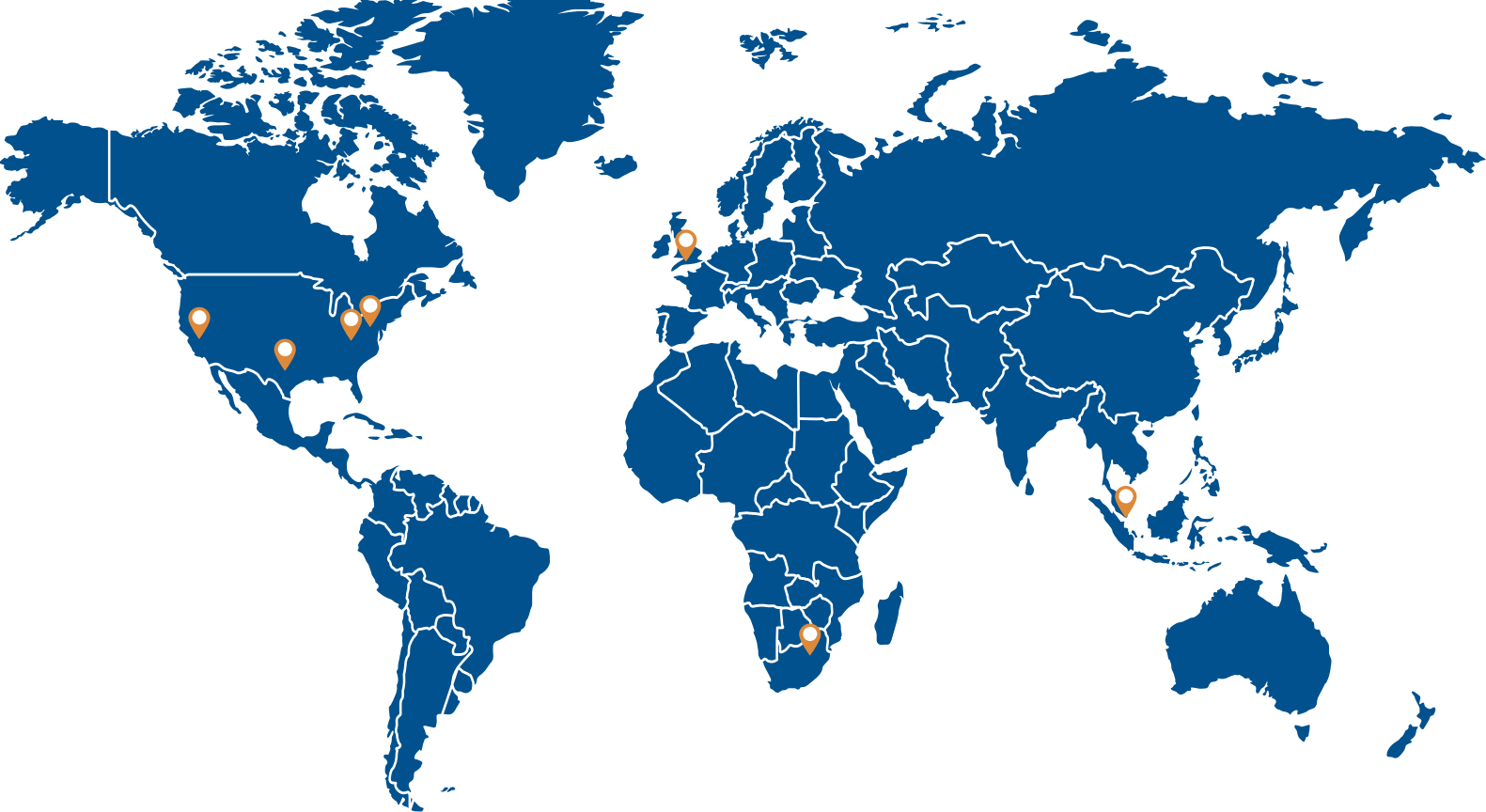




Solutions for the OEHHS Professional

air sampling | noise monitoring | surface/dermal testing



● **SKC Inc.**
World Headquarters
Eighty Four, PA
800-752-8472
skcinc.com

● **SKC South**
Appomattox, VA
800-752-7684

● **SKC-West**
Fullerton, CA
800-752-9378

● **SKC Gulf Coast**
Houston, TX
800-225-1309

● **SKC Europe**
Blandford Forum
Dorset, U.K.
skcltd.com

● **SKC Africa**
Boksburg, South Africa
skcsouthafrica.co.za

● **SKC Asia**
Singapore
skc-asia.com



FAST FIND

SAMPLE PUMPS & ACCESSORIES

PERSONAL LOW AND HIGH/LOW FLOW PUMPS
HIGH FLOW/AREA PUMPS
CALIBRATORS

06-45

07
24
38

SAMPLE MEDIA FOR GASES AND VAPORS

SORBENT TUBES
SAMPLE BAGS AND PUMPS
COATED FILTERS
IMPINGERS
COLOR DETECTION

46-79

46
58
68
70
72

PASSIVE SAMPLERS

80-99

COLLECTION MEDIA AND DUST/PARTICULATE SAMPLERS

FILTERS AND ACCESSORIES
INHALABLE DUST SAMPLERS
RESPIRABLE DUST SAMPLERS
ENVIRONMENTAL PM SAMPLERS

100-134

101
122
126
131

BIOAEROSOL SAMPLERS

135-142

PORTABLE INSTRUMENTS

143-163

NOISE/SOUND BY SKC
HAND-ARM VIBRATION
DUST/PARTICULATE
INDOOR AIR QUALITY
PERSONAL
ENVIRONMENTAL/AMBIENT AND INDOOR AIR
MULTI-POLLUTANTS

144
152

154
155
159
162

SURFACE/DERMAL SAMPLING

164-173

SAMPLING GUIDES

174-247

CELEBRATING

— WHAT'S NEW —

HAV-SENTRY

NEW!

Personal Hand-Arm Vibration Exposure Meter

Protect hand-held tool operators from developing lifelong Hand-Arm Vibration Syndrome. The unique, reliable HAV-Sentry System provides measurement (not estimate) and real-time alerts of hand-arm vibration exposure. A secure cloud-based dashboard provides for visualization, analysis, and reporting.

- ▶ Tri-axial accelerometer
- ▶ Personalized, non-intrusive monitoring
- ▶ Designed/manufactured to comply with BS ISO 5349 and 8041

Learn more on pages 152-153 or
contact your SKC distributor.



SKC Noise

Easiest to use, designed specifically for OEHS professionals

NoiseCHEK
Personal Dosimeter

SoundCHEK
Essential
Sound Level Meters

SoundCHEK
Connect

AcoustiCHEK
Calibrator



See pages 144-151 or visit skcinc.com/noise

Touch Series Sample Pumps

Just the right features and value—the perfect pumps!

AirChek ESSENTIAL
Simplest operation, best value

AirChek TOUCH
Color touch screen programmability

AirChek CONNECT
Bluetooth connectivity, mobile app



See pages 16-19 or visit skcinc.com

YOU
INSPIRE
US TO DO OUR BEST WORK

Your important mission of protecting the health and safety of workers is the reason we work so hard to apply our science and provide you with best-in-class tools.

SAMPLING SOLUTIONS



AIR



NOISE



SURFACE/
DERMAL

CUSTOMER SUPPORT

WORLDWIDE

200+
combined years



Technical Support from
our team of scientists

Our Science. Serving You.



EXPERTISE

SKC Science Serving People through Training and Resources

Expertise is the foundation and heart of our solutions

SKC is dedicated to sharing its expertise to serve industrial hygiene, safety, and environmental professionals. Our goal is to help you protect the health and safety of people at work and in their communities.



Visit the

KNOWLEDGECENTER

at skcinc.com

- **TECHNICAL** INFORMATION
- **SAMPLING** HELP
- **TRAINING** RESOURCES

LET US HELP YOU!

Look for the Expertise Fast Find in this catalog to alert you to online training and resources available at the **SKC Knowledge Center**.



JOIN OUR ONLINE COMMUNITIES –





SKC Air Sample Pumps

Professionals have always relied on SKC pumps for ruggedness and reliable performance. That same durability and reliability continues in our latest models that also feature ergonomic design, touch screen operation, PC compatibility, and Bluetooth connectivity. Built with the quality upon which you have always relied and backed by the expertise, service, and support you deserve — SKC air sample pumps are the clear choice of professionals.
SCIENCE. SERVING PEOPLE.



SKC Sample Pump Selection Guide

Choose the Features You Need, Get the Quality You Expect

Choose by Flow Range	20 to 500 ml/min	5 to 3000 ml/min	5 to 5000 ml/min	5 to 15 L/min
----------------------	------------------	------------------	------------------	---------------

Choose by Compensation Range	Up to 20 inches water BP at 500 ml/min	Up to 25 inches water BP at 2 L/min	Up to 30 inches water BP at 2 L/min	Up to 20 inches water BP at 2 L/min	Up to 40 inches water BP at 2 L/min	Up to 50 inches water BP at 2 L/min	Up to 50 inches water BP at 2 L/min	Up to 12 inches water BP at 10 L/min
------------------------------	--	-------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------	--------------------------------------

Choose by Feature								
Programmable/PC Compatible	Keypad/PC	No	Keypad/PC	No	Keypad (PCXR8)	Keypad	Touch screen* or touch keypad/PC*	Keypad/PC
Listed for Intrinsic Safety	UL/ATEX/IECEX	UL (ATEX models available)	Ex	No	UL (ATEX models available)	UL	UL/ATEX/IECEX**	No
Compensates for Changes in Atmospheric Pressure	Yes	No	Yes	No	No	No	Yes	Yes
Compensates for Changes in Temperature	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Battery Type	Li-Ion	NIMH	NIMH	Alkaline	NIMH	Li-Ion	Li-Ion	Li-Ion
Approximate Run Time	20+ hours at 500 ml/min	12+ hours at 2 L/min	12+ hours at 2 L/min	10+ hours at 2 L/min	12+ hours at 4 L/min [§]	20 hours at 2 L/min	40+ hours at 2 L/min***	24+ hours at 10 L/min

* Not applicable to AirChek Essential

** AirChek TOUCH – UL only

*** 20+ hours at 2 L/min for AirChek TOUCH

§ Specific models



Pocket Pump TOUCH
Pages 10-11



AirChek 52/Sidekick
Pages 12-13



AirChek 3000
Pages 14-15



AirLite
Page 31



Universal
Pages 22-23



AirChek XR5000
Pages 20-21



AirChek Essential
AirChek Connect
AirChek TOUCH
Pages 16-19



Leland Legacy
Pages 24-25

Air Sampling Pump Kits from SKC Inc.

With Accessories for U.S. Methods

Don't Forget . . .

SKC Air Sampling Kits provide the pumps and accessories you need for your applications. Order the following items separately:

- ☑ **A calibration device** – Select a calibration device based on the accuracy requirements of your application. *See pages 38-41.*
- ☑ **Sample Media** – Base your choice of sampling media on the application and the method used. Consult the SKC Air Sampling Guides for information on recommended sampling media for specific compounds. *See sampling media beginning on page 46 and Air Sampling Guides starting on page 174.*

SKC Inc. carefully designs its air sampling pump kits to meet the unique sampling requirements of individual regions. When selecting a pump kit, consider the configuration that will best fit your application. Most of the SKC Inc. pumps are available in Starter Kits with pump, tubing, and charger; single kits (one of each kit component); and 5-pack kits (5 of each kit component except the charger and the case). Kits do **not** include sample media or a calibrator (unless otherwise noted). Kit content can vary depending on the pump model.

Starter Kits

- Pump
- Battery charger or cradle
- Power supply
- Tubing
- Collar clip with cable tie



High Flow Sampling Kits

- Pump
- Battery charger or cradle
- Power supply
- Filter cassette holder
- Tubing
- Screwdriver set
- Soft-sided nylon carry case (single) or Pelican case (5 pack)



Low and High Flow Sampling Kits

- Pump
- Battery charger or cradle
- Power supply
- Filter cassette holder
- Tubing
- All-in-One adjustable tube holder
- Type A tube cover
- Screwdriver set
- Soft-sided nylon carry case (single) or Pelican case (5 pack)



Low Flow Sampling Kits

- Pump
- Battery charger or cradle
- Power supply
- Type A tube holder
- Tubing
- Soft-sided nylon carry case (single) or Pelican case (5 pack)



See specific pump pages for ordering information.

Air Sampling Pump Kits from SKC Ltd.

With Accessories for UK and EU Methods

SKC Ltd. air sampling pump kits are designed to suit your applications without a lot of extra purchases. One durable carry case houses the equipment you need for gas/vapour sampling, dust/particulate sampling, or both. A basic kit is available to which you may add equipment for specific applications. Kits are available in single and 5-pack configurations. Kits do **not** include a calibrator or sample media. Contents of kits may vary with pump model.

Basic Air Sampling Kits

- Pump
- Battery charger or cradle
- Power supply
- Tubing
- Screwdriver set
- Step by Step Guide
- Durable carry case



Gas/Vapour Sampling Kits

- Pump
- Battery charger or cradle
- Power supply
- Tubing
- Tube breaker
- All-in-One adjustable tube holder*
- Type A protective tube cover
- Screwdriver set
- Step by Step Guide
- Durable carry case

* Not included in Pocket Pump TOUCH Kits



Dust/Particulate Sampling Kits

- Pump
- Battery charger or cradle
- Power supply
- Tubing
- IOM Sampler (plastic)
- IOM Cassettes (4, plastic)
- Calidaptor
- MultiDust Foam Discs (10)
- Screwdriver set
- Step by Step Guide
- Durable carry case



Combined Dust and Vapour Sampling System

- Pump
- Battery charger or cradle
- Power supply
- Tubing
- Tube breaker
- All-in-One adjustable tube holder
- Type A protective tube cover
- Calidaptor
- IOM Sampler (plastic)
- IOM Cassettes (4, plastic)
- MultiDust Foam Discs (10)
- Screwdriver set
- Step by Step Guide
- Large, durable carry case



For Pumps . . .

Personal Pump Guide	7
Pocket Pump	10
AirChek 52/Sidekick	12
AirChek 3000	14
AirChek Essential	16-17
AirChek TOUCH	16, 18
AirChek Connect	16, 19
AirChek XR5000	20
Universal Pumps	22
Leland Legacy	24
Deployable Systems	26
QuickTake 30	28
Flite4	30
AirLite	31
DataTrac Pro Software	32
Battery Chargers	34
Low Flow Accessories	36
Calibrators	38
Pump Cases/Tubing	44-45
BioLite[†]	139



See specific pump pages for ordering information.

Air Sample Pumps

20 to 500 ml/min

Rocket Pump® TOUCH

The Low Flow TOUCH in Air Sampling from 20 to 500 ml/min

- ▶ Intuitive touch screen for easy programmability
- ▶ Constant flows from 20 to 500 ml/min
 - Accommodates typical flow rates for sorbent tubes
- ▶ Bluetooth® low-energy (BLE) communication
 - With PC and DataTrac Pro Software (see page 33)
 - With IOS® and Android® tablets and phones using the SKC SmartWave app (see page 33)
 - Non-BLE pump models available (visit skcinc.com)
- ▶ Exhaust port for direct filling of sample bags
 - Optional quick-connect accessory for secure connection
- ▶ Magnetic charging connector
- ▶ Large backlit screen displays time, date, constant battery status, flow rate, sample volume, temperature, atmospheric pressure, remaining run time (programmed run), and elapsed run time
- ▶ Rubber overmolded case provides quiet operation, impact protection, and a no-slip grip
- ▶ Compact and only 8.3 ounces (235 grams)
- ▶ > 20+ hours run time at 500 ml/min with powerful Li-Ion battery
 - Extended run times with AC adapter/charger
- ▶ Multi-tube sampling
 - Sample with up to four tubes simultaneously; saves time and uses fewer pumps
 - Constant flow mode and constant pressure mode (see page 37 for accessories)
- ▶ Automatic flow fault and restart
- ▶ Screen auto-lock provides for secure sampling



Non-BLE models available

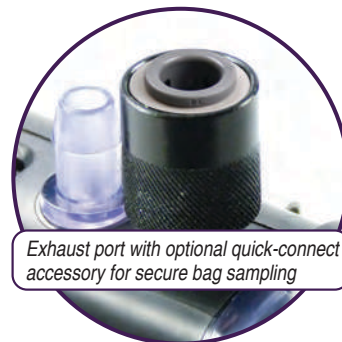


Air Sample Pumps

20 to 500 ml/min



BLE communication with PC and DataTrac Pro Software for pump and data management

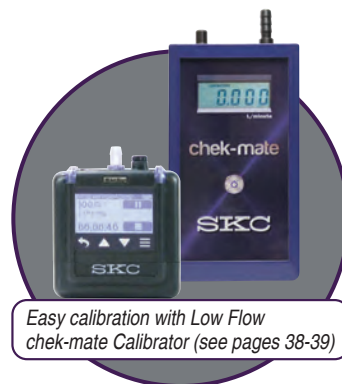


Exhaust port with optional quick-connect accessory for secure bag sampling

Non-BLE models are available!
Visit skcinc.com.



BLE communication with iOS and Android devices and SKC SmartWave app for pump control and monitoring



Easy calibration with Low Flow chek-mate Calibrator (see pages 38-39)

	SKC Inc. Cat. No.	SKC Ltd. Cat. No.
Pocket Pump TOUCH with Bluetooth (BLE)		
Pocket Pump TOUCH only* with Li-Ion battery and screwdriver, <i>requires charger; see kits or chargers below</i>	220-1000TC	
Pocket Pump TOUCH with Charger* includes pump as described above and single charger (cable and wall cube with U.S. plug)	100-240 V 220-1000TC-C	
Pocket Pump TOUCH Starter Kit* includes pump and single charger as described above, 3 feet (0.9 meter) of Tygon tubing, and collar clip with cable tie	100-240 V 220-1000TC-S	
Single Pump Kit* includes pump and single charger as described above, and low flow tube holder with Type A cover, in a soft-sided nylon carry case	100-240 V 220-1000TC-K	
Pocket Pump TOUCH Single Pump Vapour Kit includes pump, single charger, low flow tube holder with Type A cover, tube breaker, mini tool kit, Basic Step by Step Guide, and carry case	100-240 V	220-1000TCKV
3-pack Pump Kit* includes 3 pumps as described above, 3 single chargers (cables and wall cubes with U.S. plug), and 3 low flow tube holders with Type A covers, in a Pelican case	100-240 V 220-1000TC-K3	
5-pack Pump Kit* includes 5 pumps as described above, 5 single chargers (cables and wall cubes with U.S. plug), and 5 low flow tube holders with Type A covers, in a Pelican case	100-240 V 220-1000TC-K5	
5-pack Deluxe Pump Kit* includes 5 pumps as described above, 5 low flow tube holders with Type A covers, 5 single charging cables, one 5-port USB charging hub with power cable (U.S. plug), and 1 DataTrac Pro USB Bluetooth Adapter (software available via free download), in a Pelican case	100-240 V 220-1000TC-K5D	
Pocket Pump TOUCH 5 Pump Vapour Kit includes 5 pumps as described above, 5 USB charging cables, one 5-port USB charging hub with power cable, 5 low flow tube holders with Type A covers, tube breaker, 5 mini tool kits, and 3 Basic Step by Step Guides, in a carry case	100-240 V	220-1000TCK5V

Accessories	Cat. No.	Qty.
Single Charger , USB, magnetic connector, supplied as cable and wall cube with U.S. plug	100-240 V 220-300	ea
with multi plug	100-240 V 220-300A	ea
5-port USB Hub with power cable (U.S. plug), <i>requires up to 5 single charging cables (Cat. No. P75739)</i>	220-400	ea
Single charging cable , USB, without wall cube	P75739	ea
Replacement Li-Ion Battery Pack*	P76303	ea
Quick-connect Bag Sampling Adapter , installs on pump exhaust port for secure connection to tubing for bag sampling, accepts 1/4-inch OD PTFE tubing	220-200	ea
Single Kit Case , nylon, with shoulder strap	224-903	ea
5-pack Kit Case , Pelican	224-915	ea
DataTrac Pro for Pocket Pump TOUCH USB Bluetooth Adapter , <i>required for free software download and use of DataTrac Pro software</i>	877-94	ea
Low Flow chek-mate Calibrator , 20 to 500 ml/min, includes 9-volt battery, available with NIST, UK, or ISO standard traceable calibration certificate; <i>see details on pages 38-39</i>		

* Pocket Pump TOUCH pumps contain Li-Ion batteries and are subject to special shipping regulations.

Pocket Pump TOUCH requires 1/4-inch ID tubing; see page 45.

Air Sample Pumps

5 to 3000 ml/min

AirChek 52/Sidekick

Simple. Rugged. Economical.

The small, lightweight, and economical AirChek® 52/Sidekick Sample Pump is designed for rugged industrial use at flows from 5 to 3000 ml/min. Ideal for on-worker applications, use the compact AirChek 52/Sidekick for short-term or full-shift sampling with sorbent tubes, impingers, cyclones, PPIs, or filter cassettes. Reliability, ease of use, and precision flow control make the AirChek 52/Sidekick one of the most popular personal air sample pumps in the industry.

Wide flow range

- Constant high flows from 1000 to 3000 ml/min
- Low flows from 5 to 500 ml/min with low flow holder (see page 36)
- Ideal for most personal sampling applications

Full-shift run times

- Provides 12+ hours run time at 2 L/min, 25 inches water back pressure

Simple design

- Impact-resistant case is easy to clean and decontaminate
- Easy on/off and flow control
- Quick-change battery pack mounted on bottom of pump

Small, compact, and lightweight

- **Sidekick:** 16.4 oz (465 grams)
- **Sidekick with ATEX approval:** 20.3 ounces (575 grams)
- **AirChek 52:** 20 ounces (567 grams)

Highly accurate display*

- Digital time display tracks sample run time in minutes up to 99,999
- Indicates low battery condition or flow fault without losing sample run time
- Attempts auto-restart up to 5 times from flow fault

Multi-tube sampling saves time and uses fewer pumps

- Multiple low flow tube holder and Constant Pressure Controller (CPC) accessories allow up to four tube samples to be taken simultaneously, each at different flow rates if desired (see page 37)

All-in-One Adjustable Tube Holder

- Permits single sorbent tube sampling from 5 to 500 ml/min without a separate CPC (see page 36 for details)

* Cat. Nos. 224-52 and 224-52MTX only



Top view: AirChek 52/Sidekick with LCD indicator

AirChek 52/Sidekick Low Flow Sampling Accessories

Description	Voltage	AirChek 52 SKC Inc. Cat. No.	Sidekick SKC Ltd. Cat. No.
AirChek 52/Sidekick Pump with NiMH battery pack and screwdriver set		224-52	224-50MH 224-51MTX 224-52MTX
Starter Kit includes pump, single PowerFlex charger with cable, 3 feet (0.9 meter) of Tygon tubing, and collar clip with cable tie	100-240 V	224-52-S	
Single Pump Kit-Basic includes pump as described above, single charger, 39 inches (1 meter) of Tygon tubing, and 1 Step by Step Guide, in a durable carry case	100-240 V		224-50MHK 224-51MTXK 224-52MTXK
Single Pump Kit-High Flow includes pump as described above, single PowerFlex charger with cable, and filter cassette holder, in a Pelican carry case	100-240 V	224-52KH	
Single Pump Kit-Dust/Particulate includes pump as described above, single charger, calidaptor, 39 inches (1 meter) of Tygon tubing, plastic IOM MultiDust Sampler, 4 extra MultiDust cassettes, 1 pack of 10 MultiDust foam discs, and 1 Step by Step Guide, in a durable carry case	100-240 V		224-50MHKP 224-51MTXKP 224-52MTXKP
Single Pump Kit-Gas/Vapour includes pump as described above, single charger, 39 inches (1 meter) of Tygon tubing, All-in-One adjustable tube holder, tube breaker, Type A protective tube cover, and 1 Step by Step Guide, in a durable carry case	100-240 V		224-50MHKV 224-51MTXKV 224-52MTXKV
Single Pump Kit-Combined includes pump as described above and all media and accessories as described in the Single Gas/Vapour and the Single Dust/Particulate kits, in one durable carry case	100-240 V		224-50MHKC 224-51MTXKC 224-52MTXKC
5-pack Pump Kit-Basic includes 5 pumps as described above, 5-station charger, 5 one-meter (39-inch) lengths of Tygon tubing, and 3 Step by Step Guides, in a durable carry case	100-240 V		224-50MHK5 224-51MTXK5 224-52MTXK5
5-pack Pump Kit-High Flow includes 5 each pumps as described above and filter cassette holders, and a 5-station PowerFlex charger with 5 cables, in a Pelican carry case	100-240 V	224-52K5	
5-pack Pump Kit-High/Low Flow includes 5 each pumps as described above, All-in-One adjustable tube holders, Type A protective tube covers, and filter cassette holders, and a 5-station PowerFlex charger with 5 cables, in a Pelican carry case	100-240 V	224-52K5D	
5-pack Pump Kit-Dust/Particulate includes 5 each pumps as described above and plastic IOM MultiDust Samplers, 1 pack of 10 MultiDust foam discs, 5 one-meter (39-inch) lengths of Tygon tubing, calidaptor, 10 extra MultiDust cassettes, 5-station charger, and 3 Step by Step Guides, in a durable carry case	100-240 V		224-50MHK5P 224-51MTXK5P 224-52MTXK5P
5-pack Pump Kit-Gas/Vapour includes 5 each pumps as described above, All-in-One adjustable tube holders, and Type A protective tube covers, 5 one-meter (39-inch) lengths of Tygon tubing, a 5-station charger, tube breaker, and 3 Step by Step Guides, in a durable carry case	100-240 V		224-50MHK5V 224-51MTXK5V 224-52MTXK5V
5-pack Pump Kit-Combined includes 5 pumps as described above and all media and accessories as described in the 5-pack Gas/Vapour and the 5-pack Dust/Particulate kits, in one durable carry case	100-240 V		224-50MHK5C 224-51MTXK5C 224-52MTXK5C



The SKC Ltd. Sidekick pump is available in three models: 224-50MH (non-ATEX approved, shown), 224-51MTX (ATEX approved, no LCD), and 224-52MTX (ATEX approved, with LCD indicator).

Certifications



ATEX model available; contact SKC



(Sidekick models
224-51MTX and 224-52MTX)

For Accessories

Battery Chargers..... pages 34-35
 Low Flow Accessories ... pages 36-37
 Flowmeters pages 38-41
 Kit Cases.....page 44
 Filter Holderspage 116

MORE INFORMATION

skcinc.com

AirChek 52/Sidekick Pump requires 1/4-inch ID tubing; see page 45.

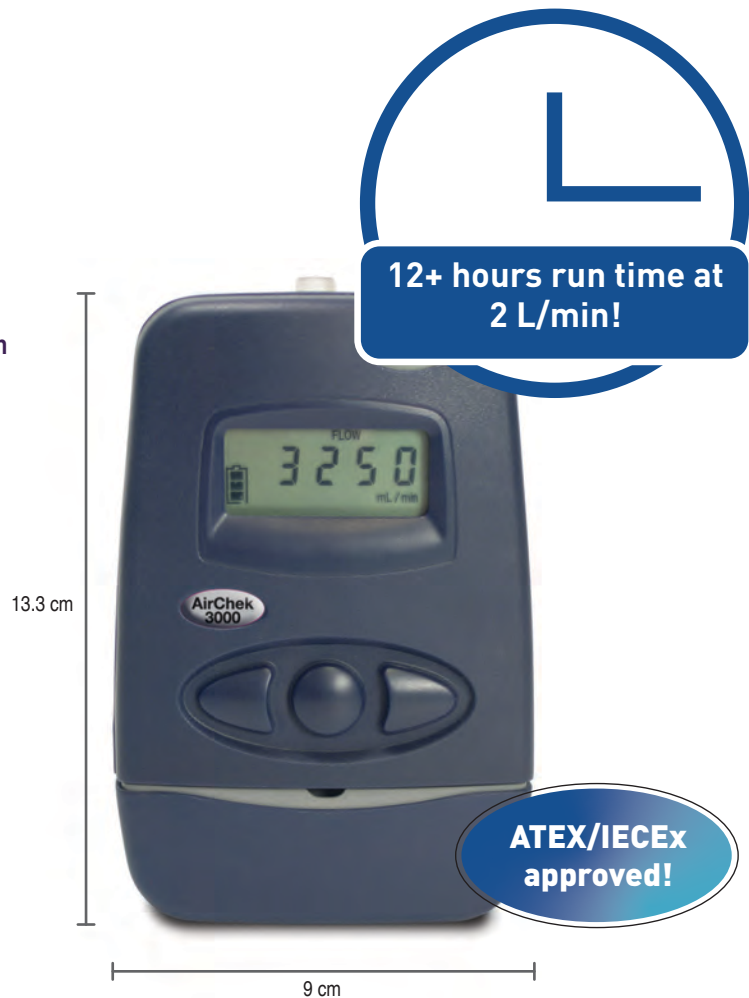
Air Sample Pumps

5 to 3250 ml/min

AirChek 3000

PC Programmable Air Sample Pump

- **Longer run times with NiMH battery — 12+ hours at 2 L/min, 30 inches water back pressure**
- **Advanced flow control from 1000 to 3250 ml/min**
 - Accurate internal flow sensor measures flow directly and acts as a secondary standard to maintain set flow
 - Thermal and pressure sensors maintain flow calibration by compensating for differences between the temperature and atmospheric pressure at calibration and during sampling
- **Convenient Low Flow Adapter Kit available for 5 to 500 ml/min**
- **Continuous sample volume calculations**
 - Flow rate, run time, volume, and flow fault are continuously recorded for accurate sample reporting
- **Battery status display**
- **Multi-tube sampling feature**
 - Save valuable time with simultaneous 2, 3, or 4-tube sampling (see page 37)
- **Protective features**
 - Rugged, impact-resistant case with cover-protected ports
 - Automatic flow fault shutdown and restart
 - Auto shut-off at low battery
- **Automatic CalChek calibration feature with chek-mate calibrator (see page 39)**



Schedule it on a PC!

Combine AirChek® 3000, your PC, and DataTrac Software to easily create single or multiple sampling schedules that include delayed start, timed shutdown, and sequential sampling. Alternatively, a single schedule can be set manually using the pump's large integral keypad.

Sample and record it!

Start sampling with the click of a mouse or the press of a button. An internal flow sensor acts as a secondary standard to accurately maintain set flow. AirChek 3000 records flow rate, run time, sample volume, and flow fault throughout the sampling period. View values during sampling on the pump LCD or in pump history on a PC.

Download and report it!

Use your PC and DataTrac Software to download pump history, import data into your favorite software for IH lab reporting, or create a worker exposure profile for complete reporting. Visit skcltd.com for details.

Certifications

CE  IECEX ANZEX

Schedule, Sample, Download, and Report from Your PC



PC Programmable with DataTrac Software

Windows-based DataTrac Software provides for maximum use of pump features and sample history download to PC for reporting.

- Program/operate pump
- Download sampling history from pump to PC
- Set up easy chain of custody sample sheets
- Manage data and produce reports

See ordering below.

Description	Voltage	SKC Ltd. Cat. No.
AirChek 3000 Pump with NiMH battery pack and tool		210-3311
Single Pump Kit-Basic includes pump as described above, single charger, 39 inches (1 meter) of Tygon tubing, and 1 Step by Step Guide, in a durable carry case	100-240 V	210-3311K
Single Pump Kit-Dust/Particulate includes pump as described above, single charger, calidaptor, 39 inches (1 meter) of Tygon tubing, plastic IOM MultiDust Sampler, 4 extra MultiDust cassettes, 1 pack of 10 MultiDust foam discs, and 1 Step by Step Guide, in a durable carry case	100-240 V	210-3311KP
Single Pump Kit-Gas/Vapour includes pump as described above, single charger, 39 inches (1 meter) of Tygon tubing, All-in-One adjustable tube holder, tube breaker, Type A protective tube cover, and 1 Step by Step Guide, in a durable carry case	100-240 V	210-3311KV
Single Pump Kit-Combined includes pump as described above and all media and accessories as described in the Single Gas/Vapour and the Single Dust/Particulate Kits, in a durable carry case	100-240 V	210-3311KC
5-pack Pump Kit-Basic includes 5 pumps as described above, 5-station charger, 5 one-meter (39-inch) lengths of Tygon tubing, and 3 Step by Step Guides, in a durable carry case	100-240 V	210-3311K5
5-pack Pump Kit-Dust/Particulate includes 5 each pumps as described above, plastic IOM MultiDust Samplers, 5 one-meter (39-inch) lengths of Tygon tubing, 1 pack of 10 MultiDust foam discs, 10 extra MultiDust cassettes, calidaptor, 5-station charger, and 3 Step by Step Guides, in a durable carry case	100-240 V	210-3311K5P
5-pack Pump Kit-Gas/Vapour includes 5 each pumps as described above, All-in-One adjustable tube holders and Type A protective tube covers, 5 one-meter (39-inch) lengths of Tygon tubing, a 5-station charger, tube breaker, and 3 Step by Step Guides, in a durable carry case	100-240 V	210-3311K5V
5-pack Pump Kit-Combined includes 5 pumps as described above and all media and accessories as described in the 5-pack Gas/Vapour and the 5-pack Dust/Particulate kits, in one durable carry case	100-240 V	210-3311K5C
Accessories		
CalChek Communication Cable , required for automatic calibration of AirChek TOUCH, AirChek 3000, and Leland Legacy Sample Pumps with chek-mate calibrator (see page 39)		375-200
Low Flow Adapter Kit (5 to 500 ml/min) includes All-in-One adjustable tube holder and Type A tube cover		210-500
Medium Flow chek-mate Calibrator , 0.5 to 5 L/min, includes 9-volt battery, available with NIST, UK, or ISO standard traceable calibration certificate; see details on pages 38-39		
DataTrac Software for AirChek 3000 , software on USB stick and adapter cable		877-91K

AirChek 3000 requires 1/4-inch ID tubing; see page 45.

Air Sample Pumps

5 to 5000 ml/min



SKC AirChek Sample Pumps

Touch Technology Enhanced, Constant Flows 5 to 5000 ml/min



- **Flows from 5 to 5000 ml/min**
 - 5 to 500 ml/min with low flow holder (see page 36)
 - Multi-tube sampling in low flow mode (see page 37)
- **High back pressure compensation**
 - Up to 50 inches water at 2 L/min
- **Long run times on Li-Ion battery** (see details on page 7)
- **Correct flow for changes in temperature and atmospheric pressure**
- **Flow fault with auto-restart**
- **Intuitive touch operation**
- **Bright running and status LEDs**
- **Tough no-slip case**
- **Ultra-quiet – average 51.7 dB**
(37-mm, 0.8 µm MCE filter at 2 L/min)
- **Small and lightweight**
 - 4.1 x 3.7 x 2.8 inches
(10.4 x 9.4 x 7.1 cm)
 - 19.4 ounces (550 grams)
- **Screen protection and security**
 - Protective screen cover
 - Screen lock-out feature
- **Intrinsically safe**

AirChek **ESSENTIAL** AirChek **TOUCH** AirChek **CONNECT**

AirChek	Low Price Simple Operation	Fully Programmable Easy Navigation	Bluetooth-connectivity Mobile App
Operation	Touch keypad	Color touch screen	Touch screen
Display	B&W, elapsed time, battery status, flow or low battery fault, screen lock	Color LCD, time, date, battery status, real-time flow rate, sample volume, ambient temperature, atm. pressure, fault, accumulated volume, elapsed time, pump run and stop status	High contrast backlit B&W LCD, time, date, battery status, flow rate, fault, sample volume, temp, atm. pressure, back pressure, programmed run remaining time, and elapsed run time
Programmable – Continuous, Timed, and Intermittent Sampling (presets available)		●	●
PC Compatible with DataTrac Pro Software – Download Sampling History		●	●
Bluetooth Connectivity with PC and Mobile			●
Mobile App			●
Constant Pressure Mode			●
CalChek Hands-free Calibration Feature with chek-mate Calibrator		●	
Charging	Standard cradle, chainable	Standard or e-cradle, chainable	Standard cradle, chainable
Certifications	CE 0539, UL Listed – intrinsically safe, Ex, IECEx	CE, UL Listed – intrinsically safe	CE 0539, UL Listed – intrinsically safe, Ex, IECEx
Ordering Information	Page 17	Page 18	Page 19

V Video	P PowerPoint	W Webinar	S Sampling Solution
Visit skcinc.com/Training			

AirChek ESSENTIAL

ORDERING

Low Price, Simple Operation, 5 to 5000 ml/min

Description	SKC Inc. Cat. No.	SKC Ltd. Cat. No.
AirChek Essential Pump only* with Li-Ion battery pack and screwdriver set, <i>requires Standard Charging Cradle and power supply; see kits or accessories below</i>	220-3000	220-3000

AirChek Essential Pump Kits*	SKC Inc. Cat. No.	SKC Ltd. Cat. No.
Single Pump Basic Kit includes pump, Standard Charging Cradle and power supply, 39 inches (1 meter) of Tygon tubing, and 1 Step by Step Guide, in a durable carry case	100-240 V	220-3000K
Single High Flow Pump Kit includes pump as described above, Standard Charging Cradle, power supply with cord, and filter cassette holder, in a soft-sided nylon carry case	100-240 V	220-3000-K
Single Pump Kit-Dust/Particulate includes pump as described above, single cradle and power supply, calidaptor, 39 inches (1 meter) of Tygon tubing, plastic IOM MultiDust Sampler, 4 extra MultiDust cassettes, 1 pack of 10 MultiDust foam discs, and 1 Step by Step Guide, in a durable carry case	100-240 V	220-3000KP
Single High/Low Flow Pump Kit includes pump as described above, Standard Charging Cradle, power supply with cord, filter cassette holder, All-in-One adjustable tube holder, and Type A protective tube cover, in a soft-sided nylon carry case	100-240 V	220-3000-KD
Single Pump Kit-Dust and Vapour includes pump and battery and all media and accessories as described in the Single Gas/Vapour and the Single Dust/Particulate kits, in one durable carry case	100-240 V	220-3000KC
Single Pump Kit-Vapour includes pump, Standard Charging Cradle and power supply, 39 inches (1 meter) of Tygon tubing, All-in-One adjustable tube holder, Type A protective tube cover, tube breaker, and 1 Step by Step Guide, in a durable carry case	100-240 V	220-3000KV
3-pack High/Low Flow Pump Kit includes 3 pumps as described above and 3 each: Standard Charging Cradles and power supply with cord, filter cassette holders, All-in-One adjustable tube holders, and Type A protective tube covers, in a Pelican case	100-240 V	220-3000-K3D
5-pack High Flow Pump Kit includes 5 pumps as described above and 5 each: Standard Charging Cradles and power supply with cord, and filter cassette holders, in a Pelican case	100-240 V	220-3000-K5 220-3000K5
5-pack Pump Kit-Dust/Particulate includes 5 each: pumps as described above, charging cradles and 1 multi-cradle power supply, plastic IOM MultiDust Samplers, 39 inches (1 meter) lengths of Tygon tubing; 10 extra MultiDust cassettes; 1 pack of 10 MultiDust foam discs, 1 calidaptor, and 3 Step by Step Guides, in a durable carry case	100-240 V	220-3000K5P
5-pack High/Low Flow Pump Kit includes 5 pumps as described above and 5 each: Standard Charging Cradles and power supply with cord, filter cassette holders, All-in-One adjustable tube holders, and Type A protective tube covers, in a Pelican case	100-240 V	220-3000-K5D
5-pack Pump Kit-Dust and Vapour includes 5 pumps and batteries and all media and accessories as described in the 5-pack Gas/Vapour and the 5-pack Dust/Particulate kits, in one durable carry case	100-240 V	220-3000K5C
5-pack Pump Kit-Vapour includes 5 each: pumps as described above, Standard Charging Cradles and 1 multi-cradle power supply, 39 inches (1 meter) of Tygon tubing, All-in-One adjustable tube holders, Type A protective tube covers, 1 tube breaker, and 3 Step by Step Guides, in a durable carry case	100-240 V	220-3000K5V

Accessories	Cat. No.	Qty.
Standard Charging Cradle , for AirChek Essential, TOUCH, and Connect pumps, <i>requires power supply, see below</i>	220-800	ea
Single Cradle Power Supply	100-240 V 220-600	ea
Multi Cradle Power Supply , for use with 2 to 5 charging cradles	100-240 V 220-700	ea
Low Flow Adapter Kit (5 to 500 ml/min) includes All-in-One adjustable tube holder and Type A tube cover	210-500	ea
Medium Flow chek-mate Calibrator , 0.5 to 5 L/min, includes 9-volt battery, available with NIST, UK, or ISO standard traceable calibration certificate; <i>see details on pages 38-39</i>		
Replacement Battery Pack,* Li-Ion	P75718	ea
Protective Pouch , nylon, with adjustable waist belt and shoulder strap, black	224-911	ea

* AirChek Essential pumps contain Li-Ion batteries and are subject to special shipping regulations.

AirChek Essential requires ¼-inch ID tubing; see page 45.

Air Sample Pumps

5 to 5000 ml/min

AirChek TOUCH ORDERING

Fully Programmable, Easy Navigation, 5 to 5000 ml/min

Description	SKC Inc. Cat. No.	SKC Ltd. Cat. No.
AirChek TOUCH Pump only* with Li-Ion battery pack and screwdriver set, <i>requires charging cradle and power supply; see kits or accessories below</i>	220-5000TC	220-5000TC

AirChek TOUCH Pump Kits*	SKC Inc. Cat. No.	SKC Ltd. Cat. No.
Single Pump Basic Kit includes pump, Standard Charging Cradle and power supply with cord, 39 inches (1 meter) of Tygon tubing, and 1 Step by Step Guide, in a durable carry case	100-240 V	220-5000TCK
Single High Flow Pump Kit includes pump as described above, Standard Charging Cradle, power supply with cord, and filter cassette holder, in a soft-sided nylon carry case	100-240 V	220-5000TC-K
Single Combined Kit includes pump as described above, Standard Charging Cradle and power supply with cord, plastic IOM MultiDust Sampler, 4 MultiDust cassettes, 10 MultiDust foam discs, All-in-One adjustable tube holder, Type A protective tube cover, tube breaker, calidaptor, and 39 inches (1 meter) of Tygon tubing, in a durable carry case	100-240 V	220-5000TCKC
Single Dust Kit includes pump as described above, Standard Charging Cradle and power supply with cord, plastic IOM MultiDust sampler, 4 MultiDust cassettes, 10 MultiDust foam discs, calidaptor, and 39 inches (1 meter) of Tygon tubing, in a durable carry case	100-240 V	220-5000TCKP
Single Vapour Kit includes pump as described above, Standard Charging Cradle and power supply with cord, All-in-One adjustable tube holder, Type A tube cover, tube breaker, 39 inches (1 meter) of Tygon tubing, in a durable carry case	100-240 V	220-5000TCKV
Single High/Low Flow Pump Kit includes pump as described above, Standard Charging Cradle, power supply with cord, filter cassette holder, All-in-One adjustable tube holder, Type A protective tube cover, in a soft-sided nylon carry case	100-240 V	220-5000TC-KD
Single High/Low Flow Enhanced Pump Kit includes pump as described above, e-Cradle and power supply with cord, USB cable for use with free DataTrac Pro software download, filter cassette holder, All-in-One adjustable tube holder, and Type A protective tube cover, in a soft-sided nylon carry case	100-240 V	220-5000TC-KDE
3-pack High/Low Flow Pump Kit includes 3 pumps as described above, 2 Standard Charging Cradles, 1 e-Cradle, power supply with cord, and USB cable for use with free DataTrac Pro software download, 3 each: filter cassette holders, All-in-One adjustable tube holders, and Type A protective tube covers, in a Pelican case	100-240 V	220-5000TC-K3D
5-Pump Combined Kit includes 5 pumps as described above, 4 Standard Charging Cradles, 1 e-Cradle, power supply with cord and USB cable, 5 plastic IOM MultiDust samplers, 10 MultiDust cassettes, 10 MultiDust foam discs, 5 All-in-One adjustable tube holders, 5 Type A protective tube covers, tube breaker, calidaptor, and 5 one-meter (39-inch) lengths of Tygon tubing, in a durable carry case	100-240 V	220-5000TCK5C
5-Pump Dust Kit includes 5 pumps as described above, 4 Standard Charging Cradles, 1 e-Cradle, power supply with cord and USB cable, 5 plastic IOM MultiDust samplers, 10 MultiDust cassettes, 10 MultiDust foam discs, calidaptor, and 5 one-meter (39-inch) lengths of Tygon tubing, in a durable carry case	100-240 V	220-5000TCK5P
5-Pump Vapour Kit includes 5 pumps as described above, 4 Standard Charging Cradles, 1 e-Cradle, power supply with cord and USB cable, 5 All-in-One adjustable tube holders, 5 Type A protective tube covers, tube breaker, and 5 one-meter (39-inch) lengths of Tygon tubing, in a durable carry case	100-240 V	220-5000TCK5V
5-pack High Flow Pump Kit includes 5 pumps as described above, 4 Standard Charging Cradles, 1 e-Cradle, power supply with cord, and USB cable, in a Pelican case	100-240 V	220-5000TCK5
5-pack High Flow Pump Kit includes 5 pumps as described above, 4 Standard Charging Cradles, 1 e-Cradle, power supply with cord, USB cable for use with free DataTrac Pro software download, and 5 filter cassette holders, in a Pelican case	100-240 V	220-5000TC-K5
5-pack High/Low Flow Pump Kit includes 5 pumps as described above, 4 Standard Charging Cradles, 1 e-Cradle, power supply with cord, and USB cable for use with free DataTrac Pro software download; and 5 each: filter cassette holders, All-in-One adjustable tube holders, and Type A protective tube covers, in a Pelican case	100-240 V	220-5000TC-K5D

Accessories	Cat. No.	Qty.
Standard Charging Cradle , <i>requires power supply, see below</i>	220-800	ea
Enhanced Charging Cradle (e-Cradle) includes USB cable, for use with free DataTrac Pro software download, <i>requires power supply, see below</i>	220-900	ea
Single Cradle Power Supply , for use with one charging cradle	100-240 V 220-600	ea
Multi Cradle Power Supply , for use with 2 to 5 charging cradles	100-240 V 220-700	ea
CalChek Communication Cable , <i>required for automatic calibration with Medium Flow chek-mate Calibrator, see details and calibrator on pages 38-39</i>	375-200	ea
DataTrac Pro for AirChek TOUCH Hardware Accessory Kit , <i>see page 32</i>	877-93	ea
Low Flow Adapter Kit (5 to 500 ml/min) includes All-in-One adjustable tube holder and Type A tube cover	210-500	ea
Replacement Battery Pack ,* Li-Ion	P75718	ea
Medium Flow chek-mate Calibrator , 0.5 to 5 L/min, includes 9-volt battery, available with NIST, UK, or ISO standard traceable calibration certificate; <i>see details on pages 38-39</i>		

* AirChek TOUCH pumps contain Li-Ion batteries and are subject to special shipping regulations.

AirChek TOUCH requires 1/4-inch ID tubing; see page 45.


AirChek **CONNECT****ORDERING****Bluetooth Connectivity, Mobile App, 5 to 5000 ml/min**

Description	SKC Inc. Cat. No.	SKC Ltd. Cat. No.
AirChek Connect Pump only* with Li-Ion battery pack and screwdriver set, <i>requires Standard Charging Cradle and power supply; see kits or accessories below</i>	220-4000	220-4000

AirChek Connect Pump Kits*	SKC Inc. Cat. No.	SKC Ltd. Cat. No.
Single Pump Basic Kit includes pump, single cradle and power supply, 39 inches (1 meter) of Tygon tubing, and 1 Step by Step Guide, in a durable carry case	100-240 V	220-4000K
Single High Flow Pump Kit includes pump as described above, Standard Charging Cradle, power supply with cord, and filter cassette holder, in a soft-sided nylon carry case	100-240 V	220-4000-K
Single Pump Kit-Dust/Particulate includes pump as described above, single cradle and power supply, calidaptor, 39 inches (1 meter) of Tygon tubing, plastic IOM MultiDust Sampler, 4 extra MultiDust cassettes, 1 pack of 10 MultiDust foam discs, and 1 Step by Step Guide, in a durable carry case	100-240 V	220-4000KP
Single High/Low Flow Pump Kit includes pump as described above, Standard Charging Cradle, power supply with cord, filter cassette holder, All-in-One adjustable tube holder, and Type A protective tube cover, in a soft-sided nylon carry case	100-240 V	220-4000-KD
Single Pump Kit-Dust and Vapour includes pump as described above, single cradle and power supply, 39 inches (1 meter) of Tygon tubing, All-in-One adjustable tube holder, tube breaker, Type A protective tube cover, calidaptor, plastic IOM MultiDust Sampler, 4 extra MultiDust cassettes, 1 pack of 10 MultiDust foam discs, and 1 Step by Step Guide, in a durable carry case	100-240 V	220-4000KC
Single Vapour Kit includes pump as described above, Standard Charging Cradle, power supply with cord, All-in-One adjustable tube holder, Type A protective tube cover, tube breaker, 39 inches (1 meter) of Tygon tubing, and 1 Step by Step Guide, in a durable carry case	100-240 V	220-4000KV
3-pack High/Low Flow Pump Kit includes 3 pumps as described above and 3 each: Standard Charging Cradles and power supply with cord, filter cassette holders, All-in-One adjustable tube holders, and Type A protective tube covers; and 1 DataTrac Pro USB Bluetooth Adapter (software available via free download), in a Pelican case	100-240 V	220-4000-K3D
5-pack High Flow Pump Kit includes 5 pumps as described above and 5 each: Standard Charging Cradles and power supply with cord, and filter cassette holders; and 1 DataTrac Pro USB Bluetooth Adapter (software available via free download), in a Pelican case	100-240 V	220-4000-K5
5-pack Pump Kit-Dust/Particulate includes 5 each: pumps as described above, charging cradles and 1 multi-cradle power supply, plastic IOM MultiDust Samplers, 39 inches (1 meter) lengths of Tygon tubing; 10 extra MultiDust cassettes; 1 pack of 10 MultiDust foam discs, 1 calidaptor, and 3 Step by Step Guides, in a durable carry case	100-240 V	220-4000K5P
5-Pump Vapour Kit includes 5 pumps as described above, 4 Standard Charging Cradles, power supply with cord, 5 All-in-One adjustable tube holders, 5 Type A protective tube covers, tube breaker, 5 one-meter (39-inch) lengths of Tygon tubing, and 3 Step by Step Guides, in a durable carry case	100-240 V	220-4000K5V
5-pack High/Low Flow Pump Kit includes 5 pumps as described above and 5 each: Standard Charging Cradles and power supply with cord, filter cassette holders, All-in-One adjustable tube holders, and Type A protective tube covers; and 1 DataTrac Pro USB Bluetooth Adapter (software available via free download), in a Pelican case	100-240 V	220-4000-K5D
5-pack Pump Kit-Dust and Vapour includes 5-each: pumps as described above, charging cradles and 1 multi-cradle power supply, 39 inches (1 meter) lengths of Tygon tubing, All-in-One adjustable tube holders, Type A protective tube covers, plastic IOM MultiDust Samplers; 10 extra MultiDust Cassettes; 1 pack of 10 MultiDust foam discs, 1 tube breaker, 1 calidaptor; and 3 Step by Step Guides, in a durable carry case	100-240 V	220-4000K5C
5-pack Pump Kit-Basic includes 5 pumps as described above, 4 Standard Charging Cradles, power supply with cord, 5 one-meter (39-inch) lengths of Tygon tubing, and 3 Step by Step Guides, in a durable carry case	100-240 V	220-4000K5

Accessories	Cat. No.	Qty.
Standard Charging Cradle , for AirChek Connect, TOUCH, and Essential pumps, <i>requires power supply, see below</i>	220-800	ea
Single Cradle Power Supply	100-240 V 220-600	ea
Multi Cradle Power Supply , for use with 2 to 5 charging cradles	100-240 V 220-700	ea
DataTrac Pro USB Bluetooth Adapter , for AirChek Connect and Pocket Pump TOUCH, <i>see page 33 for details</i>	877-94	ea
Low Flow Adapter Kit (5 to 500 ml/min) includes All-in-One adjustable tube holder and Type A tube cover	210-500	ea
Medium Flow chek-mate Calibrator , 0.5 to 5 L/min, includes 9-volt battery, available with NIST, UK, or ISO standard traceable calibration certificate; <i>see details on pages 38-39</i>		
Replacement Battery Pack,* Li-Ion	P75718	ea
Protective Pouch , nylon, with adjustable waist belt and shoulder strap, black	224-911	ea

* AirChek Connect pumps contain Li-Ion batteries and are subject to special shipping regulations.

AirChek Connect requires ¼-inch ID tubing; see page 45. 

Air Sample Pumps

5 to 5000 ml/min

AirChek XR5000

Powerful Sampling – Simple Operation

- **Extended flow range: 5 to 5000 ml/min†**
 - Suitable for low flow gas/vapor or high flow particulate sampling (see page 36)
 - Multi-tube sampling option allows up to four tube samples to be taken simultaneously, each at different flow rates if desired (see page 37)
- **Extended back pressure capabilities**
 - Up to 50 inches of water at 2 L/min
- **2 interchangeable battery options**
 - High-power Li-Ion for extended runs to 40 hours
 - Standard Li-Ion for runs to 20 hours
- **Highly accurate electronic flow control system**
- **Automatic flow correction for changes in temperature provides accurate air volumes**
- **Extremely simple operation**
 - Large three-button keypad
 - Continuous run with the push of a button
 - Bright blue pump status LED
 - Easy-to-read LCD displays elapsed time and accumulated run time
- **Set-and-go timer**
 - Timed and delayed runs up to 9999 minutes
- **Sample integrity**
 - Lockable keypad
 - Automatic flow fault
 - Auto-restart attempted after 15 seconds in flow fault
- **Standard model weighs only 16 ounces (454 grams)**

† 5 to 500 ml/min with low flow adjustable holder, see page 36



Enhanced Battery Power for Extended Runs!

XR5000 Model	2 L/min*	5 L/min*
High-power Li-Ion	40 hours	22 hours
Standard Li-Ion	20 hours	11 hours

* Results of run time tests using 37-mm, 0.8-µm MCE filters with new pumps and batteries. Pump and battery performance may vary.



Air Sample Pumps

5 to 5000 ml/min



Extended run times



Simple operation



Bright blue status LED



Small footprint and only 16 ounces!

SKC Inc. AirChek XR5000 Pumps and Kits

Description	4-cell High-power Li-Ion [®] Battery SKC Inc. Cat. No.	2-cell Standard Li-Ion [®] Battery SKC Inc. Cat. No.
Pump with battery and screwdriver set, <i>requires charger; see kits or chargers below</i>	210-5001	210-5002
Starter Kit includes pump, charger, 3 feet (0.9 meter) of Tygon tubing, and collar clip with cable tie	100-240 V 210-5001-S	210-5002-S
Single High Flow Pump Kit includes pump, charger, and cassette holder, in a soft-sided nylon carry case	100-240 V 210-5001K	210-5002K
5-pack High Flow Pump Kit includes 5 each: pumps and cassette holders and one Take Charge 5 Multi-charger, in a Pelican case	100-240 V 210-5001K5	210-5002K5
5-pack High/Low Flow Pump Kit includes 5 each: pumps, cassette holders, All-in-One adjustable tube holders, and Type A protective tube covers and one Take Charge 5 Multi-charger, in a Pelican case	100-240 V 210-5001K5D	210-5002K5D
Replacement Li-Ion Battery Pack[#]	P85004A	P85002A

SKC Ltd. AirChek XR5000 Kits

Description	4-cell High-power Li-Ion [®] Battery SKC Ltd. Cat. No.	2-cell Standard Li-Ion [®] Battery SKC Ltd. Cat. No.
Pump with battery , <i>requires charger; see kits below or charger on p. 35</i>	210-5001	210-5002
Single Pump Basic Kit includes pump, charger, 39 inches (1 meter) of Tygon tubing, and 1 Step by Step Guide, in a durable carry case	100-240 V 210-5001K	210-5002K
Single Pump Kit-Gas/Vapour includes pump and battery, single charger, 39 inches (1 meter) of Tygon tubing, All-in-One adjustable tube holder, tube breaker, Type A protective tube cover, and 1 Step by Step Guide, in a durable carry case	100-240 V 210-5001KV	210-5002KV
Single Pump Kit-Dust/Particulate includes pump and battery, single charger, calidaptor, 39 inches (1 meter) of Tygon tubing, plastic IOM MultiDust Sampler, 4 extra MultiDust cassettes, 1 pack of 10 MultiDust foam discs, and 1 Step by Step Guide, in a durable carry case	100-240 V 210-5001KP	210-5002KP
Single Pump Kit-Combined includes pump and battery and all media and accessories as described in the Single Gas/Vapour and the Single Dust/Particulate kits, in one durable carry case	100-240 V 210-5001KC	210-5002KC
5-pack Pump Basic Kit includes 5 each pumps and batteries, 5 one-meter (39-inch) lengths of Tygon tubing, 3 Step by Step Guides, and 5 single chargers, in a durable carry case	100-240 V 210-5001K5	210-5002K5
5-pack Pump Kit-Gas/Vapour includes 5 each pumps and batteries, All-in-One adjustable tube holders, and Type A protective tube covers, 5 one-meter (39-inch) lengths of Tygon tubing, tube breaker, 3 Step by Step Guides, and 5 single chargers, in a durable carry case	100-240 V 210-5001K5V	210-5002K5V
5-pack Pump Kit-Dust/Particulate includes 5 each pumps and batteries, plastic IOM MultiDust Samplers, and 5 one-meter (39-inch) lengths of Tygon tubing, 1 pack of 10 MultiDust foam discs, calidaptor, 10 extra MultiDust cassettes, 3 Step by Step Guides, and 5 single chargers, in a durable carry case	100-240 V 210-5001K5P	210-5002K5P
5-pack Pump Kit-Combined includes 5 pumps and batteries and all media and accessories as described in the 5-pack Gas/Vapour and the 5-pack Dust/Particulate kits, in one durable carry case	100-240 V 210-5001K5C	210-5002K5C
Replacement Battery Pack[#]	P85004A	P85002A

Accessories

Description	Cat. No.	Qty.
Single Charger , for high-power and standard Li-Ion pumps	100-240 V 223-241	ea
Take Charge 5 Multi-charger , 5 stations, for high-power and standard Li-Ion pumps	100-240 V 223-441	ea
Low Flow Adapter Kit (5 to 500 ml/min) includes All-in-One adjustable tube holder and Type A protective tube cover, <i>suitable for both XR5000 models</i>	210-500	ea
Medium Flow chek-mate Calibrator , 0.5 to 5 L/min, includes 9-volt battery, available with NIST, UK, or ISO standard traceable calibration certificate; <i>see details on pages 38-39</i>		
Protective Pouches , nylon, with belt, adjustable waist, and shoulder strap, <i>see noise-reducing pouches on page 44</i>		
Black , for high-power model	224-88	ea
Red, high-profile , for high-power model	224-96A	ea

AirChek XR5000 pumps contain Li-Ion batteries and are subject to special shipping regulations.

AirChek XR5000 requires 1/4-inch ID tubing; see page 45.

Air Sample Pumps

5 to 5000 ml/min

Universal Series

Classic Workhorse from 5 ml/min to 5 L/min

- ▶ **Constant flows from 1 to 5 L/min**
 - MTX models: 1 to 4 L/min
- ▶ **Low flows from 5 to 500 ml/min with adjustable tube holder** (see page 36)
- ▶ **Long 12+ hours run time** (4 L/min at 20 inches water back pressure)
 - MTX models: 8 hours run time (3 L/min at 20 inches water back pressure)
- ▶ **Heavy duty and rugged**
- ▶ **Lightweight — only 34 ounces (964 grams)**
 - MTX models: 32 ounces (915 grams)
- ▶ **Choose the automatic features that meet your requirements**



PCXR8 Universal Pump
Programmable Solution



PCXR4 Universal Pump
Compliance Solution



44XR Universal Pump
Economical Solution

- ✓ High-accuracy timer
- ✓ Automatic fault shutdown/
time retention
- ✓ Convenient HOLD feature

- ✓ Turn on and go

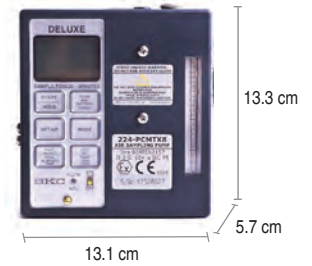
- ✓ High-accuracy timer
- ✓ Automatic fault shutdown/
time retention
- ✓ Convenient HOLD feature
- ✓ Delayed start
- ✓ Timed shutdown
- ✓ Intermittent sampling
- ✓ Extended intermittent sampling
up to 7 days

Universal Pumps, Kits, and Accessories

Description	5 to 5000 ml/min SKC Inc. UL Listed	5 to 4000 ml/min SKC Ltd. ATEX approved
Universal Pump with NiMH battery pack and screwdriver set <i>Low flow (5 to 500 ml/min) requires adjustable low flow holder; see p. 36</i>	224-PCXR8 224-PCXR4 224-44XR	224-PCMTX8 224-PCMTX4 224-44MTX
Starter Kit includes pump, single PowerFlex charger with cable, 3 feet (0.9 meter) of Tygon tubing, and collar clip with cable tie	224-PCXR8-S 224-PCXR4-S 224-44XR-S	
Single Pump Kit-Basic includes pump as described above, single charger, 1 meter (39 inches) of Tygon tubing, and 1 Step by Step Guide, in a durable carry case	100-240 V	224-PCMTX8K 224-PCMTX4K 224-44MTXK
Single Pump Kit-High/Low Flow includes pump as described above, single PowerFlex charger with cable, filter cassette holder, adjustable low flow holder, and Type A protective tube cover, in a soft-sided nylon carry case†	100-240 V	224-PCXR8KD 224-PCXR4KD 224-44XRKD
Single Pump Kit-Dust/Particulate includes pump as described above, single charger, calidaptor, 1 meter (39 inches) of Tygon tubing, plastic IOM MultiDust Sampler, 4 extra MultiDust cassettes, 1 pack of 10 MultiDust foam discs, and 1 Step by Step Guide, in a durable carry case	100-240 V	224-PCMTX8KP 224-PCMTX4KP 224-44MTXKP
Single Pump Kit-Gas/Vapour includes pump as described above, single charger, 1 meter (39 inches) of Tygon tubing, single adjustable low flow holder, tube breaker, Type A protective tube cover, and 1 Step by Step Guide, in a durable carry case	100-240 V	224-PCMTX8KV 224-PCMTX4KV 224-44MTXKV
Single Pump Kit-Combined includes pump as described above and all media and accessories as described in the Single Gas/Vapour and the Single Dust/Particulate kits, in one durable carry case	100-240 V	224-PCMTX8KC 224-PCMTX4KC 224-44MTXKC
5-pack Pump Kit-Basic includes 5 pumps as described above, 5-station charger, 5 one-meter (39-inch) lengths of Tygon tubing, and 3 Step by Step Guides, in a durable carry case	100-240 V	224-PCMTX8K5 224-PCMTX4K5 224-44MTXK5
5-pack Pump Kit-High/Low Flow includes 5 each pumps as described above, single adjustable low flow holders, Type A protective tube covers, and filter cassette holders, and a 5-station PowerFlex charger with 5 cables (223-1002), in a Pelican carry case	100-240 V	224-PCXR8K5D 224-PCXR4K5D 224-44XRK5D
5-pack Pump Kit-Dust/Particulate includes 5 each pumps as described above, plastic IOM MultiDust Samplers, 5 one-meter (39-inch) lengths of Tygon tubing, 10 MultiDust plastic cassettes, 1 pack of 10 MultiDust foam discs, calidaptor, and 3 Step by Step Guides, in a durable carry case	100-240 V	224-PCMTX8K5P 224-PCMTX4K5P 224-44MTXK5P
5-pack Pump Kit-Gas/Vapour includes 5 each pumps as described above, single adjustable low flow holders, and Type A protective tube covers, 5 one-meter (39-inch) lengths of Tygon tubing, a 5-station charger, tube breaker, and 3 Step by Step Guides, in a durable carry case	100-240 V	224-PCMTX8K5V 224-PCMTX4K5V 224-44MTXK5V
5-pack Pump Kit-Combined includes 5 pumps as described above and all media and accessories as described in the 5-pack Gas/Vapour and the 5-pack Dust/Particulate kits, in one durable carry case	100-240 V	224-PCMTX8K5C 224-PCMTX4K5C 224-44MTXK5C

† Single kits are also available in hard-sided Pelican case. Contact SKC for ordering information.

Universal XR Pumps require 1/4-inch ID tubing; see page 45.



Universal MTX models are ATEX-approved and available as Cat. Nos. 224-44MTX, 224-PCMTX4, and 224-PCMTX8 (shown)

Certifications



Accessories

Battery Chargers..... pages 34-35
 Tube Holders pages 36-37
 Flowmeters pages 38-41
 Pouches and Kit Cases page 44
 Filter Holders..... page 116

Multiple-tube sampling!
 Extend the flow range and applications of your Universal pumps. See the low flow accessories needed for multiple-tube sampling on page 37.

MORE INFORMATION

skcinc.com

Air Sample Pumps

5 to 15 L/min

Leland Legacy

Area or Personal High Flow Sample Pump

The SKC Leland Legacy® Sample Pump provides the high flows and long run times of a vacuum-style pump in a compact, portable, and battery-operated sampler. Leland Legacy is ideal for asthma studies in schools, unattended 24-hour PM10 and PM2.5 ambient air sampling, and higher flow respirable dust sampling with SKC PPI Samplers.*

- High flows from 5 to 15 L/min
- 24-hour run times with Li-Ion battery
- Highly accurate internal flow sensor acts as a secondary standard
- Flexible programing
 - Manual three-button operation from large built-in keypad
 - PC programmability with DataTrac Software and your PC

* Not suitable for applications requiring intrinsic safety or high back pressure compensation such as asbestos clearance monitoring



Fast, Easy, and Automatic Calibration

Direct Communication with chek-mate Calibrator Using the CalChek Feature

Connect the Leland Legacy Sample Pump with CalChek Communication Cable accessory to the new High Flow chek-mate Calibrator for accurate, automatic calibration without manual adjustments. *See details on page 39.*

Look for chek-mate and the CalChek Cable in ordering on page 25.



Childhood asthma studies



PM10 and PM2.5
See Leland Legacy in deployable systems on pages 26-27.



Respirable dust — partner with 8 L/min PPI sampler. See pages 128-130.

24-hour PM Sampling with Impactors at Flows up to 10 L/min



- Protected top-mounted computer interface and battery charging jack
- Inlet port with removable protective filter
- Bright flashing LED run indicator
- Large Liquid Crystal Display (LCD)
- Convenient battery status icon
- Large, easy-to-use 3-button keypad
- Tough rubber overmolding protects pump and provides a sure grip
- Anti-static thermoplastic case

DataTrac[®]

Software for Leland Legacy

Windows-based DataTrac Software for Leland Legacy sample pumps provides for maximum use of pump features and sample history download to PC for reporting. *Software is available via free download; requires Cable Cat. No. 877-92 at bottom left.*

- Program/operate your pump
- Download sampling history from pump to PC
- Set up easy chain of custody sample sheets
- Manage data and produce reports

Description	Cat. No.	Qty.
Leland Legacy Pump[†] with Li-Ion battery pack and screwdriver set, <i>requires charger; see kits or chargers below</i>	100-3002	ea
Single Pump Kit[†] includes pump as described above and single charger, in a Pelican carry case	100-240 V 100-3002K	ea
5-pack Pump Kit[†] includes 5 Leland Legacy pumps, one Take Charge 5 Multi-charger, and DataTrac Software cable (USB - software available via free download), in a Pelican case	100-240 V 100-3002K5	ea
Accessories		
Single Charger , for Li-Ion battery-powered pumps	100-240 V 223-241	ea
Take Charge 5 Multi-charger , 5 stations, for Li-Ion battery-powered pumps	100-240 V 223-441	ea
High Flow chek-mate Calibrator , 5 to 30 L/min, includes 9-volt battery, available with NIST, UK, or ISO standard traceable calibration certificate; <i>see details on pages 38-39</i>		
Battery Charging Adapter , for charging batteries outside the pump	223-248	ea
CalChek Communication Cable , for use with chek-mate calibrator, <i>see page 39</i>	375-200	ea
DataTrac Software Cable , for Leland Legacy, USB; <i>software available via free download</i>	877-92	ea
Replacement Battery Pack , [†] Li-Ion	P75692A	ea

[†] Leland Legacy pumps contain Li-Ion batteries and are subject to special shipping regulations.

Leland Legacy requires 3/8-inch ID tubing; see page 45.

Certifications



*Ideal for use with
IMPACT Sampler and
Sioutas Impactor
see pages 131 and 134*



Deployable Sampler Systems

Ambient Air Kits for 24-hour Sampling

Deployable Systems Performance Profile

Flow Rate

10 L/min

Run Time

> 24 hrs (one battery charge)

Power

Rechargeable Li-Ion battery,

Case Dimensions

18.5 x 14.1 x 6.9 in (47 x 36 x 18 cm)

System Weight

DPS: 13 lbs (5.9 kg)

DCS: 12.2 lbs (5.5 kg)

■ One compact, portable case easily carried or shipped!

■ Ideal for remote locations, indoor air sampling, and baseline surveys

- Pre-program automatic start and stop
- 24-hour Li-Ion battery operation
- Secure operation from within a heavy-duty lockable case
- Quick-change battery packs
- Low noise for indoors

■ Fast setup with modular components and quick-connect tubing

■ System pump provides constant, accurate airflows

- Simple 3-button keypad for setting a single unattended sample run
- Program for multiple runs with a PC and DataTrac for Leland Legacy Software; *see page 25 for details*

SKC Deployable Sampler Systems provide cost-effective ambient air sampling and are ideal for applications including fenceline, near-roadway, and remediation monitoring, baseline surveys, and indoor air studies. SKC offers two systems:

- **Deployable Particulate Sampler (DPS) System** for PM10 or PM2.5
- **Deployable Cartridge Sampler (DCS) System** for polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), pesticides, and associated particulates

Each system includes the fully programmable Leland Legacy Sample Pump, specially designed sampling head, and accessories for fast deployment and effective sampling; and it fits into one portable heavy-duty Pelican case. Partner either system with DataTrac Software for advanced scheduling options and record keeping, *see page 25*.

Certification



Rain cover protects sampling head

Quick-mount bracket

Tough reinforced sample tubing



System in one rugged, portable case

Quick-connect tubing fitting

V Video	P PowerPoint	W Webinar	S Sampling Solution
Visit skcinc.com/Training			

Deployable Particulate Sampler (DPS) System

Ambient and Indoor PM10 or PM2.5 Sampling

Description	Cat. No.	Qty.
DPS System** includes sample pump with connection case, charger (100-240 V), 2 external battery assemblies with adapters (packaged separately), IMPACT [‡] sampling head, 2 filter cassettes, calibration adapter, rain cover for sampling head, 25 disposable impaction discs (<i>limited shelf-life</i>), filter cassette opener, tubing with quick-connect fitting, and mounting bracket, in a heavy-duty lockable carry case	PM10 Kit 100-3901 PM2.5 Kit 100-3903	ea ea
Collection Filters for DPS System (not supplied with system) <i>Select a filter based on your application; required for sampling</i>		
Quartz Filters , 47 mm, Tissuquartz, 432 µm thick	225-1823	25
PTFE Filters , [§] 47 mm, 2.0-µm pore size, with PMP support ring	225-1747	50
Sampling Heads/Replacement Parts		
IMPACT Sampler includes sampler inlet and body, calibration adapter, filter cassette, and rain cover for sampler; <i>requires collection media (see above) and impaction substrate (see below) sold separately</i>	PM2.5 225-392 PM10 225-390	ea ea
IMPACT Sampler Inlet Only , interchangeable on IMPACT body	PM2.5 P54204 PM10 P54202	ea ea
Impaction Discs , 37 mm, pre-oiled, ready to use, disposable, <i>required for sampling, limited shelf-life</i>	225-395 225-395A	25 50
Filter Cassette , <i>required for sampling</i>	225-396	ea
Accessories		
Petri Dish Slide , for filter transport	225-2-01	100
High Flow chek-mate Calibrator , 5 to 30 L/min, includes 9-volt battery, available with NIST, UK, or ISO standard traceable calibration certificate; <i>see details on pages 38-39</i>		

* Provides data similar to Federal Reference Method samplers. The DPS System is not a U.S. EPA reference or equivalent method for compliance sampling.

System contains Li-Ion batteries and is subject to special shipping regulations.

§ Back pressure on PTFE filters may vary within the same lot.

‡ U.S. Patent No. 7,334,453



Patented[‡] IMPACT sampling head for DPS. For more information on IMPACT, see page 131.



Leland Legacy Sample Pump
The Power of the DPS and DCS Systems
See pages 24-25 for more information.

Deployable Cartridge Sampler (DCS) System

Ambient Sampling of PAHs, PCBs, Pesticides, and Associated Particulates

Description	Cat. No.	Qty.
DCS System** includes sample pump with connection case, charger (100-240 V), 2 external battery assemblies with adapters (packaged separately), sampling head, calibration adapter, rain cover for sampling head, sample tubing with quick-connect fitting, calibration tubing, and mounting bracket, in a heavy-duty lockable carry case	100-3960	ea
Media Cartridges, required, select based on application <i>Stainless steel cartridges containing media as described below, stainless steel support screens, and gaskets. Each cartridge is wrapped in aluminum foil and shipped in an aluminum can with lid.</i>		
Filter/PUF contains 41.3-mm length of PUF and a 47-mm quartz filter	226-206	ea
Filter/PUF/XAD-2/PUF contains a 47-mm quartz filter and 2 grams of XAD-2 sorbent sandwiched between two 20.6-mm lengths of PUF	226-207	ea
Accessories		
High Flow chek-mate Calibrator , 5 to 30 L/min, includes 9-volt battery, available with NIST, UK, or ISO standard traceable calibration certificate; <i>see details on pages 38-39</i>		

* Provides data similar to Federal Reference Method samplers. The DCS System is not a U.S. EPA reference or equivalent method for compliance sampling.

System contains Li-Ion batteries and is subject to special shipping regulations.



Sampling head holds media cartridge for DCS.

Air Sample Pumps

10 to 30 L/min

QuickTake 30

Powered by Supercharged
Lithium-Ion Battery

10 to 30 L/min constant flow...

for sampling with BioStage viable cascade impactor, spore trap cassettes, microvacuum cassettes, or other samplers that require flows up to 30 L/min within the back pressure range of the pump

It's compact and portable!

QuickTake® 30 weighs only 4.8 pounds (2.2 kg) and features an easy-grip handle for portability.

Reliable long run times...

with powerful Li-Ion battery (*see page 29*)

Easy operation...

with large keypad buttons, high-contrast digital display, front-mounted intake for fast media setup, and programmable timer

Versatile!

Sample with a spore trap cassette directly on the inlet, with tubing and impactor or cassette, or with BioStage mounted on pump (*with accessory*).

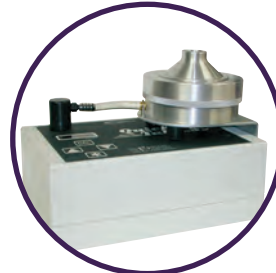
The highly portable SKC QuickTake 30 Sample Pump provides the accurate constant flows from 10 to 30 L/min and run times up to 14 hours you need for particulate sampling applications. A low-noise, battery-powered alternative to vacuum pumps, the QuickTake 30 Sample Pump is ideal for indoor air sampling. Using its sturdy handle and easy keypad programmability, take the compact QuickTake 30 with you anywhere you need to sample using impactors, asbestos and microvacuum cassettes, and spore traps. You can even mount the SKC VersaTrap Spore Trap Cassette or the SKC BioStage Impactor directly on the pump! Partner QuickTake 30 with the High Flow chek-mate Calibrator for easy calibration accuracy.

PROGRAMMABLE.
CONSTANT FLOW.
EASY CALIBRATION.



QuickTake 30 for Dust, Mold, Bioaerosols, Asbestos, and More

- 10 to 30 L/min constant flow sample pump**
 - Maintains set flow throughout a sampling period for complete sample integrity
 - Ideal for use with BioStage viable cascade impactor, spore trap cassettes such as VersaTrap, microvacuum cassettes, or other samplers that require flows up to 30 L/min
- Long run times on a single battery charge**
 - AC charger/adaptor for extended sampling
 - Rechargeable Li-Ion battery pack
- Compact and portable**
 - 9.3 x 8.4 x 3.5 inches (23.6 x 21.3 x 8.9 cm)
 - Weighs only 4.8 pounds (2.2 kg)
 - Handle for easy portability
- Easy-to-use programmable timer for unattended sampling**
 - Select sample time presets or customize timer from 1 to 999 minutes
 - Continuous run with manual shut-off
 - Intermittent sampling
 - Large, easy-to-use keypad
- Easy to use**
 - Large keypad control
 - End-of-cycle visible and audible alarms
- High-contrast digital display**
- Low noise — average < 64 dBA at 3 feet**
(37-mm, 0.8-µm MCE filter at 16.8 L/min)



QuickTake 30 with BioStage on mounting bracket – see page 136



QuickTake 30 with VersaTrap cassette mounted on pump inlet – see page 114



Use a QuickTake 30 with Asbestos cassette mounted on tripod – see page 104

ADVANTAGES

- Maintains constant flow even when used with media that creates back pressure such as microvacuum cassettes (see page 140)
- A low-noise, battery-powered alternative to vacuum pumps

APPLICATIONS

QuickTake 30

- Particulate sampling for 14+ hours[§]**
 - Use with a 37-mm, 0.8-µm MCE filter at 10 L/min
- Asbestos clearance sampling for 9+ hours[§]**
 - For 9+ hours of run time and a total air volume of 5400 liters, use QuickTake 30 with a 25-mm, 1.2-µm MCE filter at 10 L/min with fully charged battery and pump connected to AC power.
- VersaTrap (spore trap) sampling for 5 hours[§]**
 - Operate the QuickTake 30 at 15 L/min
- BioStage (viable cascade impactor) sampling for 4 hours[§]**
 - Operate the QuickTake 30 at 28.3 L/min

[§] Results obtained using a new pump and new, fully charged battery. Pump and battery performance may vary.

Description	Cat. No.	Qty.
QuickTake 30 Sample Pump** and Charger	100-240 V 228-9530	ea
QuickTake 30 Sample Pump,** Rotameter, and Charger	100-240 V 228-9530A	ea
QuickTake 30 BioStage Pump** Kit includes pump, charger, rotameter, BioStage, mounting bracket with inlet adapter, and calibration adapter, in a deluxe carry case	100-240 V 228-9530K	ea
Accessories		
High Flow chek-mate Calibrator , 5 to 30 L/min, includes 9-volt battery, available with NIST, UK, or ISO standard traceable calibration certificate; see details on pages 38-39		
Charger/Adapter	100-240 V 223-245	ea
Mounting Bracket for BioStage includes inlet adapter	228-9531	ea
Rotameter , 3 to 30 L/min	320-100	ea
Replacement Battery Pack,* Li-Ion	P75689	ea
Replacement Filter/O-ring Set includes 5 filters and 1 O-ring	P40021	ea
Tripod Stand , for cassette or BioStage Impactor	228-506	ea

* QuickTake sample pumps contain Li-Ion batteries and are subject to special shipping regulations.

Not CE marked

QuickTake 30 requires 3/8-inch ID tubing; see page 45.

V
Video

P
PowerPoint

W
Webinar

S
Sampling Solution

Visit skcinc.com/Training

Air Sample Pumps-Area Asbestos

2 to 20 L/min

Flite4

Programmable High Flow Area Pump for Asbestos and More

Flite4

Performance Profile

Flow Range

2 to 20 L/min

Operating Temperature

23 to 122 F (-5 to 50 C)

Battery

Lead-acid, 7-Ah capacity

Dimensions

4.4 x 6.4 x 8 in (11.2 x 16.3 x 20.3 cm)

Weight (pump only)

4.5 lbs (2.06 kg)

Certification



Not intrinsically safe

Typical Run Time*

Filter	Flow (L/min)	Run Time (Hrs)
25-mm MCE, 0.8 µm	4	30
25-mm MCE, 0.8 µm	8	14
25-mm MCE, 0.8 µm	12	6
25-mm MCE, 1.2 µm	4	35
25-mm MCE, 1.2 µm	8	16
25-mm MCE, 1.2 µm	12	8
25-mm Glass Fiber	8	22
25-mm Glass Fiber	12	13
25-mm Glass Fiber	16	7

* Results obtained using a new, fully charged 7-Ah battery in clean factory conditions. Pump and battery performance may vary.



Flite4 Sample Pump with Aluminum Sampling Mast
Cat. No. 901-213

- Wide flow range: 2 to 20 L/min
- Fully programmable
 - Manual run
 - Timed run and delayed start
 - Intermittent sampling
- Robust steel casing, sturdy handle
- Long run times
- High-performance sampling capabilities
- Convenient front-mounted power socket
- Battery or AC operation
 - Long-run 7-Ah battery



14+ hours run time at 8 L/min



The highly versatile SKC Flite4 air sample pump provides high-performance sampling for asbestos and other particulates. With features such as a robust steel casing to withstand daily rigors, a front-mounted power socket to provide easy access for charging or powering, and a sturdy handle for portability, the Flite4 is the choice for most high-volume sampling applications. Use the fully programmable timer to set a manual run, a timed run with or without delayed start, or intermittent sampling. Flite4 is ideal for area and environmental monitoring, stack sampling, indoor air studies, asbestos monitoring, biosampling, and long-term background monitoring.

Description	Cat. No.	Qty.
Flite4 Sample Pump Only	901-4011	ea
Flite4 Pump Kits , includes 7-Ah battery, charger (100-240 V), and 39 inches (1 meter) of Tygon tubing	901-4011K	ea

Sampling Accessories	Cat. No.	Qty.
Rigid Aluminum Sampling Mast	901-213	ea
Asbestos Sampling Head, 25 mm, with aluminum cowl	225-54A	ea

Power Accessories	Cat. No.	Qty.
Single Battery Charger for Flite Series Pumps , 110-240 V, multi-plug	901-410	ea
AC Adapter , 110-240 V, multi-plug	901-411	ea
Replacement Lead-acid Battery , 7-Ah capacity	P901402	ea

Flite4 requires 1/4-inch ID tubing; see page 45.

ECONOMY ON THE GO

AirLite

5 to 3000 ml/min with Alkaline Batteries

- ▶ **Simple operation**
 - Turn on, calibrate, and sample — no programming or battery charging
- ▶ **Simple power**
 - Economical, disposable AA alkaline batteries are ready to go anytime for over 10 hours*
- ▶ **Compact design**
 - AirLite fits in the palm of your hand!
 - 12 ounces (340 grams)
- ▶ **Sample integrity**
 - Constant flows up to 3000 ml/min[‡]
 - Patented** flow control system holds constant flow to ± 5% of set-point
 - Compensation for back pressure and temperature changes
 - Low battery and flow fault indicator and shut-off
- ▶ **The simple choice for:**
 - Abatement projects
 - Indoor air sampling
 - Emergency response
 - Silica

New model with timer!



Certification
CE

AirLite® is the simple solution when a 5 to 3000 ml/min sampler is needed for abatement projects, indoor air sampling, and emergency response in environments that do not require intrinsic safety. AirLite maintains full back pressure compensation from 1000 to 3000 ml/min; flows from 5 to 500 ml/min require a low flow accessory (*see below*). Powered by economical, disposable AA alkaline batteries, AirLite provides run times greater than 10 hours. AirLite is ready to go anytime you are!

Description	SKC Inc. Cat. No.		SKC Ltd. Cat. No.	
	(without timer)	(with timer)	(without timer)	(with timer)
AirLite Pump^Δ with 3 AA alkaline batteries and screwdriver set	110-100	110-100-T	110-100	110-100-T
Single Pump Kit-Dust/Particulate includes pump ^Δ as described above, calidaptor, 1 meter (39 inches) of Tygon tubing, plastic IOM MultiDust Sampler, 4 extra MultiDust cassettes, 1 pack of 10 MultiDust foam discs, and 1 Step by Step Guide, in a durable carry case			110-100KP	110-100-TKP
5-pack Pump Kits				
High Flow Sampling includes 5 pumps ^Δ as described above and filter cassette holders, in a Pelican case	110-100K5	110-100-TK5		
High/Low Flow Sampling includes 5 pumps ^Δ as described above, filter cassette holders, All-in-One adjustable tube holders, and Type A protective tube covers, in a Pelican case	110-100K5D	110-100-TK5D		
5-pack Pump Kit-Dust/Particulate includes 5 each: pumps ^Δ as described above, plastic IOM MultiDust Samplers, 1-meter (39-inch) lengths of Tygon tubing; 10 extra MultiDust cassettes; 1 pack of 10 MultiDust foam discs, 1 calidaptor, and 3 Step by Step Guides, in a durable carry case			110-100K5P	110-100-TK5P

Accessories	Cat. No.
Filter Cassette Holder , accommodates two or three-piece 25 or 37-mm cassettes with or without a cyclone, clips to a worker's collar, <i>see p. 116</i>	225-1
Low Flow Adapter Kit (5 to 500 ml/min) includes All-in-One adjustable tube holder and Type A protective tube cover, <i>see p. 36</i>	210-500
Medium Flow chek-mate Calibrator , 0.5 to 5 L/min, includes 9-volt battery, available with NIST, UK, or ISO standard traceable calibration certificate; <i>see details on pages 38-39</i>	224-902

[‡] Flows from 5 to 500 ml/min require the Low Flow Adapter Kit. See ordering above. ** U.S. Patent No. 6,741,056
^Δ Not intrinsically safe * Use of rechargeable 1.5-volt AA batteries will yield half the run time.

AirLite requires 1/4-inch ID tubing; see page 45.

Multiple-tube sampling!

Extend the flow range and applications of your AirLite pumps. See the low flow accessories needed for multiple-tube sampling on page 37.

Vapour and Dust/Vapour pump kits are available. Visit skcltd.com!

Pump Accessories

Software

DataTracPro

PC Software for SKC AirChek TOUCH

ADVANTAGES

- ✓ Time saving
- ✓ Easy to use
- ✓ Pump history at your fingertips
- ✓ Create convenient sample run presets

DataTrac® Pro Software is a time-saving pump and data management accessory for your AirChek TOUCH sample pumps. Use DataTrac Pro's intuitive tabs to access/manage pump history, control/monitor pump operation, program sample run presets, and configure pump settings for your applications. *See pages 16 and 18 for more information on the AirChek TOUCH pump.*

Set up a fleet of pumps quickly

Program sample run for upload to pumps

Easily update firmware and settings

See graphical display of sampling events

Connect multiple pumps

View downloaded pump history at a glance

Save and export sampling data for reporting

The screenshot shows the DataTrac Pro software interface for SKC AirChek TOUCH pumps. The interface includes a navigation bar with tabs for History, Control, Presets, Configure Pumps, and Help. The main display area shows a graph of flow rate (L/min) over time for a specific pump (11067) on 6/1/2019 at 10:32 AM. Below the graph is a table of pump status and performance data.

Status	Start	Duration	Rate	Accu. Vol.	STP Vol.	Temp.	Atm. Pressure
Run	4/1/2016 10:32:39 AM	00:00	1.40 L/min	0.25 L		74.3°F	28.52 inHg
Fault	4/1/2016 10:32:51 AM	00:00	0.02 L/min	0.00 L		74.3°F	28.53 inHg
Total		00:00		0.25 L	0.24 L	74.3°F	28.50 inHg

Pump	Start	Set Rate	Duration	Run Time	Accum. Vol.	Type	Notes
11067	4/1/2016 10:33 AM	1.00 L/min	00:00	00:00	0.12 L		
11067	4/1/2016 10:33 AM	3.00 L/min	00:00	00:00	0.16 L		
11067	4/1/2016 10:32 AM	3.00 L/min	00:00	00:00	0.25 L	Fault	
11067	4/1/2016 10:31 AM	3.00 L/min	00:00	00:00	1.01 L		
11067	4/1/2016 10:31 AM	3.00 L/min	00:00	00:00	0.17 L		

DataTrac Pro for AirChek TOUCH

Hardware Accessory Kit includes e-Cradle, single power supply, and USB cable for connection to PC, required for free software download and use of DataTrac Pro for AirChek TOUCH Software. See skcinc.com/DataTracPro for system/hardware specifications.

Cat. No. 877-93



Easy cradle and USB connection to PC

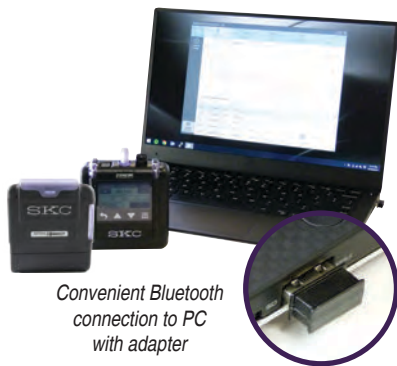
PC Software for Pocket Pump TOUCH and AirChek CONNECT

Save time managing your fleet of Bluetooth-connected SKC sample pumps and sampling data with DataTrac Pro Software. Intuitive tabs allow you to access and export pump history, control/monitor pump operation, program sample run presets, and configure pump settings for your applications from your PC. See pages 10-11, 16, and 19 for more on Pocket Pump TOUCH and AirChek Connect pumps.

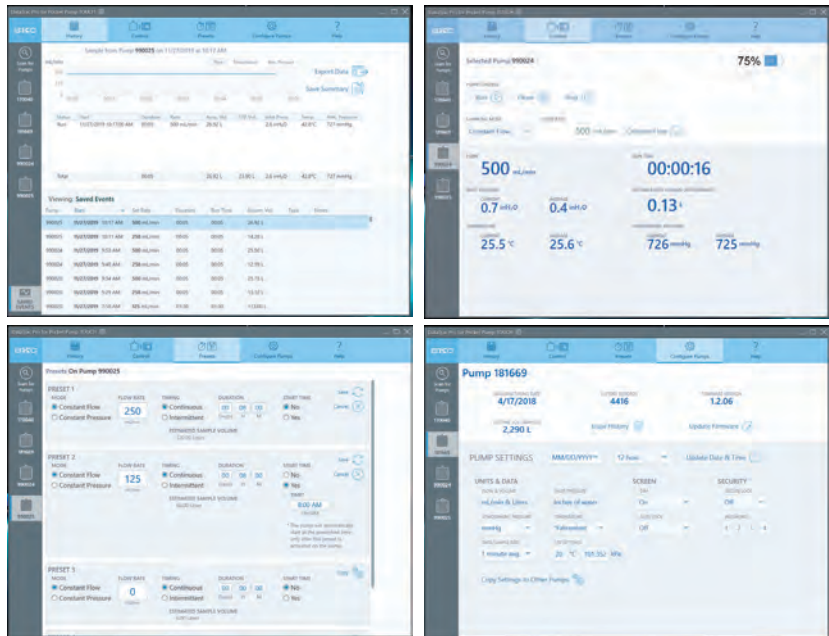
DataTrac Pro for Bluetooth-connected Pumps

USB Bluetooth Adapter to be installed in USB port on PC, required for free software download and use of DataTrac Pro Software. See skcinc.com/DataTracPro for system/hardware specifications.

Cat. No. 877-94



Convenient Bluetooth connection to PC with adapter



SKC SmartWave

Mobile App for Pocket Pump TOUCH and AirChek CONNECT

Monitor one or more Pocket Pump TOUCH and AirChek Connect sample pumps with your IOS® or Android® tablets and phones using Bluetooth low-energy connectivity. See pages 10-11, 16, and 19 for pump information.

- Check in-range pump status
- Monitor run time parameters
- Set flow and operate sample runs
- Spot pump fault status
- Select display units and name pumps
- Use with the pump's Secure Lock feature enabled to prevent unauthorized access to pump



Get the free SKC SmartWave app:



Pump Accessories

Battery Chargers

Personal Sample Pump Battery Chargers

SKC PowerFlex Chargers

SKC PowerFlex® battery charging systems provide flexibility for your fleet of NiMH and NiCad-powered SKC personal sample pumps. Pump-specific cables allow connection and charging of batteries in different SKC personal pump models while using one PowerFlex charger! Instead of carrying several bulky wall cubes or charging units, you only need one lightweight charger and the appropriate cables. The 5-station PowerFlex can charge up to three different SKC pump models simultaneously. *See PowerFlex charger ordering (Cat. Nos. 223-1000 and 223-2000 and 223-1000 Series cables) in table at right.*

MORE INFORMATION

Battery Life

skcinc.com/knowledgecenter



5-station PowerFlex Carry Case

Includes padded shoulder strap and compartment for cables. Included with single pump kits. *See page 44.*

Cat. No. 224-903

SKC Pump	Pocket Pump TOUCH	Universal	AirChek 52/Sidekick
Single Chargers (100-240 V)			
Cat. No.	Single Charger 220-300 (U.S. plug) or 220-300A (multi plug)	PowerFlex*** 223-2000 For ATEX models: 223-203A	AirChek 52: PowerFlex*** 223-2000 Sidekick: 223-203A
5-station Chargers (100-240 V)			
Cat. No.	5-port USB Hub 220-400 <i>Requires single charger cables</i> P75739	PowerFlex*** 223-1000 For ATEX models: 223-103A	AirChek 52: PowerFlex*** 223-1000 Sidekick: 223-103A
Required PowerFlex Cable(s)			
Cat. No.	N/A	223-1002 [#]	AirChek 52: 223-1004 [#]
Replacement Batteries[†]			
Cat. No.	P76303 (Li-Ion) [‡]	P21661MH (NiMH) [#] For ATEX models: P22419MTX	AirChek 52: P78011AMH (NiMH) [#] Std. Sidekick: P78050MH Dlx & Int. Sidekick: P78051MTX
Battery Eliminators for Line Operation			
Cat. No.	220-300 (U.S. plug) or 220-300A (multi plug)	223-325 (115 V) [#] 223-325B (230 V) [#] 223-305C — UK Plug 223-305B — Euro Plug	AirChek 52: 223-300 (115 V) [#] Sidekick: 223-300C — UK Plug Sidekick: 223-300B — Euro Plug

[#] For use with U.S.-produced pump models only; not compatible with EX or ATEX models

^{**} CE marked when used with the power supply provided by SKC; power supply is UL and cUL Listed for electrical safety

[†] Replacing batteries with non-approved battery packs voids any warranty and intrinsic safety approvals.

[‡] Li-Ion batteries are subject to special shipping regulations.

Ordering PowerFlex?

Don't forget PowerFlex cables!

ABOUT

Li-Ion Battery Shipment

Rechargeable lithium-ion batteries for use with SKC sample pumps are subject to special shipping regulations. For more information, visit skcinc.com/knowledgecenter.

• TECH TIPS •

► Li-Ion is a “clean” system and only takes what it can absorb; therefore, Li-Ion batteries do not require the continuous “trickle” charge that other battery chemistries need. SKC Li-Ion battery chargers apply a trickle charge to fully charged batteries only when the charger senses a drop in battery voltage (e.g., self-discharge). Once full battery voltage is restored, the trickle charge shuts off.

► SKC pumps powered by Li-Ion battery can be operated indefinitely while charging.

AirChek TOUCH, Essential, and Connect	AirChek 3000	AirChek XR5000	Leland Legacy
			
<p>Choose charging cradles:*</p> <p>Standard Cradle 220-800</p>  <p>e-Cradle (for use with AirChek TOUCH only) 220-900</p> 			
<p>Choose a power supply:*</p> <p>Single – For use with 1 cradle 220-600</p>  <p>Multi – For use with 2 to 5 cradles 220-700</p> 			
N/A	223-240A	223-241	223-241
N/A	223-109A	Take Charge 5 223-441 ^Δ	Take Charge 5 223-441 ^Δ
N/A	N/A	N/A	N/A
P75718 (Li-Ion) [‡]	P21030	P85004A (4-cell Li-Ion) [‡] P85002A (2-cell Li-Ion) [‡]	P75692A (Li-Ion) [‡]
See cradles and power supplies (above)	223-330C - UK Plug 223-330B - Euro Plug	223-241	223-241

[‡] Li-Ion batteries are subject to special shipping regulations.

* Cradle and power supply required; each sold separately





^Δ Not CE approved

Pump Accessories

Single-tube Holders

Single-tube Low Flow Sampling Accessories

Build a **single-tube low flow sampling train** in three easy steps: (1) select a pump, (2) select the pump-specific tube holder, and (3) select a protective tube cover (based on sorbent tube size, *see Sorbent Tube Selection Guide on pages 48-52*). Pocket Pump TOUCH tube holders are non-adjustable and are supplied with a tube cover; select the appropriate model based on size of sorbent tube used.

Step 1	Step 2	Step 3	
Pumps AirChek 52/Sidekick AirChek XR5000 AirChek TOUCH AirChek Connect AirChek Essential AirLite AirChek 3000	All-in-One Low Flow/Single Adjustable Tube Holder with built-in CPC Cat. No. 224-27 <i>See convenient Low Flow Adapter Kit below.</i> 	Tube Covers Only A (6-mm OD x 70-mm L) Cat. No. 224-29A  B (7 or 8-mm OD x 110-mm L) Cat. No. 224-29B  C (10-mm OD x 150-mm L) Cat. No. 224-29C  D (10-mm OD x 220-mm L) Cat. No. 224-29D  <i>Select desired tube from the Sorbent Tube Selection Guide on pp. 48-52. Match the letter indicated in the Tube Cover column in the Guide to the letter above. See page 37 for specialty tube holders.</i>	
Universal Series	Adjustable Low Flow Tube Holder Cat. No. 224-26-01 	Tube Covers Only A (6-mm OD x 70-mm L) Cat. No. 224-29A  B (7 or 8-mm OD x 110-mm L) Cat. No. 224-29B  C (10-mm OD x 150-mm L) Cat. No. 224-29C  D (10-mm OD x 220-mm L) Cat. No. 224-29D  <i>Select desired tube from the Sorbent Tube Selection Guide on pp. 48-52. Match the letter indicated in the Tube Cover column in the Guide to the letter above. See page 37 for specialty tube holders.</i>	
Pocket Pump TOUCH	Low Flow Tube Holder with cover (non-adjustable) Cat. No. 222-3-1 (A)	Tube Covers Only A (6-mm OD x 70-mm L) Cat. No. 224-29A  B (7 or 8-mm OD x 110-mm L) Cat. No. 224-29B  C (10-mm OD x 150-mm L) Cat. No. 224-29C  D (10-mm OD x 220-mm L) Cat. No. 224-29D  <i>Select desired tube from the Sorbent Tube Selection Guide on pp. 48-52. Match the letter indicated in the Tube Cover column in the Guide to the letter above. See page 37 for specialty tube holders.</i>	

Low Flow Adapter Kit

The SKC Low Flow Adapter Kit includes an All-in-One Low Flow Adjustable Tube Holder with built-in CPC and Type A Tube Cover. It is now even easier to adapt high flow SKC pumps for low flow applications.
Cat. No. 210-500












SKC Tube Breaker

The SKC Tube Breaker opens 6, 7, 8, and 10-mm OD glass sorbent tubes cleanly and safely. This heavy-duty breaker is constructed of sturdy stainless steel with cap that rotates to expose the desired size opener and to retain glass tips to be discarded.
Cat. No. 226-03-055



Multiple-tube Low Flow Sampling Accessories

Build a **multiple-tube low flow sampling train** in four easy steps: (1) select a pump, (2) select the constant pressure controller (if pump requires it), (3) select a tube holder, and (4) select protective tube covers (based on sorbent tube size, *see Sorbent Tube Selection Guide on pages 48-52*).

Step 1	Step 2	Step 3	Step 4	
Pumps	Constant Pressure Controller (CPC)	Adjustable Multiple-tube Low Flow Holders	Tube Covers Only	
AirChek 52/Sidekick AirChek XR5000 AirChek Connect AirChek Essential AirChek TOUCH AirChek 3000	CPC Cat. No. 224-26-CPC 	2 tubes (Dual) Cat. No. 224-26-02 	A (6-mm OD x 70-mm L) Cat. No. 224-29A 	
Pocket Pump TOUCH AirLite	CPC Cat. No. 224-26CPC-10 	3 tubes (Tri) Cat. No. 224-26-03 	B (7 or 8-mm OD x 110-mm L) Cat. No. 224-29B 	
Universal Series	None required (pump has built-in regulator)	4 tubes (Quad) Cat. No. 224-26-04 	C (10-mm OD x 150-mm L) Cat. No. 224-29C 	
			D (10-mm OD x 220-mm L) Cat. No. 224-29D 	
				Select desired tube from the Sorbent Tube Selection Guide on pp. 48-52. Match the letter indicated in the Tube Cover column in the Guide to the letter above. See below for specialty tube holders.

Specialty Tube Holders

For Sorbent Tube Sampling ≥ 1 L/min Without Low Flow Accessories

OVS Tube Holder

The OVS Tube Holder accommodates the 13-mm diameter of SKC OVS Tubes.

OVS Tube Holder includes fitting with durable protective cover, 3 feet of tubing, and collar clip. *Do not use an Adjustable Low Flow Holder.*
Cat. No. 224-29V



Low-volume PUF Tube Holder

The Low-volume PUF Tube Holder accommodates the 22-mm diameter and 100-mm length of SKC Low-volume PUF Tubes.

Low-volume PUF Tube Holder includes fitting with durable protective cover, 3 feet of tubing, and collar clip. *Do not use an Adjustable Low Flow Holder.*
Cat. No. 224-29P



16-mm Diameter Tube Holder

Accommodates the 16-mm diameter of SKC Sorbent Tubes Cat. Nos. 226-142 and 226-177.

16-mm Diameter Tube Holder includes fitting with durable protective cover, 3 feet of tubing, and collar clip. *Do not use an Adjustable Low Flow Holder.*
Cat. No. 224-29H



chek-mate CALIBRATOR

► Three models available

- High Flow: 5 to 30 L/min **NEW MODEL!**
- Medium Flow: 0.50 to 5 L/min
- Low Flow: 20 to 500 ml/min

► CalChek capability in medium and high flow models provides direct communication to CalChek-ready pumps for automatic calibration

- Certified volumetric accuracy is 1% of reading for ranges of 5 to 30 L/min (high flow), 750 to 5000 ml/min (medium flow), and 50 to 500 ml/min (low flow)
- 2.5% accuracy outside of above ranges

► Average flow display feature

► Built-in sensors adjust for changes in temperature and atmospheric pressure

- Calibrated against NIST, UK, or ISO national standards in an ISO 17025-accredited laboratory
- NIST, UK, or ISO standard traceable calibration certificate supplied

► Sleek design for calibration anywhere, anytime

- 7 x 3.3 x 1.3 inches (18 x 8.3 x 3.3 cm)
- Models under 9 ounces (255 grams)
- Compact for handheld use

► 9-volt alkaline battery operation

- Auto shut-off feature

► No moving parts, use in any orientation

► Internal filter protects components from dust

NEW!

High Flow Model!



Low flow chek-mate shown with Pocket Pump TOUCH sample pump

NEED ANNUAL CALIBRATION?

SKC CAL

See pages 42-43

Best Practice

Calibrate pump flowmeters annually to a national standard using an ISO 17025-accredited calibration laboratory. See pages 42-43.

Highly Accurate Differential Pressure Calibrator



Fast, Easy, and Accurate

- No manual adjustments needed
- Calibrate at a single flow point or across a range of flows
- Document calibration with DataTrac Software and your PC

The patented* CalChek feature allows direct communication between Medium Flow and High Flow chek-mate Calibrators and CalChek-ready AirChek TOUCH, AirChek 3000, and Leland Legacy sample pumps. Connect chek-mate directly to the AirChek 3000 or Leland Legacy pump or to a cradle containing an AirChek TOUCH pump, set pump flow, and let CalChek take it from there.

See required cable and dampener accessories below!

* U.S. Patent Nos. 6,227,031 and 6,363,769

Long barbed fitting securely holds tubing

Moving-average flow reading available continuously on large display

Easy one-button operation

Sleek, lightweight

Description	Flow Range	Cat. No.	Qty.
High Flow chek-mate Calibrator with CalChek includes a 9-volt alkaline battery (<i>calibrator hosetail larger diameter for higher flow pumps</i>)	5 to 30 L/min		
with NIST standard traceable calibration certificate		375-50300N	ea
with UK standard traceable calibration certificate		375-50300	ea
with ISO standard traceable calibration certificate		375-50300S	ea
Kit with calibrator and pulsation dampener Cat. No. 375-150			
with NIST standard traceable calibration certificate		375-50300-KN	ea
with ISO standard traceable calibration certificate		375-50300-KNS	ea
Medium Flow chek-mate Calibrator with CalChek includes a 9-volt alkaline battery	0.50 to 5 L/min		
with NIST standard traceable calibration certificate		375-0550N	ea
with UK standard traceable calibration certificate		375-0550	ea
with ISO standard traceable calibration certificate		375-0550S	ea
Kit with calibrator and pulsation dampener Cat. No. 375-100			
with NIST standard traceable calibration certificate		375-0550-KN	ea
with ISO standard traceable calibration certificate		375-0550-KNS	ea
Low Flow chek-mate Calibrator includes a 9-volt alkaline battery	20 to 500 ml/min		
with NIST standard traceable calibration certificate		375-00205N	ea
with UK standard traceable calibration certificate		375-00205	ea
with ISO standard traceable calibration certificate		375-00205S	ea
Accessories			
CalChek Communication Cable , required for automatic calibration of AirChek TOUCH, AirChek 3000, and Leland Legacy Sample Pumps with chek-mate calibrator		375-200	ea
Calibration Service , see pages 42-43 for details			
Pulsation Dampeners , required for use with the following (also available in kits; see above)			
chek-mate Calibrator Cat. Nos. 375-0550N, 375-0550, and 375-0550S			
for CalChek full calibration of AirChek TOUCH and AirChek 3000 pumps		375-100	ea
chek-mate Calibrator Cat. Nos. 375-50300N, 375-50300, and 375-50300S			
for calibration of high flow pumps and CalChek calibration of Leland Legacy pump		375-150	ea

Pump Accessories

Flowmeters

Soap Film Flowmeters

SKC offers two models of classic soap film flowmeters:

- **Model 303** provides calibration for low flow pumps typically used for sorbent tube sampling
- **Model 311** provides calibration for higher flow pumps typically used for filter sampling

Both flowmeters are calibrated to within $\pm 2\%$ of the volumes marked on the flowmeter and are supplied with a certificate of calibration. The smaller Model 303 offers a convenient carry case for easy transport.



Laboratory Film Flowmeter
Cat. No. 311-1000

Description	Meas. Range (ml/min)	Cat. No.	Qty.
Laboratory Film Flowmeter Kit includes precision glass buret, film solution, operating instructions, adapter for vacuum or pressure, aluminum tripod stand, and calibration certificate	300 to 3000	311-1000	ea
Portable Field Flowmeter Kit includes precision glass buret, film solution, operating instructions, carry case, and calibration certificate	5 to 500	303	ea
Calibration Accessories			
Film Solution , 1 pint (473 ml)		302-4011	ea

Calibration Adapters

Use the guide below to find the calibration adapter or jar required to calibrate your SKC sampler.

For SKC sampler	You need	
Disposable PPIs	Disposable PPI Calibration Adapter Cat. No. 225-389	
Reusable PPIs GS Cyclones Low-volume PUF Tubes	Calibration Jar, Standard Cat. No. 225-111	
Devices up to 8-inch length x 3.25-inch diameter	Calibration Jar, Large Cat. No. 225-112	
Aluminum Cyclones (25 and 37 mm)	Aluminum Cyclone Calibration Adapter Cat. No. 225-01-03	
Button Sampler IFV Pro Sampler	Button Sampler/IFV Pro Sampler Calibration Adapter Cat. No. 225-361	
IMPACT Sampler	IMPACT Sampler Calibration Adapter Cat. No. 225-394	
IOM Sampler	IOM Calibration Adapter Cat. No. 391-01	
PEM Sampler	PEM Calibration Adapter Cat. No. 761-202	
PMI Sampler	PMI Calibration Adapter Cat. No. 225-358	
BioStage Impactor	BioStage Calibration Adapter Cat. No. P33100	

See page 45 for tubing or visit skcinc.com.

Rotameters

Economical Field Rotameters



320 Series

- Easy-to-read scales
- Ball type
- Provisions for panel mounting
- Lightweight, rugged, and portable

Measuring Range (L/min)	Scale (Inches)	Accuracy*	Cat. No.	Qty.
0.05 to 0.5	2	5%	320-2A05	ea
0.1 to 1†	4	3%	320-4A1	ea
0.4 to 5	4	3%	320-4A5	ea
2 to 20	4	3%	320-4A20L#	ea
4 to 50	4	3%	320-440	ea
3 to 30	4	3%	320-530	ea
3 to 30	4	3%	320-100‡	ea

* Full scale
 † Product scale is marked in CCM (cc/min), which is equivalent to ml/min.
 ‡ Fittings adapted for QuickTake 30 sample pump
 # Fittings adapted for use with BioLit[®]

Standard Rotameters



393 Series

- 100-mm scale
- Float type
- Steel base plate/stand
- NIST certificate available; contact SKC

Measuring Range (L/min) ^Δ	Scale (mm)	Accuracy	Cat. No.	Qty.
0.02 to 0.25	100	2.5%	393-002025	ea
0.3 to 3.4	100	2.5%**	393-0334	ea
0.6 to 5	100	2.5%**	393-0650	ea
1 to 13	100	2.5%**	393-1130	ea
2 to 26	100	2.5%**	393-2260	ea
Accessories				
Calidaptor, for hands-free IOM calibration			391-01	ea
Cowed Head Adapter			391-05	ea

** Full scale-VDI/VDE Standard 3513/2:2008
 Δ Calibrated at 68 F (20 C) and 1 atmosphere

Pneumatic Test Kit

The Pneumatic Test Kit is an all-in-one kit for testing sample pump flow range compensation. The kit includes a rotameter that measures 1 to 5 L/min, a valve, and a magnetic gauge that reads from 0 to 80 inches water back pressure. Mounted in heavy-duty casing.



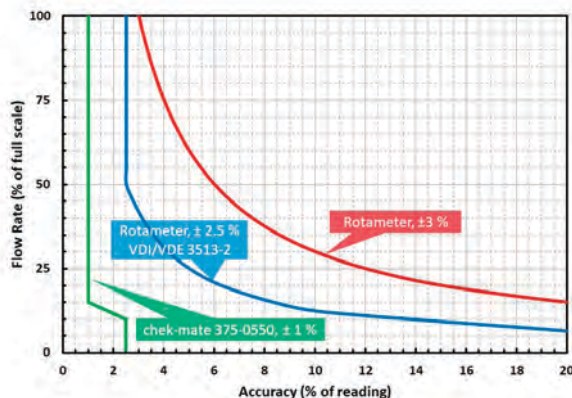
Cat. No. 224-6580

Need Annual Calibration?

SKC CAL will keep your calibration devices in optimum condition.

Learn more on pages 42-43!

Standard and Field Rotameter Accuracy vs. chek-mate Calibrator



For the chek-mate Calibrator see pages 38-39

SKC CAL

Accuracy builds credibility! Keeping gas flow devices in top condition is essential to the integrity of air monitoring programs and compliance with quality management systems. SKC CAL provides fast, reasonably priced calibration and certification services for the gas flow devices you rely on every day. It's another way that SKC's science can serve you.



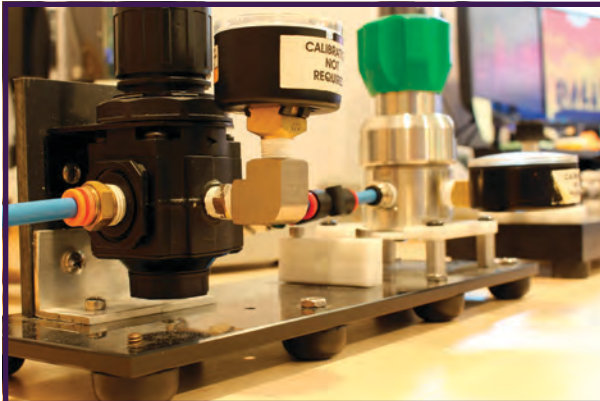
- ▶ ISO/IEC 17025:2017-accredited laboratory
- ▶ Traceable standard piston provers and other instruments used in accordance with ISO/IEC 17025:2017
- ▶ Controlled environmental conditions
- ▶ Certified calibration staff
- ▶ Calibration services available for a range of popular flowmeters
 - Contact SKC or your distributor for details
- ▶ Fast service
- ▶ Reasonable prices



Confidence in Calibration of Flowmeters



Highly trained and certified calibration technicians provide fast service.



Well-equipped ISO/IEC 17025:2017-accredited laboratories ensure accuracy.

SKC CAL is confidence in calibration!

Contact SKC or your distributor for more information about local accreditations.

Gas Flow Device Calibration and Certification Services

Pump Accessories

Stand/Cases/Pouches

Pump Sampling Accessories



Soft-sided nylon case Cat. No. 224-903 standard in single pump kits



Protective and noise-reducing pump pouches Cat. Nos. 224-95A, 224-96A, and 224-96C



Noise-reducing pump pouch Cat. No. 224-89



Hard-sided Pelican case Cat. No. 224-901 alternative case for single pump kits



Hard-sided Pelican case Cat. No. 224-905



Hard-sided Pelican case Cat. No. 224-912

Tripod Stand

Sturdy stand telescopes to 5 feet and holds sampling media securely for breathing zone measurements. Ideal for asbestos and bioaerosol sampling. *Stand does not hold a pump.*

Description	Cat. No.	Qty.
Tripod, for cassette or BioStage Impactor	228-506	ea



Pump Cases and Protective Pouches

Description	Cat. No.	Qty.
5-pack Pump Kit Carry Cases , Pelican, watertight, airtight, dustproof, and crushproof, equipped with foam for complete equipment protection		
AirChek TOUCH, Connect, or Essential , on wheels for easy transport	224-914	ea
AirChek 3000, AirChek 52/Sidekick, AirLite, or XR5000 , on wheels for easy transport	224-907	ea
AirChek 3000, AirChek 52/Sidekick or XR5000 Deluxe Kit , on wheels for easy transport	224-910	ea
Leland Legacy , on wheels for easy transport	224-905	ea
Pocket Pump TOUCH (Pelican Air)	224-915	ea
Universal Series	224-908	ea
Single Pump Kit Carry Cases , for AirChek Series, Pocket Pump TOUCH, and Universal		
Pelican (shown at left)	224-901	ea
Nylon with shoulder strap (shown at left) , also used for 5-station PowerFlex	224-903	ea
Single Pump Kit Carry Case , for Leland Legacy		
Pelican	224-912	ea
Protective Pump Pouches , for personal sampling, designed for personal comfort with adjustable waist belt, and shoulder strap		
Universal		
Black		
Red (shown at left)	224-87	ea
AirChek 3000, AirChek 52/Sidekick or XR5000[‡]		
Black	224-95A	ea
Red (shown at left)	224-88	ea
Black, with belt loop (no shoulder or waist strap)	224-96A	ea
AirLite	224-902	ea
AirChek TOUCH, Connect, or Essential	224-911	ea
Noise-reducing Pump Pouches , reduce noise level from 62.5 to 55 dBA*		
AirChek 3000, XR5000 (4-cell) or AirChek 52/Sidekick		
Black (shown at left)	224-96C	ea
XR5000 (2-cell)	224-913	ea
Leland Legacy , reduces noise level from 62.5 to 52 dB ^Δ	224-89	ea
Black		
Waist Belt , extends up to 48 inches	224-12	ea

[‡] High-power Li-Ion model only

* Measured at 39 inches (1 meter) from an AirChek 52 pump running at 2 L/min with 37-mm, 0.8-µm MCE cassette

Δ Measured at 39 inches (1 meter) from a Leland Legacy pump operating at 10 L/min without media

Tubing for Air Sampling

Tygon



Description	Applications	Diameter Inches (mm)		Cat. No.	Length in Feet	Qty.
		ID	OD			
Tygon	Sampling trains	$\frac{3}{16}$ (4.76)	$\frac{5}{16}$ (7.94)	225-1346	10	ea
Tygon	Sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	$\frac{1}{4}$ (6.35)	$\frac{3}{8}$ (9.53)	225-13-4A	3.3	ea
				225-13-4	10	ea
				225-1345	50	ea
Tygon	Sampling trains; for calibrating QuickTake pumps	$\frac{3}{8}$ (9.53)	$\frac{1}{2}$ (12.7)	225-1351	10	ea
				225-1352	50	ea
Tygon	For calibrating DPS and DCS	$\frac{5}{16}$ (7.94)	$\frac{9}{16}$ (14.29)	225-1349	10	ea

Latex Rubber



Description	Applications	Diameter Inches (mm)		Cat. No.	Length in Feet	Qty.
		ID	OD			
Latex Rubber, black	Sampling trains	$\frac{3}{16}$ (4.76)	$\frac{5}{16}$ (7.94)	226-03-003	12	ea
Latex Rubber, black	Sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	$\frac{1}{4}$ (6.35)	$\frac{3}{8}$ (9.53)	226-03-004	12	ea
				225-1347	10	ea
Latex Rubber, amber	Sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	$\frac{1}{4}$ (6.35)	$\frac{3}{8}$ (9.53)	225-1347	10	ea

Polyurethane



Description	Applications	Diameter Inches (mm)		Cat. No.	Length in Feet	Qty.
		ID	OD			
Polyurethane, reinforced to prevent kinking	Sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	$\frac{1}{4}$ (6.35)	$\frac{15}{32}$ (11.9)	225-1350	10	ea

PTFE[†]



Description	Applications	Diameter Inches (mm)		Cat. No.	Length in Feet	Qty.
		ID	OD			
PTFE	Inert for bag sampling; fits over bag fitting	$\frac{3}{16}$ (4.76)	$\frac{1}{4}$ (6.35)	231-9-23	10	ea
PTFE	Inert for bag sampling; fits inside bag fitting	$\frac{1}{16}$ (1.59)	$\frac{1}{8}$ (3.18)	231-9-21	10	ea
PTFE	Inert for bag sampling; fits Vac-U-Chamber sample inlet	$\frac{1}{4}$ (6.35)	$\frac{5}{16}$ (7.94)	231-937	10	ea
				231-924	50	ea

[†] PTFE tubing is not suitable for particulate sampling because static effect can cause sample loss in the tubing.

Tubing Accessories

Tubing Accessories	Cat. No.	Qty.
PVC Adapters, Luer taper connects to $\frac{1}{4}$ -inch ID tubing	225-13-2	10
	225-132A	250
Spring Tubing Support, for use with $\frac{5}{16}$ -inch OD flexible tubing to prevent kinking	225-1348	5
Tubing, Collar Clip, and Cable Ties	225-13-8	ea
Collar Clip and Cable Ties only	225-13-6	10





SKC Quality Sorbent Tubes

SKC was the first to bring the NIOSH sorbent tube design to the commercial market over 45 years ago.

SKC leads in sorbent tube research to make quality sorbent tubes available for protecting workers and public health.

Over 100 SKC Sorbent Tubes are available for validated methods and specialty applications. SKC also manufactures custom sorbent tubes to your specifications.

Look for the SKC name when choosing sorbent tubes. SKC brings to you almost 50 years of expertise, the support of experienced scientists, low-background sorbents, quality manufacturing, QC data online, repeatable performance, and accurate sampling.

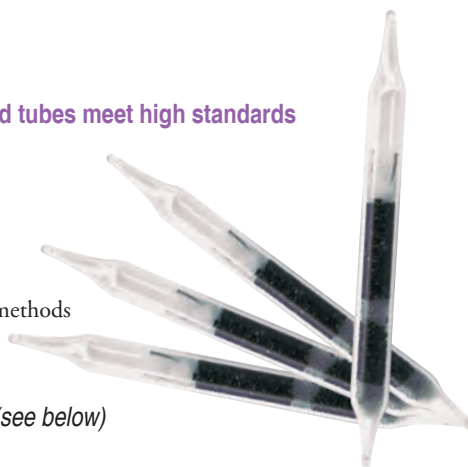
SKC Sorbent Tubes — made for NIOSH, OSHA, EPA, ASTM, and HSE methods.



First and Still the Best Since 1973



- **Meet NIOSH, OSHA, ASTM, EPA, and HSE specifications**
 - Your single source for U.S. and UK methods
- **Made with high-quality, low-background sorbents**
- **SKC thorough quality control ensures sorbents and tubes meet high standards**
 - Accurate sorbent weights
 - Consistent method-specified mesh size and separators
 - Uniform back pressure
 - Accurate, repeatable results
- **Validation of reliability**
 - Specified in OSHA, NIOSH, ASTM, EPA, and HSE methods
 - Used by health and safety professionals around the world for compliance and consulting
- **Sorbent background certification available online (*see below*)**
- **Technical support from scientists**
- **Hundreds of sorbent tubes for standard and specialty applications delivered quickly from stock**



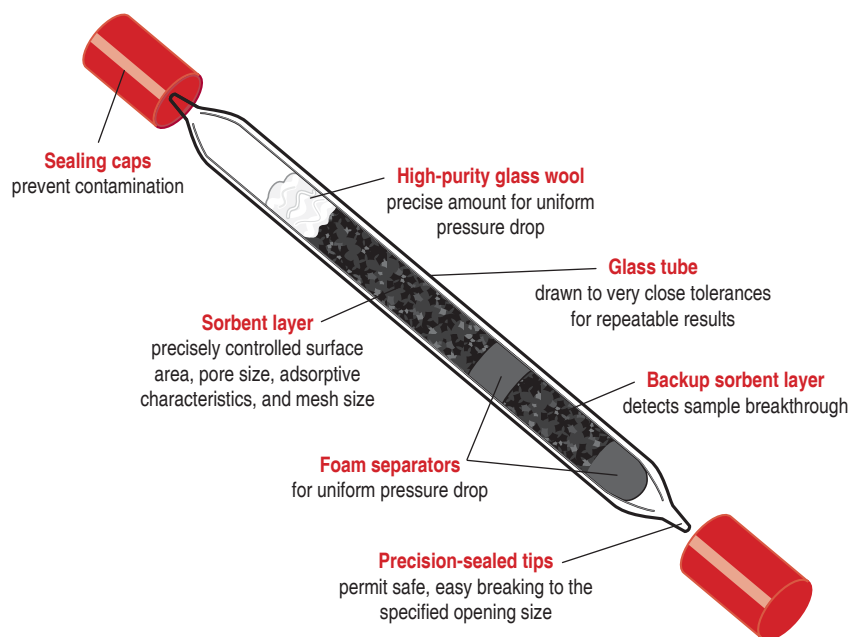
Anasorb®

A Trademark of Quality

In 1973, SKC made the first commercial sorbent tube. Since then, SKC has led advancements in sorbent tube technology. To more easily identify SKC proprietary sorbents in air sampling methods, the registered trademark "Anasorb" is used for SKC proprietary sorbents of all types.

Sorbent Equivalencies

Anasorb	Equivalent Sorbent
708	Chromosorb 108
727	Chromosorb 106
C300	Hydrar, Carulite
CSC	None
747	None
GCB1	Carbotrap B (20/40) Carbopack B (60/80)
GCB2	Carbotrap C (20/40) Carbopack C (60/80)



*For Sample Pumps
see pages 7-23*

Seeing is Believing!

Sorbent background certificates are available.
Visit skcinc.com/certificates.

V Video	P PowerPoint	W Webinar	S Sampling Solution
Visit skcinc.com/Training			

Sorbent Tubes

Selection Guide

Sorbent Tube Selection Guide

ADVANTAGES

- Over 45 years of proven performance!** Produced the first commercial sorbent tube
- Validation and reliability**
 SKC tubes are specified and used by OSHA, NIOSH, EPA, ASTM, HSE, and health and safety professionals around the globe for compliance and consulting.
- High-quality, low-background sorbents**
- Consistent method-specified mesh size and separators** maintain uniform back pressure and breakthrough volumes.
- Sorbent background certification available online**
- Backup sorbent layer** for breakthrough indication
- Technical backup**
 SKC technical experts provide fast, accurate answers to your questions.
- Easy-off "hat" caps on specialty tubes**

To select a tube for a specific compound, refer to the SKC Sampling Guide on catalog pages 174-247 or search the online Sampling Guides at skcinc.com for methods and required sorbent tubes.

Cat. No.	Sorbent (treatment)	Size (mm) OD x L	Sections	Sorbent (mg)	Ends	Separators	Tube Cover	Qty.
226-01	Anasorb CSC, Coconut Charcoal	6 x 70	2	100/50	GS	F F W	A	50
226-01A	Anasorb CSC, Coconut Charcoal	6 x 70	2	100/50	GS	F F W	A	10
226-01-BULK	Anasorb CSC, Coconut Charcoal	6 x 70	2	100/50	GS	F F W	A	1000
226-01GWS	Anasorb CSC, Coconut Charcoal	6 x 70	2	100/50	GS	W W W	A	50
226-09	Anasorb CSC, Coconut Charcoal	8 x 110	2	400/200	GS	F W W	B	50
226-09-BULK	Anasorb CSC, Coconut Charcoal	8 x 110	2	400/200	GS	F W W	B	1000
226-09-02	Anasorb CSC, Coconut Charcoal	8 x 150	3	350/350/350	GS	W W W W	C	50
226-10	Silica Gel	6 x 70	2	150/75	GS	F W W	A	50
226-10-03	Silica Gel (specially cleaned)	7 x 110	2	400/200	GS	W W G W	B	50
226-10-04	Silica Gel	8 x 110	2	300/150	GS	W W W	B	50
226-10-06	Silica Gel (sulfuric acid)	6 x 70	2	200/100	GS	W W W	A	50
226-15	Silica Gel	8 x 110	2	520/260	GS	F W W	B	50
226-15GWS	Silica Gel	8 x 110	2	520/260	GS	W W W	B	50
226-16	Anasorb CSC, Coconut Charcoal	10 x 110	2	800/200	GS	F W W	C	50
226-16-02	Anasorb CSC, Coconut Charcoal	10 x 160	2	1800/200	GS	F W W	D	50
226-17-1A	Anasorb C300†	6 x 70	1	200	GS	W W	A	50
226-17-3A	Anasorb C300†	8 x 110	1	500	GS	W W	B	50
226-22	Silica Gel	10 x 110	2	1040/260	GS	F W W	C	50
226-23	XAD-2 (octanoic acid)	6 x 70	2	100/50	GS	W W W	A	50
226-25	Anasorb CSC, Coconut Charcoal Anasorb CSC, Coconut Charcoal	8 x 110 8 x 110	1 1	400 200	GS	W W W W	D	50 sets
226-27	XAD-2 (2-hydroxymethyl piperidine)	8 x 110	2	450/225	GS	W W W	B	20
226-29	Anasorb 747 (sulfuric acid)	8 x 110	2	500/250	GS	W W W	B	50
226-30	XAD-2	7 x 70	2	80/40	GS	W W W	B	50
226-3002A	XAD-2 XAD-2	10 x 110 10 x 110	1 1	600 300	GS	W W W W	D	10 sets
226-30-03	XAD-2	8 x 110	2	100/30	GS	W W W	B	50
226-30-04	XAD-2	8 x 110	2	100/50	GS	W W W	B	50
226-30-05	XAD-2	8 x 110	2	150/75	GS	W W W	B	50
226-30-06	XAD-2	8 x 110	2	400/200	GS	W W W	B	50
226-30-07	XAD-2 (p-anisidine)	8 x 110	2	100/50	GS	W W W	B	20
226-30-08	Anasorb 708	6 x 70	1	100	GS	W W	A	50
226-30-16* (OVS)	XAD-2/Glass Fiber filter	13→8 x 75	2	270/140	GO	F F G T	V	10
226-30-16A* (OVS)	XAD-2/Glass Fiber filter	13→8 x 75	2	270/140	GO	F F G T	V	50
226-30-18	XAD-2 (naphthylisothiocyanate)	6 x 70	2	80/40	GS	W W W	A	50
226-35	Tenax TA	6 x 70	2	30/15	GS	F W W	A	50
226-35-01	Tenax TA	6 x 70	2	20/10	GO	W W W	A	50
226-35-03	Tenax TA	8 x 110	2	100/50	GS	W W W	B	50
226-35031	Tenax TA	8 x 110	2	100/50	GS	W W W	B	10

* Limited shelf-life; contact SKC for more information † Anasorb C300 is equivalent to Hydrar and Carulite.

TUBE ENDS: GS: Glass Sealed GO: Glass Open
 SEPARATORS: W: Glass Wool G: Glass Fiber Filter F: Foam T: PTFE Ring

For compliance sampling, use tubes as specified in a validated sampling method. It is the user's responsibility, employing a suitable method, to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before use. The user should adjust the sampling parameters for specific conditions and evaluate tubes under conditions of use to ensure that the desired results will be obtained.



For tube holders
and accessories
see pages 36-37

Sorbent Tube Selection Guide

To select a tube for a specific compound, refer to the SKC Sampling Guide on catalog pages 174-247 or search the online Sampling Guides at skcinc.com for methods and required sorbent tubes.

Cat. No.	Sorbent (treatment)	Size (mm) OD x L	Sections	Sorbent (mg)	Ends	Separators	Tube Cover	Qty.
226-36	JXC Charcoal	8 x 150	2	630/315	GS	F W W	C	50
226-37	Anasorb CSC, Coconut Charcoal	8 x 110	1	400	GS	F W	D	50 sets
	Anasorb CSC, Coconut Charcoal	8 x 110	1	200	GS	L F W	D	50 sets
226-39	Florisil	6 x 70	2	100/50	GS	W W W	A	50
226-39-02	Florisil	8 x 110	2	400/200	GS	W W W	B	50
226-40A	Molecular Sieve (triethanolamine)	7 x 70	1	400	GS	W W	D	10 sets
	Oxidizer	7 x 110	1	400	GS	W W	D	10 sets
	Molecular Sieve (triethanolamine)	7 x 70	1	600	GS	W W	D	10 sets
226-40-02	Molecular Sieve (triethanolamine)	7 x 110	2	400/200	GS	W W W	B	50
226-42	Silica Gel (sulfuric acid)	8 x 110	2	200/200	GS	W W W	B	50
226-42-02	Firebrick (gas chrom-R) (sulfuric acid)	7 x 70	1	300	GS	W W	B	50
226-44	Drying Tube	6 x 70	1	250	GS	W W	—	50
226-44-02	Drying Tube	10 x 160	1	900	GS	W W	—	50
226-47-01	Silica Gel	6 x 70	2	100/50	GS	W W W	A	50
226-48	Silica Gel	7 x 110	2	150/150	GS	W W W	B	50
226-49-102	Chromosorb 102	6 x 70	2	66/33	GS	W W W	A	50
226-49-106	Chromosorb 106	6 x 70	2	75/37	GS	W W W	A	50
226-49-108	Anasorb 708	6 x 70	2	75/37	GS	W W W	A	50
226-51	Silica Gel	6 x 70	2	100/50	GS	F W W	A	50
226-53	Silica Gel (sulfuric acid)	6 x 70	2	150/75	GS	W W W	A	50
226-54	XAD-2 (2-hydroxymethyl piperidine)	6 x 70	2	45/23	GS	W W W	A	20
226-55	Silica Gel (sodium hydroxide)	7 x 70	2	150/75	GS	W W W	B	20
226-56 (OVS)	Tenax TA/Glass Fiber filter	13→8 x 75	2	140/70	GO	F F G T	V	10
226-57 (OVS)	XAD-7/Glass Fiber filter	13→8 x 75	2	200/100	GO	F F G T	V	10
226-57A (OVS)	XAD-7/Glass Fiber filter	13→8 x 75	2	200/100	GO	F F G T	V	50
226-58* (OVS)	XAD-2/Quartz filter	13→8 x 75	2	270/140	GO	F F Q T	V	10
226-58A* (OVS)	XAD-2/Quartz filter	13→8 x 75	2	270/140	GO	F F Q T	V	50
226-59-03	Porapak-Q	6 x 70	2	78/39	GS	W W W	A	50
226-61	Silica Gel/Charcoal (charcoal treated with sodium hydroxide)	10 x 210	3	750/1250/250	GS	W W R W	D	50
226-67	Anasorb CSC, Coconut Charcoal (potassium hydroxide)	6 x 70	2	100/50	GS	W R W W	A	50
226-68	JXC Charcoal, Drierite (hydroquinone)	8→6 x 160	3	1600/160/110	GS	W W W W	D	20
226-70A	Silica Gel (p-methoxyphenol)	8 x 150	2	1200/600	GS	W W W	C	10
226-73	Anasorb CSC, Coconut Charcoal (t-butylcatechol)	6 x 70	2	100/50	GS	W W W	A	50
226-75	Anasorb 727 [‡]	8 x 110	2	300/150	GS	W W W	B	20
226-80	Anasorb 747 (potassium hydroxide)	6 x 70	2	100/50	GS	F W W	A	50
226-81A	Anasorb 747	6 x 70	2	140/70	GS	F W W	A	20

* Limited shelf-life; contact SKC for more information ‡ Anasorb 727 is equivalent to Chromosorb 106.

TUBE ENDS: GS: Glass Sealed GO: Glass Open

SEPARATORS: W: Glass Wool G: Glass Fiber Filter F: Foam T: PTFE Ring Q: Quartz Filter R: Glass Spacer

For compliance sampling, use tubes as specified in a validated sampling method. It is the user's responsibility, employing a suitable method, to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before use. The user should adjust the sampling parameters for specific conditions and evaluate tubes under conditions of use to ensure that the desired results will be obtained.

Best Practice

- ▶ Maintain the sorbent tube in a vertical position when sampling. This position will prevent sorbent from falling away from the tube wall and creating a small channel through which air would pass without contaminants adsorbing onto the sorbent.
- ▶ Store and prepare sampling media in solvent-free environments.



*For Sample Pumps
see pages 7-23*

Sorbent Tube Selection Guide

TECH TIPS

► Breakthrough is indicated when there is $\geq 25\%$ contamination in the backup layer of sorbent. It can also mean the sorbent tube was inserted into the tube holder in the wrong direction. Always insert the tube into the holder with the arrow on the tube pointing toward the holder. If no arrow is printed on the tube, insert the end of the tube with the smallest sorbent section (backup section) into the holder.

► **Q: Is it possible to increase the flow rate of a method to lower the detection limit?**

A: NIOSH recommends not exceeding the method-stated maximum flow rate. Instead, sample for a longer period and monitor closely for breakthrough.

To select a tube for a specific compound, refer to the SKC Sampling Guide on catalog pages 174-247 or search the online Sampling Guides at skcinc.com for methods and required sorbent tubes.

Cat. No.	Sorbent (treatment)	Size (mm) OD x L	Sections	Sorbent (mg)	Ends	Separators	Tube Cover	Qty.
226-82	Anasorb 747	8 x 110	1	400	GS	F W	D	20 sets
	Anasorb 747	8 x 110	1	200	GS	F W	D	
226-83	Anasorb 747	8 x 110	2	400/200	GS	F W W	B	50
226-84	Anasorb 747	10 x 110	2	800/200	GS	F W W	C	20
226-92	Polyurethane Foam (PUF)	22 x 100	1	76 mm	GO	—	P	ea
226-93	XAD-4	7 x 70	2	80/40	GS	W W W	B	50
226-94	XAD-7	6 x 70	2	60/30	GS	W W W	A	50
226-95	XAD-7	6 x 110	2	100/50	GS	W W W	B	50
226-96	XAD-7 ((NBD) chloride)	8 x 110	2	100/50	GS	W W W	B	50
226-97	XAD-7 (specially cleaned)	8 x 110	1	175	GS	W G W	—	20 sets
	XAD-7 (2 tubes)	8 x 110 (2)	1	175 (2)	GS	W W	—	
226-98	XAD-7 (phosphoric acid)	6 x 70	2	80/40	GS	W W W	A	50
226-99 (OVS)	Silica Gel/Glass Fiber filter	13→8 x 75	2	520/260	GO	F F G T	V	10
226-106A	Chromosorb 102	8 x 110	2	200/100	GS	W W W	B	20
226-107	Chromosorb 102	8 x 110	2	100/50	GS	W W W	B	50
226-110	Chromosorb 106	7 x 70	2	100/50	GS	W W W	B	50
226-111A	Chromosorb 106	10 x 150	2	600/300	GS	W W W	C	10
226-114	Porapak-P	6 x 110	2	100/50	GS	F W W	B	50
226-115	Porapak-Q	6 x 110	2	150/75	GS	W W W	B	50
226-116A	Porapak-T	6 x 40	1	75	GO	W W	B	10 sets
	Porapak-T	6 x 40	1	25	GO	W W	B	
226-117	XAD-2 (2-hydroxymethyl piperidine)	6 x 110	2	150/75	GS	W W W	B	20
226-118	XAD-2 (2-hydroxymethyl piperidine)	6 x 110	2	120/60	GS	W W W	B	20
226-119	High-purity Silica Gel with low background (2,4-dinitrophenylhydrazine)	6 x 110	2	300/150	GS	W W W	B	20
226-119A		6 x 110	2	300/150	GS	W W W	B	100
226-119-7		7 x 110	2	300/150	GS	W W W	B	20
226-120	High-purity Silica Gel with low background (2,4-dinitrophenylhydrazine) with built-in ozone scrubber	8 x 115	3	1500/300/150	GS	W W W W	D	20

TUBE ENDS: GS: Glass Sealed GO: Glass Open
SEPARATORS: W: Glass Wool G: Glass Fiber Filter F: Foam T: PTFE Ring

For compliance sampling, use tubes as specified in a validated sampling method. It is the user's responsibility, employing a suitable method, to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before use. The user should adjust the sampling parameters for specific conditions and evaluate tubes under conditions of use to ensure that the desired results will be obtained.

In-house methods or SOPs? SKC custom sorbent tubes are your solution

- Specify solvent or thermal desorption
- Choose tube, sorbent, and separator materials
- Precision manufacturing, stringent QC, and competitive prices

VISIT SKCINC.COM/CUSTOM OR CONTACT SKC FOR A QUOTE

V Video	P PowerPoint	W Webinar	S Sampling Solution
Visit skcinc.com/Training			

Sorbent Tube Selection Guide

To select a tube for a specific compound, refer to the SKC Sampling Guide on catalog pages 174-247 or search the online Sampling Guides at skcinc.com for methods and required sorbent tubes.

Cat. No.	Sorbent (treatment)	Size (mm) OD x L	Sections	Sorbent (mg)	Ends	Separators	Tube Cover	Qty.
226-124	PUF/Tenax TA/PUF	22 x 100	3	3 cm/750 mg/ 3 cm	GO	—	P	ea
226-126	PUF/Glass Fiber filter	22 x 100	1	76 mm	GO	F S G N	P	ea
226-129	PUF/XAD-2/PUF	65 x 125	3	50 mm/10 gm/ 25 mm	GO	—	—	ea
226-131	PUF	65 x 125	1	75 mm	GO	—	—	ea
226-134	Tenax TA	16 x 125	1	1.6 gm	GO	W W	—	ea
226-142*	Carbon Beads/PTFE filter (carbon beads treated with potassium hydroxide)	16→8 x 85	2	100/50	GO	W W W T T	H	5
226-143	PUF/XAD-2/PUF	22 x 100	3	3 cm/1500 mg/ 3 cm	GO	—	P	ea
226-153*	XAD-2 (di-n-butylamine)	8 x 110	2	400/200	GS	W W W	B	20
226-165A	Silica Gel (mercuric cyanide)	6 x 110	2	300/150	GS	W W W	B	20
226-170	XAD-4	6 x 70	1	120	GS	W W	A	20
226-175	XAD-4	8 x 150	2	400/200	GS	W W W	C	20
226-176*	Silica Gel (hydrochloric acid)	10 x 150	3	700/150/150	GS	W W W W	C	20
226-177*	Silica Gel (silver nitrate)/Glass Fiber filter (sodium carbonate/glycerol)	16→8 x 85	2	200/200	GO	T T T W W	H	5
226-178*	Anasorb 747 (hydrobromic acid)	6 x 70	2	100/50	GS	W W W	A	20
226-182	Molecular Sieve (triethanolamine) and oxidizer	10 x 110	3	400/400/600	GS	W W W W	C	50
226-182A								10
226-183	Silica Gel (specially washed and baked)/Glass Fiber filter	7 x 110 7 x 110	1 1	600 600	GS	W G W W G W	D	20 sets
226-184	Chromosorb 106/ Chromosorb 106/ Sodium Sulfate	8 x 150	3	150/300/1000	GS	W W W W	D	50

* Limited shelf-life; contact SKC for more information

TUBE ENDS: GS: Glass Sealed GO: Glass Open

SEPARATORS: W: Glass Wool G: Glass Fiber Filter F: Foam T: PTFE Ring S: Screen N: Nylon Ring

For compliance sampling, use tubes as specified in a validated sampling method. It is the user's responsibility, employing a suitable method, to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before use. The user should adjust the sampling parameters for specific conditions and evaluate tubes under conditions of use to ensure that the desired results will be obtained.

SKC Bulk Sorbents for Laboratory QA/QC Requirements

- Undergo extensive cleaning procedures to ensure low backgrounds
- Meet stringent specifications for environmental applications

• HIGH QUALITY •
GUARANTEED

Sorbent	Mesh Size	Amount (grams)	Cat. No.	Qty.
Anasorb 747	20/40	100	P226200	ea
Anasorb C300	20/40	100	P226171	ea
Anasorb CSC	20/40	100	P2260101	ea
Anasorb GCB1	20/40	10	P226128	ea
	60/80	10	P226132	ea
Anasorb GCB2	20/40	10	P226127	ea
Anasorb JXC	20/40	100	P2263601	ea
Silica Gel	20/40	100	P22610	ea
Tenax GR	20/35	10	P226124	ea
Tenax TA	35/60	10	P226125	ea
	20/35	10	P226126	ea
XAD-2	20/60	100	P226201	ea

ABOUT

SKC Single-tube Solution for NO/NO₂ Sampling

SKC's new single sorbent tube for NO/NO₂ houses three sections of sorbent (oxidizer sandwiched between triethanolamine-treated molecular sieve) that existed previously as a sampling train of three separate tubes (Cat. No. 226-40A). The single 10 x 110-mm glass sorbent tube is available as Cat. No. 226-182 (Qty/50) and 226-182A (Qty/10).

Need tube holders and covers?

See pages 36-37 or visit skcinc.com.



For Sample Pumps
see pages 7-23



Sorbent Tube Selection Guide

To select a tube for a specific compound, refer to the SKC Sampling Guide on catalog pages 174-247 or search the online Sampling Guides at skcinc.com for methods and required sorbent tubes.

TECH TIPS

► Studies show that when sampling hydrogen cyanide gas, particulate hydrogen cyanide can vaporize and bias vapor results. To reduce the amount of particulate cyanide vapor generated when using NIOSH Method 6017, the sampling train has been modified. In place of Sorbent Tube Cat. No. 226-28 (soda lime [600/200 mg] with built-in 5-mm glass fiber filter), the train now contains **Sorbent Tube Cat. No. 226-210** (soda lime [600/200 mg]) at right and **25-mm A/E Glass Fiber Filter in two-piece cassette Cat. No. 225-710** (see page 110).

Tube Breakers

Description	Cat. No.
Tube Breaker , stainless steel, for 6, 7, 8, and 10-mm OD tubes	 226-03-055
Tube Scorer/Breaker , doubles as a detector tube tip breaker and tip storage for up to 260 broken tips	 810-722

Cat. No.	Sorbent (treatment)	Size (mm) OD x L	Sections	Sorbent (mg)	Ends	Separators	Tube Cover	Qty.
226-188	Silica Gel (2,4-dinitrophenylhydrazine)	10 x 110	2	800/200	GS	W W W	C	20
226-191	Silica Gel (o-phenylenediamine)	8 x 110	2	520/260	GS	W W W	B	50
226-192	XAD-2/XAD-2/Anasorb CSC	8 x 110	3	50/100/150	GS	W W W W	B	50
226-193-UC	Silica Gel (MTSO)	7 x 110	1	800	GS	W W	B	20
226-196	Anasorb CSC, Coconut Charcoal (t-butylcatechol)	8 x 110	2	400/200	GS	W W W	B	20
226-199-UC	Silica Gel (MTSO)	8 x 110	2	800/200	GS	W G W	B	20
226-210	Soda Lime	7 x 110	2	600/200	GS	W W W	B	50
226-211	XAD-7	8 x 110	2	175/175	GS	W W W	B	20
226-213	XAD-2 (p-anisidine)	8 x 110	2	200/100	GS	W W W	B	20
226-214	XAD-2 (naphthylisocyanate)	8 x 110	2	200/100	GS	W W W	B	20
226-330 [‡]	Anasorb GCB2/GCB1/Carbosieve S-III	6 x 115	3	250/150/100	GO	W W W W	N/A	ea
226-339 [‡]	Tenax TA	1/4 x 3-1/2 in	1	100	GO	W W	N/A	ea
226-340 [‡]	Tenax TA	1/4 x 3-1/2 in	1	100	SS	S W W S	N/A	ea
226-341 [‡]	Carbosieve S-III	1/4 x 3-1/2 in	1	100	SS	S W W S	N/A	ea
226-345 [‡]	Tenax GR/Anasorb GCB1	1/4 x 3-1/2 in	2	125/120	GO	W W W	N/A	ea
226-346 [‡]	Anasorb GCB1/Carbosieve S-III	1/4 x 3-1/2 in	2	175/80	GO	W W W	N/A	ea
226-347 [‡]	Anasorb GCB2/GCB1/Carbosieve S-III	1/4 x 3-1/2 in	3	120/125/105	GO	W W W W	N/A	ea
226-348 [‡]	Tenax GR/Anasorb GCB1	1/4 x 3-1/2 in	2	175/150	SS	O S W S O	N/A	ea
226-349 [‡]	Anasorb GCB1/Carbosieve S-III	1/4 x 3-1/2 in	2	280/165	SS	S W S	N/A	ea
226-350 [‡]	Anasorb GCB2/GCB1/Carbosieve S-III	1/4 x 3-1/2 in	3	210/140/165	SS	S W W W S	N/A	ea
226-356 [‡]	Anasorb GCB1	1/4 x 3-1/2 in	1	400	SS	S W W S	N/A	ea
226-357 [‡]	Tenax TA	1/4 x 3-1/2 in	1	250	SS	S W W S	N/A	ea
226-358 [‡]	Chromosorb 106	1/4 x 3-1/2 in	1	350	SS	S W W S	N/A	ea
226-360 [‡]	Tenax TA	1/4 x 3-1/2 in	1	250	GO	W W	N/A	ea
226-363 [‡]	Carbopack X	1/4 x 3-1/2 in	1	400	SS	S W W S	N/A	ea

‡ Tubes are chemically conditioned before shipping; use within 6 months or recondition, restocking fee applies. ∞ Available unconditioned, see page 56
§ Each tube has a flow direction arrow and unique number.

TUBE ENDS: GS: Glass Sealed GO: Glass Open SS: Stainless Steel Open
SEPARATORS: W: Glass Wool G: Glass Fiber Filter S: Screen O: Other

For compliance sampling, use tubes as specified in a validated sampling method. It is the user's responsibility, employing a suitable method, to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before use. The user should adjust the sampling parameters for specific conditions and evaluate tubes under conditions of use to ensure that the desired results will be obtained.



For Thermal Desorption Tubes conditioned by SKC or your lab see page 56

SKC IFV Pro Sampler for Mixed-phase Contaminants

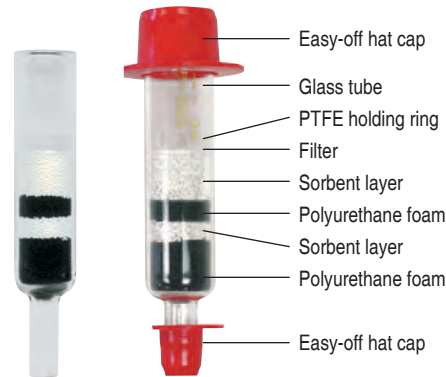
ACGIH has assigned a TLV with the Inhalable Fraction and Vapor (IFV) designation to over 50 compounds that can be found in mixed phases including pesticides, diesel fuel, cresol, and maleic anhydride. The SKC IFV Pro Sampler features an IOM-style inlet for collection of the inhalable fraction onto 25-mm filters and uses sorbent tubes for collection of the vapor phase at a flow rate of 1 L/min. See page 125 or visit skcinc.com for more information.



OSHA Versatile Samplers

For Sampling Pesticides, Explosives, and Glycols

- ▶ Sorbent and filter combined in one tube to meet NIOSH and OSHA method specifications
- ▶ Collect aerosols and vapors simultaneously
- ▶ Low backgrounds ensure sample reliability
- ▶ Available with a variety of sorbents
- ▶ Easy-off hat caps



IFV Pro Sampler

Simultaneous Inhalable and Vapor Sampling

- Designed for ACGIH TLVs with IFV designation
- IOM-style inlet sized for 1 L/min flow for true inhalable sampling
- Collects vapor phase on a variety of sorbents following published methods
- Meets European Standard 13936



OSHA designed OSHA Versatile Sampler (OVS) Tubes to overcome the inconveniences of earlier methods. OVS Tubes contain a filter to trap aerosols and a two-section sorbent bed to adsorb vapors in one specially constructed glass tube. Only cleaned and verified materials are used in OVS Tubes to ensure low background interference. A flow rate of 1 L/min provided by a personal sample pump is typically used to obtain volumes ranging from 60 to 480 liters. Samples are solvent extracted and analyzed using GC or HPLC methods.

Sample challenging mixed-phase contaminants such as pesticides, polyaromatic hydrocarbons (PAHs), inorganic acids, and explosives with the IFV Pro Sampler.

See page 125 for details.

Application — Method	Sorbent (mg)	Filter	Cat. No.	Qty.
Pesticides — OSHA 62, 63, 67, 70, 74, OSHA CSI			226-30-16	10
Organotin Compounds* — OSHA CSI	XAD-2 (270/140)	Glass Fiber	226-30-16A	50
Pesticides, organophosphorus — NIOSH 5600, 5601, 5602	XAD-2 (270/140)	Quartz Fiber	226-58 226-58A	10 50
Explosives (trinitrotoluene [TNT] and dinitrotoluene [DNT]) — OSHA 44				
Phthalate Esters — OSHA 104				
Acrylates and Benzophenone — Non-agency method [†]	Tenax TA (140/70)	Glass Fiber	226-56	10
Caprolactam Vapor — OSHA CSI			226-57	10
Glycols — NIOSH 5523	XAD-7 (200/100)	Glass Fiber	226-57A	50
Kathon® 886 Biocide — Non-agency method [‡]	Silica gel (520/260)	Glass Fiber	226-99	10
Accessories				
OVS Tube Holder includes 3 feet (0.9 meter) of tubing and collar clip, see details on p. 37			224-29V	
OVS Calibration Adapter Kit includes tubing and calibration adapter			224-31	

* Methyl tin mercaptide, stannous-2-ethyl hexanoate, butyltin trichloride † See Ref. 39 on page 245. ‡ See Ref. 55 on page 245.



For Sample Pumps

see pages 12-23

Sorbent Tubes

Specialty – Low-volume PUF

Low-volume PUF Tubes

For Sampling Semi-volatiles from 1 to 5 L/min

- Meet specifications of EPA Method TO-10A, EPA IP-8, and ASTM D4861
- For sampling up to 24 hours
- Custom PUF/sorbent combinations available
- Precleaned and ready to use



Replacement Parts

Replacement PUFs for	
Cat. No. 226-92	
Uncleaned, 76-mm length	
Cat. No. P22692	Qty/20
Cleaned, 76-mm length	
Cat. No. P22692C	Qty/10
Replacement Glass	
Precleaned and ready to use	
Cat. No. P22692G	

Sample Time:	4 to 24 hours
Sample Rate:	1 to 5 L/min
Sample Pump:	Universal, AirChek Series, or Leland Legacy

24-hour Sampling?



Use Low-volume PUF Tubes with the Leland Legacy Sample Pump at 5 L/min
see pages 24-25

SKC Low-volume PUF Tubes contain polyurethane foam (PUF) or PUF/sorbent combinations that meet the specifications of EPA and ASTM indoor and ambient air sampling methods for designated contaminants found in homes, public buildings, and offices. The methods specify the use of a sample pump, operating at a flow rate of 1 to 5 L/min, to draw air through the PUF tube to sample concentrations as low as 0.001 mg/m³. Collection times vary from 4 to 24 hours. See pages 16-23 and 24-25 for sample pump information.

Low-volume PUF Tubes

Methods	Compounds	Sorbent (Amount)	Cat. No.	Qty.
EPA TO-10A, IP-8	Organochlorine and organophosphorus pesticides, carbamate, pyrethrin, triazine, and urea pesticides	PUF (76 mm)		
ASTM D4861	Organochlorine and organophosphorus pesticides and PCBs		226-92	ea
ASTM D4861	Organochlorine and organophosphorus pesticides and PCBs	PUF/Tenax/PUF (30 mm/750 mg/30 mm)		
EPA TO-10A	Organochlorine and organophosphorus pesticides, carbamate, pyrethrin, triazine, and urea pesticides		226-124	ea
Custom	Pesticides, PCBs, and PAHs	PUF/XAD-2/PUF (30 mm/1500 mg/30 mm)	226-143	ea
Custom	Pesticides, PCBs, and PAHs	PUF/Glass Fiber filter (76 mm)	226-126	ea
Accessories				
Tube Holder for Low-volume PUF Tubes, see p. 37 for details			224-29P	ea
Multi-purpose Calibration Jar, see p. 118 for details			225-111	ea

Note: PUF tubes used in the Statements of Work for Superfund sites must be used and analyzed within 14 days of being cleaned.



High-volume PUF Tubes

For Sampling Semi-volatiles from 220 to 280 L/min

SKC High-volume PUF and PUF/sorbent combination tubes are designed for use with high-volume samplers to meet EPA and ASTM method specifications for ambient air sampling. Applications include sampling organochlorine pesticides, polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs).

► **Combination PUF/XAD-2 sorbent tube**

- Meets EPA Method 600/8-80-038 specifications
- Contains cleaned XAD-2 sorbent between two PUFs
- XAD-2 sorbent improves volatile component extraction during analysis

► **PUF-only sorbent tube**

- Meets ASTM D6209, EPA IP-7, TO-4A, and TO-13A
- Packed with precleaned PUF for low background



SKC High-volume PUF Tubes are cleaned and ready to use.

Custom PUF Tubes

You provide the specifications, SKC will provide the tubes. Custom PUF, PUF/sorbent combination, and PUF/filter combination tubes are available.

Contact SKC with your specifications —
skcinc.com/custom.

High-volume PUF Tubes

Methods	Compounds	Sorbent (Amount)	Cat. No.	Qty.
EPA 600/8-80-038	Organochlorine pesticides, PCBs	PUF/XAD-2/PUF (50 mm/10 gm/25 mm)	226-129	ea
Non-agency†	Nonpolar organic compounds			
EPA IP-7, TO-4A, TO-13A	Organochlorine pesticides, furans, PCBs, PAHs	PUF (75 mm)		
ASTM D6209	Polycyclic aromatic hydrocarbons		226-131	ea

Note: PUF tubes used in the Statements of Work for Superfund sites must be used and analyzed within 14 days of being cleaned.
 † See Non-agency Method 38 on page 245.

Replacement Parts

Description		Cat. No.	Qty.
Replacement PUF for Cat. No. 226-129, uncleaned	25-mm length	P226129A	10
	50-mm length	P226129B	10
Replacement PUF for Cat. No. 226-131, 75-mm length	Uncleaned	P226131	10
	Cleaned	P226131C	10
Glass Cartridge with support screens for Cat. No. 226-129 or 226-131		P226129C	ea

Quartz Filters for High-volume PUF Sampling

Description	Cat. No.	Qty.
QM-A, high-purity microfibers, 450-µm thickness, 102-mm diameter	225-1808	100



Deployable System for sampling PAHs, PCBs, pesticides, and associated particulate at 10 L/min
 see pages 26-27

V	P	W	S
Video	PowerPoint	Webinar	Sampling Solution
Visit skcinc.com/Training			

Thermal Desorption Tubes

For Active Sampling of ppb-level VOCs in Ambient or Indoor Air

Traps for Volatile Organic Sampling Trains (VOSTs)

VOSTs are specified by U.S. EPA 0031 in SW-846 for sampling VOCs in gaseous effluent from stationary emission sources such as hazardous waste incinerators. SKC VOST traps meet method specifications, are tested for background and pressure drop, and feature Swagelok fittings and PTFE ferrules. Traps are **not** supplied thermally conditioned. See note below.

VOST Traps for EPA Method 0031, Tenax TA, 35/60 mesh (1.6 gm), glass open, 16-mm OD x 125-mm L

Cat. No. 226-134[†]

[†] Limited shelf-life

Note: VOST traps must be conditioned prior to use. Use and analyze within 14 days of conditioning.

SKC offers single and multiple-bed thermal desorption tubes that meet EPA Method TO-17 requirements. All SKC thermal desorption tubes are sealed with PTFE end caps and marked with a permanent serial number. SKC offers both **thermally conditioned** tubes for immediate use or **unconditioned (UP)** tubes for thermal conditioning by your laboratory as needed. It is best practice to condition thermal desorption tubes before each use to ensure background levels are suitable for ppb-level measurements.

Perkin Elmer or Markes International Thermal Desorber Tubes

Available in **glass or stainless steel**, these tubes measure ¼-inch OD x 3 ½-inch length (6.35-mm OD x 88.9-mm length). Supplied as a single tube.

Method	Sorbent	SS	SS	Glass	Glass
		Conditioned Cat. No.	Unconditioned Cat. No.	Conditioned Cat. No.	Unconditioned Cat. No.
ASTM D6196	Anasorb GCB1*	226-356	226-356-UP	—	—
ASTM D6196; MDHS 72	Tenax TA	226-357	226-357-UP	226-360	226-360-UP
ASTM D6196; MDHS 72	Chromosorb 106	226-358	226-358-UP	—	—
EPA TO-1, IP-1B	Tenax TA	226-340	226-340-UP	226-339	226-339-UP
EPA TO-2	Carbosieve S-111	226-341	226-341-UP	—	—
EPA TO-17	Anasorb GCB1*/Carbosieve S-111	226-349	226-349-UP	226-346	226-346-UP
EPA TO-17, NIOSH 2549	Anasorb GCB2*/Anasorb GCB1*/ Carbosieve S-111	226-350	226-350-UP	226-347	226-347-UP
EPA TO-17	Tenax GR/Anasorb GCB1*	226-348	226-348-UP	226-345	226-345-UP

Perkin Elmer or Markes International Thermal Desorber Tubes with Carboxpack X

Select tubes with Carboxpack X sorbent for superior recovery of very volatile compounds. Available in **stainless steel**, these tubes measure ¼-inch OD x 3 ½-inch length (6.35-mm OD x 88.9-mm length).

Method	Sorbent	Cat. No.	Qty.
—	Carboxpack X	Conditioned 226-363	ea
		Unconditioned 226-363-UP	ea

Screening Tubes (Dynatherm Thermal Desorber)

Available in **glass**, these tubes measure 0.24-inch OD x 4.5-inch length (6-mm OD x 115-mm length).

Method	Sorbent	Cat. No.	Qty.
EPA IP 1B, NIOSH 2549	GCB2*/GCB1*/Carbosieve S-111	Conditioned 226-330	ea
		Unconditioned 226-330-UP	ea

* Anasorb GCB1 is equivalent to Carboxpack B; Anasorb GCB2 is equivalent to Carboxpack C.

Accessories

Description	Cat. No.	Qty.
Glass Transport Tubes , for 3 1/2-inch (88.9-mm) length tubes	226-300	5
PTFE Ferrules , set of 2	P30121	ea
Swagelok Fittings , for 1/4-inch (6.35-mm) OD tubes, set of 2	P50291	ea



*For Sample Pumps,
see pages 7-23*

Custom

SORBENT TUBES

Trust **SKC's** 45+ Years in Sorbent Media

Our chemists, product design specialists, technicians, and QA professionals are here to build the custom sorbent media you need for in-house methods and SOPs.

- Precision manufacturing
- Stringent quality control
- Technical support from our team of scientists
- Competitive prices



Visit skcinc.com/custom, or contact SKC for a quote.



SKC Sample Bags

SKC Sample Bags

SKC sample bags are constructed of high-quality films with evenly sealed, leak-free seams and high-quality bag fittings.

Make the Best Choice!

SKC publishes performance data on its bag films to equip you with the knowledge you need to make the best choice for your applications.

Custom Bags

SKC will create the bags you need! Select the film, fitting, bag dimensions, and more!



SKC – The Best Choice in Sample Bags

Choose from over 60 combinations!

High-quality bag films

- ❑ **Tedlar**, see pages 60-61
- ❑ **Standard FlexFoil**, see page 62
- ❑ **FlexFoil PLUS**, see page 63



Need help choosing the right bag material? Visit skcinc.com.

Bag fittings designed for your application

- ❑ **Single Polypropylene** combined hose/valve and septum
- ❑ **Single Stainless Steel** combined hose/valve and septum
- ❑ **Dual Stainless Steel** separate hose/valve and septum
- ❑ **Breath-gas Analysis** in stainless steel or polypropylene with mouthpiece



Sample pumps optimized for bag sampling

- ❑ **Pocket Pump TOUCH** — programmable, touch screen, and intrinsically safe. See page 10 or 65
- ❑ **Grab Air** — economy with fixed 1 L/min flow rate. See page 64



Need a custom bag?

Choose your film, fitting, size, and more for your application.

Submit your specifications for SKC Custom Bags at skcinc.com/custom.



Sample Bags

Tedlar with Stainless Steel Fittings

APPLICATIONS

Breath-gas Analysis Bags

Breath-gas Analysis Bags are designed for sanitary, effective capture of human exhaled air for several applications, including:



- **ACGIH Biological Exposure Indices (BEIs)** determined by end-exhaled air for methyl chloroform, tetrachloroethylene, and trichloroethylene
- **NIOSH Method 3704 for perchloroethylene** with collection of exhaled air into Tedlar bags for analysis by GC/PID
- **Collection of human breath to be analyzed for VOCs or volatile sulfur compounds (VSCs)**, possible biomarkers for some diseases

SKC Breath-gas Analysis Bags are offered in Tedlar and FlexFoil PLUS. See below right and pages 61 and 63.

*For PTFE Tubing
see page 64*

Classic Tedlar Bags for VOCs The Flexibility of Dual Stainless Steel Fittings

- Industry standard Tedlar film offers good stability for VOCs and some sulfur compounds
- Dual stainless steel fittings provide complete sampling flexibility
 - Bags are configured with one hose/valve fitting and one septum fitting
- Reliable, inert stainless steel fitting construction prevents leakage
- Stocked in a variety of sizes; custom bags available
- Breath-gas analysis bags for BEIs based on end-exhaled air for medical applications (see left)
- Routine QC of every batch for total hydrocarbons

Performance Profile

Background

Moderately low VOC

Stability

Good for VOCs, some sulfur compounds (including H₂S), CO, CO₂, methane, and SF₆

Thickness

2 mil

Sample Pump

Grab Air or Pocket Pump TOUCH, see pp. 64-65

Tedlar Bags with Dual Stainless Steel Fittings

Maximum Capacity (liter)	Cat. No.	Qty.	Fittings
1	231-01 231-01A	10 ea	
3	231-03	10	
5	231-05 231-05A	10 ea	
10	231-10	10	
25	231-25	5	
50	231-50	5	
75	231-75	5	
100	231-100	3	
Replacement Septa	231-9-04	10	

Tedlar Bag with Stainless Steel Breath-gas Analysis Fitting

Description	Cat. No.	Qty.	Fitting
Tedlar Sample Bags, 1 liter, each with stainless steel fitting and individually packaged clean mouthpiece, see above left	249-01	5	

MORE INFORMATION

SKC Bag Stability Report

skcinc.com

Classic Tedlar Bags for VOCs

Convenient and Economical Single Polypropylene Fitting

- ▶ **Single polypropylene fitting**
 - Combines the septum and hose/valve into one fitting
- ▶ **An industry standard!**
- ▶ **Economical**
- ▶ **Single lightweight fitting provides easy bag handling**
- ▶ **Stocked in a variety of sizes; custom bags available**
- ▶ **Routine QC of every batch for total hydrocarbons**

Performance Profile

Background

Moderately low VOC

Stability

Good for VOCs, some sulfur compounds (including H₂S), CO, CO₂, methane, and SF₆

Thickness

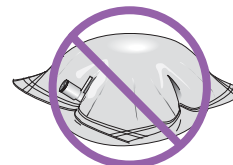
2 mil

Sample Pump

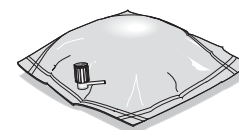
Grab Air or Pocket Pump TOUCH, see pp. 64-65
Also see the Vac-U-Chamber on pp. 66-67.

TECH TIPS

- ▶ Avoid filling a sample bag more than 80% of its maximum volume.



Incorrect inflation



Correct inflation



*For Bag Sampling Pumps
see pages 64-65*



*For negative pressure sample collection
see pages 66-67*

MOST POPULAR BAG

Tedlar Bags with Single Polypropylene Fitting

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
0.5	232-02	10	
1	232-01	10	
(Fits small Vac-U-Chamber Cat. No. 231-940)	232-01A	ea	
3	232-03	10	
	232-03A	ea	
5	232-05	10	
	232-05A	ea	
8	232-939	10	
(Fits large Vac-U-Chamber Cat. No. 231-939)			
10	232-10	10	
(Fits extra-large Vac-U-Chamber Cat. No. 231-944)	232-10A	ea	
25	232-25	5	
(Fits jumbo Vac-U-Chamber Cat. No. 231-946)			
50	232-50	5	
75	232-75	5	
100	232-100	3	
Replacement Septa	232-01-RS	10	

Tedlar Bag with Polypropylene Breath-gas Analysis Fitting

Description	Cat. No.	Qty.	Fitting
Tedlar Sample Bags, 1 liter, each with polypropylene fitting, fitting adapter, and individually packaged clean mouthpiece, see Applications on p. 60	249-01-PP	5	

Sample Bags

Standard FlexFoil

APPLICATIONS

Standard FlexFoil Bags

- CO₂ — OSHA Method ID-172
- CO₂ — NIOSH 6603
- CO — OSHA ID-210[‡]
- Sulfur compounds
- Indoor air studies (CO, CO₂, SF₆)

[‡] OSHA ID-210 specifies 5-layer foil bags. SKC 4-ply FlexFoil bags hold 100 ppm CO for 5 days without loss. See skcinc.com/knowledgecenter for more information.



Standard FlexFoil Sample Bags

Superior Bag for Sulfur Compounds and Low Molecular Weight Gases

- Effectively retain hydrogen sulfide for 48 hours!
- Strong, flexible, evenly sealed seams
- Lightproof and moistureproof
 - Excellent for light-sensitive compounds
- Choice of all-in-one polypropylene or stainless steel hose/valve and septum fittings
- Stocked in a variety of sizes
- Custom bags available

Performance Profile

Background

Moderate to high VOC and low sulfur

Stability

Good for CO, CO₂, methane, hydrogen, and SF₆
Good 48-hour stability for H₂S, hydrogen, carbonyl sulfide, and methyl and ethyl mercaptan

Thickness

4 ply (5 mil)

Sample Pump

Grab Air or Pocket Pump TOUCH, see pp. 64-65
Also see the Vac-U-Chamber on pp. 66-67.

Standard FlexFoil® Bags with Single Polypropylene Fitting

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
1 <i>(Fits small Vac-U-Chamber Cat. No. 231-940)</i>	262-01 262-01A	10 ea	
3	262-03 262-03A	10 ea	
5	262-05	10	
8 <i>(Fits large Vac-U-Chamber Cat. No. 231-939)</i>	262-08	10	
10 <i>(Fits extra-large Vac-U-Chamber Cat. No. 231-944)</i>	262-10	10	
25 <i>(Fits jumbo Vac-U-Chamber Cat. No. 231-946)</i>	262-25	5	
50	262-50	5	
Replacement Septa	236-01-RS	10	

Standard FlexFoil Bags with Single Stainless Steel Fitting

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
1	263-01 263-01A	10 ea	
3	263-03 263-03A	10 ea	
5	263-05	10	
10	263-10	10	
25	263-25	5	
50	263-50	5	
Replacement Septa	233-01-RS	10	

MORE INFORMATION

SKC Bag Stability Report

skcinc.com

FlexFoil PLUS Sample Bags

Specially Cleaned for Low ppm to High ppb-Level VOCs

- ▶ All the benefits of Standard FlexFoil — PLUS detection and good storage stability for low ppm to high ppb-level VOCs
- ▶ Strong, flexible, evenly sealed seams
- ▶ Lightweight and moistureproof
- ▶ Choice of all-in-one polypropylene or stainless steel hose/valve and septum fittings
- ▶ Stocked in many sizes; custom bags available
- ▶ Breath-gas analysis bags are available in FlexFoil PLUS
- ▶ Routine QC of every batch for total hydrocarbons

Performance Profile

Background

Low VOC and sulfur (*specially cleaned*)

Stability

Good for low ppm to high ppb-level VOCs
 Good for CO, CO₂, methane, hydrogen, and SF₆
 Good 48-hour stability for H₂S, hydrogen, carbonyl sulfide, and methyl and ethyl mercaptan

Thickness

4 ply (5 mil)

Sample Pump

Grab Air or Pocket Pump TOUCH, *see pp. 64-65*
 Also see the Vac-U-Chamber on pp. 66-67.

APPLICATIONS

FlexFoil PLUS Bags


- Biogas and landfill gas (LFG) sampling
- Sampling low-level VOCs
- Pollution level monitoring
- Site sampling/mobile surveys
- Breath analysis
- Calibration gas transfer
- Calibration mixtures
- Leak/spill exposure assessment

MORE INFORMATION


SKC Bag Stability Report

skcinc.com


FlexFoil PLUS Bags with Single Polypropylene Fitting

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
1 <i>(Fits small Vac-U-Chamber Cat. No. 231-940)</i>	252-01 252-01A	10 ea	
3	252-03 252-03A	10 ea	
5	252-05	10	
8 <i>(Fits large Vac-U-Chamber Cat. No. 231-939)</i>	252-08	10	
10 <i>(Fits extra-large Vac-U-Chamber Cat. No. 231-944)</i>	252-10	10	
25 <i>(Fits jumbo Vac-U-Chamber Cat. No. 231-946)</i>	252-25	5	
50	252-50	5	
Replacement Septa	236-01-RS	10	

FlexFoil PLUS Bags with Single Stainless Steel Fitting

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
1	253-01 253-01A	10 ea	
3	253-03 253-03A	10 ea	
5	253-05	10	
10	253-10	10	
25	253-25	5	
50	253-50	5	
Replacement Septa	233-01-RS	10	

FlexFoil PLUS Bags with Breath-gas Analysis Fitting

Description	Cat. No.	Qty.	Fitting
FlexFoil PLUS Sample Bags, 1 liter , each with individually packaged clean mouthpiece <i>See Applications on p. 60 and at right for details.</i>			
Stainless steel fitting	269-01	5	
Polypropylene fitting	269-01-PP	5	

APPLICATIONS

Breath-gas Analysis Bags

- ACGIH BEIs for end-exhaled air
- Metabolic status determination
- Asthma detection by exhaled nitric oxide
- Lung cancer detection
- Diabetes detection
- Fructose malabsorption with hydrogen breath test
- Helicobacter pylori (H. pylori) with urea breath test
- Organ rejection detection
- Carbon monoxide poisoning detection
- Smoking cessation evaluation
- NIOSH Method 3704 for perchloroethylene in exhaled breath



Easy sampling for breath-gas analysis

Bag Sampling Pump

Fixed 1 L/min

Grab Air Sample Pump — 1 L/min Economy Pump for Filling Bags

TECH TIPS

- ▶ Use only PTFE tubing for bag sampling to prevent sample loss through adsorption to the tubing's inner surface.
- ▶ PTFE tubing can be used at temperatures up to 500 F (260 C).

- ▶ 9-volt alkaline battery for approximately 1000 liters of volume on one battery
- ▶ Low battery indicator
- ▶ Fixed 1 L/min flow rate

The SKC Grab Air Sample Pump is an economical choice for grab-and-go bag sampling when intrinsic safety is not required. Grab Air operates at a fixed flow rate of 1 L/min for up to 1000 liters of volume on one 9-volt battery. Simply attach a sample bag to the outlet port and turn on the pump. Simple, quick, economical — Grab Air.



*For high-quality
Tedlar and FlexFoil
Sampling Bags
see pages 60-63*

Description	Cat. No.	Qty.
Grab Air Pump with 9-volt alkaline battery	222-2301	ea
Grab Air Hazmat Kit includes pump as described above, 3 feet of 3/16-inch (4.76-mm) ID PTFE tubing, and ten 1-liter Tedlar bags with single polypropylene fitting Cat. No. 232-01	222-2111	ea

PTFE Tubing Inert Tubing for Bag Sampling

- ▶ Heat and corrosion resistant
- ▶ Chemically inert
- ▶ Strong

Chemically inert SKC PTFE tubing is ideal for bag sampling to prevent sample loss through adsorption to the tubing's inner surface. SKC offers PTFE tubing with different diameters to fit over or inside bag fittings.



MORE INFORMATION
skcinc.com

PTFE Tubing	Cat. No.	Length	Qty.
Fits over all SKC bag fittings and Grab Air pump exhaust; fits into Pocket Pump TOUCH Quick-connect Adapter			
3/16-inch (4.76-mm) ID, 1/4-inch (6.35-mm) OD	231-9-23	10 ft	ea
Fits inside bag fitting			
1/16-inch (1.59-mm) ID, 1/8-inch (3.18-mm) OD	231-9-21	10 ft	ea
Fits Vac-U-Chamber sample inlet			
1/4-inch (6.35-mm) ID, 5/16-inch (7.94-mm) OD	231-937 231-924	10 ft 50 ft	ea ea

Bag Sampling Pump

Adjustable 20 to 500 ml/min

Pocket Pump® **TOUCH** – 20 to 500 ml/min Programmable Pump for Bag Sampling

- Quick-connect accessory on exhaust port provides easy and secure bag sampling
- Constant flows from 20 to 500 ml/min — also suitable for sorbent tube sampling and other low flow applications (see pages 10-11)
- Easy touch screen operation
- Intrinsically safe



Need more information
on bag sampling?



KNOWLEDGECENTER

Visit skcinc.com/knowledgecenter.

Description	Cat. No.	Qty.
Pocket Pump TOUCH with Li-Ion battery pack, requires Pocket Pump TOUCH charger See <i>Quick-connect Adapter</i> below for sampling with rigid PTFE 1/4-inch OD tubing	220-1000TC	ea
Pocket Pump TOUCH Single Charger	220-300	ea

Quick-connect Accessory for Secure Bag Sampling

- Rugged metal
- Easy installation on pump exhaust
- Holds rigid PTFE 1/4-inch OD tubing securely
- Simply press to release tubing



Only for
**Pocket Pump
TOUCH**

The Quick-connect Adapter accessory makes bag sampling with Pocket Pump TOUCH fast, easy, and secure. The Quick-connect Adapter threads into the pump exhaust port and securely holds rigid PTFE 1/4-inch OD tubing during sampling. When sampling is complete, a quick press of the adapter flange releases the tubing.

Cat. No. 220-200



*For negative pressure
sample collection
see pages 66-67*

Bag Sampling Chamber

Negative Pressure Sampling

Vac-U-Chamber

Eliminates Pump Contamination During Bag Sampling

- ▶ **Allows direct filling of air sample bags**
 - Uses negative pressure provided by most personal air sample pumps
 - Designed to contain SKC sample bags
- ▶ **Rugged and airtight construction**
 - Will not collapse under vacuum
- ▶ **Available in several sizes, including extra large for EPA Method 0040**
- ▶ **Sample line extends from contaminant source through case to bag**

For Convenient, Reliable Bag Sampling

The SKC Vac-U-Chamber is a rigid air sample box that allows sample bags to be filled directly by using negative pressure provided by most personal air sample pumps. Because the sample does not pass through the pump, both sample and pump contamination are eliminated. All surfaces in contact with the sample are constructed of inert materials. The Vac-U-Chamber's rigid walls will not collapse under vacuum conditions.



APPLICATIONS

Vac-U-Chamber

- U.S. EPA Method 18 (VOCs — industrial sources)
- U.S. EPA 0040 (POHCs — stationary sources)
- Soil gas/vapor intrusion sampling
 - U.S. EPA SOP 2042
- Indoor air remediation system monitoring petroleum constituents (U.S. EPA SOPs 2102, 2103, and 2104)
- Groundwater testing
- Stack sampling
- Ventilation studies
- Hazmat testing



Vac-U-Chamber in use with AirChek XR5000 Sample Pump

Vac-U-Chamber

Multiple Sizes Available for Your Applications

Small Vac-U-Chamber for 1-liter Bags

Description	Cat. No.	Qty.
Complete Vac-U-Chamber Kit includes Standard AirChek XR5000 sample pump, single charger, small Vac-U-Chamber, and 10 Tedlar sample bags Cat. No. 232-01	100-240 V	210-4124 ea
Kit with Universal Pump (224-PCMTX8)	100-240 V	224-4124MTX ea
Small Vac-U-Chamber only with polypropylene fittings (supplied without pump), suitable for use with SKC 1-liter sample bags below		231-940 ea
1-liter Sample Bags with single polypropylene fitting, for use with small Vac-U-Chamber Cat. No. 231-940	Tedlar	232-01 10
	FlexFoil PLUS	252-01 10
	Standard FlexFoil	262-01 10



For Sample Pumps

*see pages 16-23 or
visit skcinc.com!*

Large Vac-U-Chamber for 8-liter Bags

Description	Cat. No.	Qty.
Complete Vac-U-Chamber Kit includes Standard AirChek XR5000 sample pump, single charger, large Vac-U-Chamber, and 10 Tedlar sample bags Cat. No. 232-939	100-240 V	210-4115 ea
Kit with Universal Pump (224-PCMTX8)	100-240 V	224-4115MTX ea
Large Vac-U-Chamber only with stainless steel fittings (supplied without pump), suitable for use with SKC 8-liter sample bags below		231-939 ea
8-liter Sample Bags with single polypropylene fitting, for use with large Vac-U-Chamber Cat. No. 231-939	Tedlar	232-939 10
	FlexFoil PLUS	252-08 10
	Standard FlexFoil	262-08 10

Extra-large Vac-U-Chamber for 10-liter Bags

Description	Cat. No.	Qty.
Extra-large Vac-U-Chamber only with stainless steel fittings (supplied without pump), suitable for use with SKC 10-liter sample bags below		231-944 ea
10-liter Sample Bags with single polypropylene fitting, for use with extra-large Vac-U-Chamber Cat. No. 231-944	Tedlar	232-10 10
	FlexFoil PLUS	252-10 10
	Standard FlexFoil	262-10 10

MORE INFORMATION

skcinc.com

Jumbo Vac-U-Chamber for 25-liter Bags

Description	Cat. No.	Qty.
Jumbo Vac-U-Chamber only with stainless steel fittings (supplied without pump), suitable for use with SKC 25-liter sample bags below		231-946 ea
25-liter Sample Bags with single polypropylene fitting, for use with jumbo Vac-U-Chamber Cat. No. 231-946	Tedlar	232-25 5
	FlexFoil PLUS	252-25 5
	Standard FlexFoil	262-25 5

Best Practice

- Using the negative pressure Vac-U-Chamber eliminates contamination and preserves sample integrity.
- To prevent the risk of carry over from a previous sample,* do not reuse sample bags.

* Reference: McGarvey, L.J., Shorten, C.V., "The Effects of Adsorption on the Reusability of Tedlar Air Sample Bags," AIHA Journal, V. 61, May/June 2000, pp. 375-380, doi:10.1080/15298660008984546



Coated Filters

Filters/ISO-CHEK Sampling System



Custom Coated Filters

- Choose filter materials
- Specify filter pore size and diameter
- Choose support pad material
- Strict QC for consistent, accurate coating
- Available as filters only or preloaded in ready-to-use cassettes

CONTACT US

Visit skcinc.com/custom or contact SKC for a quote.

SKC Chemically Coated Filters

Meet Agency Method Specifications

- Ready to use
- Convenient personal sampling
- Small package sizes for short shelf-life products

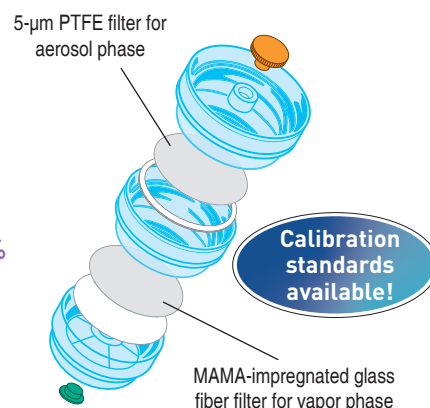
SKC Coated Filters make sampling reactive compounds safe and simple by eliminating the inconveniences of wet chemistry sampling with impingers and producing a stable compound for storage and analysis. SKC Coated Filters are easy to use: insert the cassette into an SKC Filter Cassette Holder, clip to the worker's collar, and connect to a personal sample pump. Certificates of Compliance are available; visit skcinc.com/certificates.

See SKC Coated Filter ordering on page 69.

ISO-CHEK

Simultaneous and Separate Collection of Isocyanate Phases

- Accurately samples diisocyanates: HDI, MDI, IPDI, HMDI, 2,4-TDI, and 2,6-TDI
- Meets ASTM D5932 (2,4 and 2,6-TDI), D6561 (HDI), and D6562 (HDI)
- Simultaneously traps and separates both monomers and oligomers at point of collection
- Decreases sample preparation and analysis time by 40%
- Highly stable – does not require low temperature storage/transport
- Provides detection limits below current regulated exposure levels
- Requires only a 15-minute sample time
- Round-robin proficiency testing for ISO-CHEK® labs – visit skcinc.com/lab



Exploded view of ISO-CHEK Filter Cassette (Cassette in image is tinted for clarification.)

Description	Cat. No.	Qty.
ISO-CHEK Sampling System with Derivatizing Reagent,** † preloaded clear cassettes and jars of Derivatizing Solution (MOPIP in toluene)	225-9023	4
	225-9023A	10
ISO-CHEK Cassettes,** † preloaded clear cassettes for isocyanates, requires Derivatizing Solution; see below	225-9022	12
	225-9022A	36

Accessories	Cat. No.	Qty.
Derivatizing Solution,** † 5 ml of MOPIP in toluene, in jars	225-9050	12
Jars, 37 mm with PTFE-lined cap	225-8377	36
Calibration Standard, ‡ MAMA-HDI, 1 gram	225-9053	ea
Calibration Standard, ‡ MAMA-IPDI, 1 gram	225-9054	ea
Calibration Standard, ‡ MAMA-MDI, 1 gram	225-9062	ea
Calibration Standard, ‡ MAMA-2,4-TDI and 2,6-TDI, 1 gram	225-9052	ea
Calibration Standard Set, ‡ HDI, MDI, IPDI, 2,4-TDI, 2,6-TDI, 1 gram each	225-9055	set
Packaging Kit, materials for shipping 10 packages of 10 samplers and jars	225-9059	ea

* Limited shelf-life † Hazmat shipping charges for air shipments only, ground shipments exempt

‡ Limited shelf-life, storage below 39.2 F (4 C) required; refrigerated shipping not required



Coated Filter Selection Guide

Chemical	Method	Preloaded Filter; Coating (in 37-mm cassettes)	Cat. No.*	Qty.
Acetic anhydride	OSHA 102	2 Glass Fiber filters; veratrylamine and di-n-octyl phthalate	225-9010 §	10
4-Aminobiphenyl	OSHA 93	2 Glass Fiber filters; sulfuric acid	225-9004	10
Aniline	NIOSH 2017 †	2 Glass Fiber filters; sulfuric acid	225-9004 †	10
Arsenic, volatile compounds	OSHA ID-1006	1 MCE filter and plastic pad; untreated and 1 cellulose support pad; sodium carbonate	225-9001	10
Benzidine	OSHA 65	2 Glass Fiber filters; sulfuric acid	225-9004	10
Bromine, chlorine	NIOSH 6011	1 25-mm PTFE pre-filter and polypropylene support; 1 25-mm specially cleaned silver membrane and polypropylene support (in 25-mm cassette)	225-9006	5
Crotonaldehyde	OSHA 81	2 Glass Fiber filters; 2,4-dinitrophenylhydrazine and phosphoric acid	225-9019 §	10
o-Dianisidine	OSHA 71	2 Glass Fiber filters; sulfuric acid	225-9004	10
3,3'-Dichlorobenzidine	OSHA 65	2 Glass Fiber filters; sulfuric acid	225-9004	10
Diisocyanates (HDI; 2,6-TDI; 2,4-TDI)	ASTM D5836 Δ OSHA 42	1 Glass Fiber filter and cellulose support; 1-(2-pyridyl)piperazine	225-9013 §† 225-9002 §	10 10
Diphenylamine	OSHA 78	2 Glass Fiber filters; sulfuric acid	225-9004	10
Fluorides	OSHA ID-110 NIOSH 7902 ASTM D4765	1 MCE filter and plastic pad; untreated and 1 cellulose support pad; sodium carbonate	225-9001 #	10
Fluorides, particulate	NIOSH 7906	2 Nitrocellulose filters; 1 coated with sodium carbonate, 1 uncoated	225-9031	10
Glutaraldehyde	OSHA 64	2 Glass Fiber filters; 2,4-dinitrophenylhydrazine and phosphoric acid	225-9003 §	10
Glyoxal	For IFV	1 25-mm Glass Fiber filters; 2,4-dinitrophenylhydrazine (filters only, in jar)	225-9036 §	10
Hydrazine	OSHA 108	2 Glass Fiber filters; sulfuric acid	225-9012	10
Hydrofluoric acid	NIOSH 7906	2 Nitrocellulose filters; 1 coated with sodium carbonate, 1 uncoated	225-9031	10
Hydrogen bromide	NIOSH 7907	2 Quartz filters (R-100); 1 coated with sodium carbonate, 1 uncoated	225-9032	10
Hydrogen chloride	NIOSH 7907	2 Quartz filters (R-100); 1 coated with sodium carbonate, 1 uncoated	225-9032	10
Hydrogen peroxide	OSHA 1019	2 25-mm Quartz filters (R-100); titanium oxysulfate hydrate (in 25-mm cassette)	225-9030	10
Isocyanates	ASTM Methods	1 PTFE filter; 1 Glass Fiber filter impregnated with MAMA (ISO-CHEK Sampling System, see p. 68)	225-9022 ‡ 225-9022A ‡	12 36
Isocyanates (HDI; 2,6-TDI; 2,4-TDI)	ASTM D5836 Δ OSHA 42	1 Glass Fiber filter and cellulose support; 1-(2-pyridyl)piperazine	225-9013 §† 225-9002 §	10 10
Isocyanates (HDI, MDI, TDI, IPDI, HDI-BT, HDI-IC)	OR-OSHA 1010	1 13-mm Glass Fiber filter; MAMA (in 13-mm Swinnex holder) (also requires impinger)	225-9029 §	5
Isocyanates, organic	MDHS 25/4 (UK)	1 25-mm A/E Glass Fiber filter; methoxyphenyl piperazine (filters only, in jar)	Special order §	ea
n-Isopropylaniline	OSHA 78	2 Glass Fiber filters; sulfuric acid	225-9004	10
Maleic anhydride	OSHA 86	2 Glass Fiber filters; veratrylamine	225-9021 §	10
Maleic anhydride	For IFV	1 25-mm Glass Fiber filter; veratrylamine (filters only, in jar)	225-9028 §	10
Mercaptans (methyl-, ethyl-, n-butyl-, phenyl-)	NIOSH 2542 OSHA 26	1 Glass Fiber filter; mercuric acetate	225-9007 §	10
4,4'-Methylene bis (2-chloroaniline) (MOCA)	OSHA 71	2 Glass Fiber filters; sulfuric acid	225-9004	10
4,4'-Methylene bis (phenyl isocyanate) (MDI)	OSHA 47	1 Glass Fiber filter and cellulose support; 1-(2-pyridyl)piperazine	225-9013 §† 225-9002 §	10 10
4,4'-Methylenedianiline	OSHA 57 NIOSH 5029	2 Glass Fiber filters; sulfuric acid	225-9004	10
1-Naphthylamine, 2-naphthylamine	OSHA 93	2 Glass Fiber filters; sulfuric acid	225-9004	10
Nitric acid	NIOSH 7907	2 Quartz filters (R-100); 1 coated with sodium carbonate, 1 uncoated	225-9032	10
Nitrobenzene	NIOSH 2017 †	2 Glass Fiber filters; sulfuric acid	225-9004 †	10
Ozone	OSHA ID-214	2 Glass Fiber filters; nitrite-impregnated	225-9014 §	10
Peracetic acid (PAA)	OSHA PV2321	1 25-mm Quartz filter (R-100); titanium oxysulfate hydrate (in 25-mm cassette)	225-9037 •	10
Phenylenediamine (o-, m-, p-)	OSHA 87	2 Glass Fiber filters; sulfuric acid	225-9004	10
Phosphine	OSHA 1003	1 Glass Fiber filter; 1 polyester filter coated with mercuric chloride	225-9018 †§	10
Phosphoric acid	NIOSH 7908	1 Quartz filter (Tissuquartz)	225-9033	10
Phthalic anhydride	OSHA 90	2 Glass Fiber filters; veratrylamine	225-9034 §	10
Sulfur dioxide	NIOSH 6004 (modified)	1 MCE pre-filter and support/1 cellulose filter and support; sodium carbonate	225-9005	10
Sulfuric acid	NIOSH 7908	1 Quartz filter (Tissuquartz)	225-9033	10
2,4-Toluenediamine	OSHA 65	2 Glass Fiber filters; sulfuric acid	225-9004	10
2,6-Toluenediamine	OSHA 65	2 Glass Fiber filters; sulfuric acid	225-9004	10
o-Tolidine	OSHA 71	2 Glass Fiber filters; sulfuric acid	225-9004	10
Toluene-2,4-diisocyanate and toluene-2,6-diisocyanate	For IFV	1 25-mm Glass Fiber filter; 1-(2-pyridyl)piperazine (filters only, in jar)	225-9035 §	10
o-Toluidine	NIOSH 2017 †	2 Glass Fiber filters; sulfuric acid	225-9004 †	10
Toluidine (o-, m-, p-)	OSHA 73	2 Glass Fiber filters; sulfuric acid	225-9004	10
Trimellitic anhydride	OSHA 98	2 Glass Fiber filters; veratrylamine and di-n-octyl phthalate	225-9010 §	10
Valeraldehyde	OSHA 85	3 Glass Fiber filters; 2,4-dinitrophenylhydrazine and phosphoric acid	225-9020 §	10
m-Xylenediamine (m-XDA, p-XDA)	OSHA 105	2 Glass Fiber filters; sulfuric acid	225-9004	10

* Coated filters have a limited shelf-life.

† Custom order due to very limited shelf-life

Δ ASTM D5836 and D5932 for 2,4-TDI, 2,6-TDI only

§ Storage below 39.2 F (4 C) required

‡ Also requires Sorbent Tube Cat. No. 226-15, see page 48

Collects both vapor and aerosol phases of fluorides

• Requires 22-ml threaded midjet impinger and sorbent-containing trap. See method and p. 70 for more information.

‡ Limited shelf-life, storage below 39.2 F (4 C) required; refrigerated shipping not required. Requires Cat. No. 225-9050; see p. 68.

Impingers

Glass

TECH TIPS

- ▶ Use a trap with impingers to prevent impinger liquid from being drawn into the sample pump. Solid sorbent may be added to a trap when using a volatile collection liquid to protect the pump from vapors. See options below.



Glass Trap Cat. No. 225-22



Plastic Trap Cat. No. 225-22-01



For Sample Pumps
see pages 12-19 and 22-23

Glass Midget Impingers Collection of Airborne Hazards into Liquids

SKC Pyrex® glass midget impingers feature graduations that are accurate to within ± 0.5 ml per increment. Serial numbers on both sections of each impinger assist with sample identification and proper part matching. SKC offers four types of glass midget impingers for your applications.

Standard Midget Impinger (25 ml) contains a precisely placed standard nozzle to ensure proper collection.

Special Midget Impinger with Fritted Nozzle (25 ml) increases contact between the air sample and collection liquid. Many NIOSH and OSHA procedures call for this impinger.

Spill-resistant Midget Impinger with Standard Nozzle (25 ml) features an outlet side arm that extends midway down the impinger with capacity for all liquid in the impinger.

Threaded Midget Impinger (22 ml) features a threaded top for use in train with Coated Filter Cat. No. 225-9037 and Impinger Trap Cat. No. 225-22-01 as specified in OSHA Method PV2321 for peracetic acid. See the method for more information.



Standard nozzle

Fritted nozzle

Glass Impinger Holders

Impingers and traps may be mounted in a holder directly on a sample pump for area sampling or placed in a holster that clips near a worker's breathing zone.



Impinger in personal holster



Impinger in single holder on AirChek 52 Sample Pump



Impinger and trap in double holder on AirChek TOUCH Sample Pump

Glass Midget Impinger	Cat. No.	Qty.
Standard Midget , 25 ml, standard nozzle	225-36-1	ea
Special Midget , 25 ml, fritted nozzle, 170 to 220-micron frit	225-36-2	ea
Spill-resistant Midget , 25 ml, standard nozzle	225-36-4	ea
Spill-resistant Midget , 25 ml, fritted nozzle, 170 to 220-micron frit	225-36-5	ea
Threaded Midget Impinger , 22 ml, 20-mm thread, standard nozzle	225-0024	ea
Glass Midget Impinger Accessories		
Trap for Midget Impingers , glass trap for area sampling, can be used with or without sorbent, see above left photo	225-22	ea
In-line Plastic Traps with sorbent to remove vapors, see photo at left	225-22-01	3
Replacement Trap Sorbent , 200 grams, to remove vapors, for use in Cat. Nos. 225-22 and 225-22-01	225-22-02	ea
Holster ,* polyester, with a clip for attaching to clothing, shown above	225-20	ea
Holders ,* for attaching to air sample pump		
Single ,* stainless steel, for 1 impinger or 1 trap, shown above, for use with AirChek 52/Sidekick or Universal pumps	225-20-01	ea
Double ,* stainless steel, for 2 impingers or impinger and trap, for use with AirChek 52/Sidekick or Universal pumps	225-20-02	ea
Double ,* stainless steel, for 2 impingers or impinger and trap, shown above, for use with AirChek TOUCH, Essential, and Connect pumps	225-20-03	ea

* Not suitable for PFA impingers

PFA Midget Impingers

Unbreakable Alternative for Collection into Liquids

Savillex semi-opaque single-piece PFA impingers are nearly unbreakable and feature a threaded lid for secure sampling. With a 60-ml reservoir, these PFA impingers allow for a greater volume of liquid to be used when needed. SKC offers PFA impingers in two different port configurations. PFA tube bends are available for connecting impingers. All PFA impingers include ferrule nuts to provide a leak-tight seal.

60-ml PFA Impinger with molded transfer cap

features a vertical port and a side port for horizontal connections.



60-ml PFA Impinger with port transfer cap

includes two vertical ports for close assembly of a sampling train.



ABOUT

Perfluoroalkoxy alkane

Perfluoroalkoxy alkane (PFA, a fluoropolymer) material is desirable for its inertness to virtually all industrial chemicals and solvents, excellent heat resistance, and use in cryogenic applications. Impingers made of PFA are nearly unbreakable, making them ideal for industrial hygiene applications.

PFA Impinger Holders

Impingers and traps may be mounted in a holder directly on a sample pump for area sampling or placed in a holster that clips near a worker's breathing zone.



Impinger in personal holster



Impinger in single holder on AirChek TOUCH Sample Pump



Impinger in single holder on AirChek 52 Sample Pump



*For Sample Pumps
see pages 12-19 and 22-23*

PFA Midget Impinger	Cat. No.	Qty.
Impinger with 1-piece Molded Transfer Cap, 60-ml capacity, with a 1/4-inch vertical port and a 1/4-inch side port for horizontal connections; includes ferrule nuts	225-0020	ea
Impinger with Port Transfer Cap, 60-ml capacity, with 2 vertical 1/4-inch ports for close assembly of sampling train; includes ferrule nuts	225-0021	ea
PFA Midget Impinger Accessories		
Single Holder for PFA Impinger, [†] stainless steel, attaches to sample pump for AirChek 52/Sidekick or Universal pumps, <i>shown above</i>	225-0026	ea
for AirChek TOUCH, Essential, and Connect pumps, <i>shown above</i>	225-20-04	ea
Holster for PFA Impinger, [†] polyester, with a clip for attaching to clothing, <i>shown above</i>	225-0027	ea
In-line Plastic Traps with sorbent to remove vapors, <i>shown at right</i>	225-22-01	3
Replacement Trap Sorbent, 200 grams, to remove vapors, <i>for use in Cat. Nos. 225-22 and 225-22-01</i>	225-22-02	ea
180-degree PFA Tube Bend, 1/4-inch diameter x 8-inch length, used to connect 2 PFA impingers, <i>for use with Cat. No. 225-0021 only</i>	225-0022	ea
90-degree PFA Tube Bend, 1/4-inch diameter x 6-inch length, used to connect 2 PFA impingers, <i>for use with Cat. No. 225-0021 only</i>	225-0023	ea

[†] Not suitable for glass impingers



Plastic Trap Cat. No. 225-22-01

Gastec Color Detection

Piston Pump

TECH TIPS

- ▶ To ensure optimum accuracy, check all detector tube hand pumps for leaks on a regular basis.



GV700 One-hand Pump Operation

The GV700 One-hand Adapter threads onto the GV110 pump to provide convenient one-hand pump operation. The tube holder mounts onto the adapter. The adapter features a slide valve that opens and closes at the push of a button. Closing the valve prevents airflow into the pump and allows the user to pull back the pump handle without taking a sample. After an open tube has been inserted into the tube holder, the sample is taken by opening the valve with another push of the button. The adapter can be left in the open position to allow normal use of the pump. It's simple, accurate, and reliable just like the GV110 pump. See below right for ordering information.



For Gastec Passive Color Dosimeter Tubes see page 95

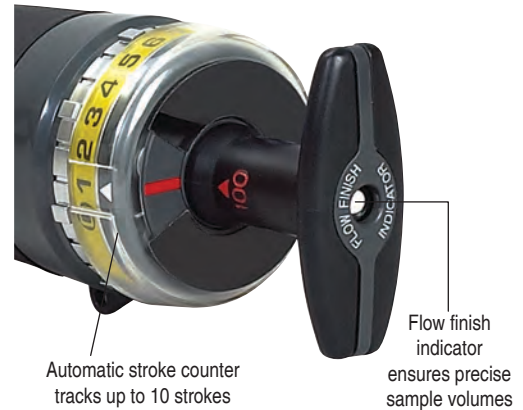
The GV110 Piston Pump

A Single Stroke of Genius for Sampling with Detector Tubes

- ▶ Built-in stroke counter tracks up to 10 strokes
- ▶ Handle lockable in full-stroke position to draw 100 ml of air or half-stroke position to draw 50 ml of air
- ▶ Flow finish indicator ensures precise sample volumes
- ▶ Contoured shape and soft elastomer-covered body for a secure, comfortable grip
- ▶ Weighs only 9.4 ounces (0.27 kg)
- ▶ Integral tube tip breaker and tip storage bin
- ▶ Simple, always ready, and intrinsically safe
- ▶ Large Gastec Detector Tube inventory available immediately



The Gastec GV110 precision piston pump offers simple, accurate syringe-like technology for gas and vapor measurements. Designed for use with Gastec grab sample detector tubes, one complete stroke draws a 100-ml air sample. A flow finish indicator shows completion of full or half strokes, while the built-in stroke counter eliminates the risk of miscounting. An integral tube tip breaker and tip storage bin add convenience. The GV110 pump and several boxes of tubes can be transported easily in the semi-rigid carry case with adjustable case strap that can be worn over the shoulder or secured to a belt.



Automatic stroke counter tracks up to 10 strokes

Flow finish indicator ensures precise sample volumes

Description	Cat. No.	Qty.
GV110 Deluxe Pump Kit includes GV110 Piston Pump with stroke counter, semi-rigid carry case with strap, lubricant, and 3 tube holder O-rings	810-GV110	ea
Accessories		
Lubricant	810-1002	ea
Shoulder Bag Carry Case	810-815	ea
GV700 One-hand Adapter, see above left for more information	810-GV700	ea

Grab Sample Tubes for GV110 Piston Pump

• TECH TIPS •

- ▶ Detector tubes are factory calibrated for a specific flow dynamic provided by a system's pump. Always use detector tubes with the pump specified by the manufacturer. Interchanging brands of pumps and tubes can significantly reduce accuracy.
- ▶ Gastec grab sample detector tubes can be used at temperatures from 32 to 104 F (0 to 40 C). For higher temperature applications, see the Hot Probe at skcinc.com.



Compressed Breathing Air Measurement System

Simply, quickly, and simultaneously measure four kinds of harmful contaminants (CO, CO₂, water vapor, and oil mist) contained in compressed breathing air (cylinder or compressor). No electricity or power source needed!

CG1 System includes measuring device, 4 rubber shrouds, 4 Gastec Airtec Tubes (Cat. Nos. 810-1A, 810-2A, 810-6A, and 810-109AD), stopwatch, tube tip breaker/holder, deep socket, and plastic carry case

Cat No. 810-CG1

Gas or Vapor to be measured	Measuring Range (ppm)	Cat. No.	Tests
Acetaldehyde	5 - 750	810-92*	10
Acetaldehyde	2.5 - 100	810-92M*	10
Acetaldehyde	1 - 20	810-92L*	10
Acetic acid	1 - 100	810-81	10
Acetic acid	0.125 - 25	810-81L*	10
Acetic anhydride	0.6 - 15	810-81	10
Acetic anhydride	0.15 - 6	810-81L*	10
Acetone	0.05 - 2%	810-151	10
Acetone	50 - 12,000	810-151L*	10
Acetone cyanohydrin	2.5 - 60	810-12L	10
Acetonitrile	3 - 180	810-52	10
Acetylene	0.05 - 4%	810-171	10
Acetylene	0.075 - 3.6%	810-103	9
Acetylene	32.5 - 1040	810-172	10
Acetylene dichloride (see 1,2-dichloroethylene)			
Acid gases	1 - 80	810-80	10
Acrolein	3.3 - 800	810-93	10
Acrylic acid	2 - 50	810-81	10
Acrylic acid	0.45 - 18	810-81L*	10
Acrylonitrile	2 - 360	810-191	5
Acrylonitrile	0.1 - 18	810-191L	5
Acrylonitrile	600 - 14400	810-102L	10
Aliphatic hydrocarbons	6 - 3000	810-140	10
Allyl amine	8.5 - 170	810-180	10
Allyl amine	0.4 - 8	810-180L	10
Allyl isothiocyanate	5 - 200	810-149	10
Allyl chloride	0.1 - 3.4%	810-101L	10
Allyl chloride	3.2 - 48	810-131L	5
Amines	5 - 100	810-180	10
Amines	0.5 - 10	810-180L	10
2-Aminoethanol (see ethanalamine)			
Ammonia	0.2 - 32%	810-3H	10
Ammonia	0.05 - 3.52%	810-3HM	10
Ammonia	10 - 1000	810-3M	10
Ammonia	2.5 - 200	810-3LA	10
Ammonia	0.5 - 78	810-3L	10
Ammonia	1.5 - 30	810-180	10
Amyl acetate	10 - 200	810-147	10
Aniline	1.25 - 60	810-181	10
Arsine	0.04 - 10	810-19LA	10
Aromatic hydrocarbons	0.4 - 200	810-120	10
Benzaldehyde	4 - 92	810-91L	10
Benzene	2 - 312	810-121S	5
Benzene	2.5 - 120	810-121	10
Benzene	1 - 100	810-121SL	5
Benzene	0.1 - 65	810-121L	5
Benzene	0.2 - 66	810-121SP	5
Benzene	0.03 - 0.6%	810-171	10
Benzyl bromide	10 - 100	810-136L	5
Benzyl chloride	1.6 - 20	810-132L	10
Boron trichloride	2.25 - 54	810-12L	10
Bromine	0.05 - 0.8	810-8LA	10
Bromochloromethane (see chlorobromomethane)			
Bromoform	1 - 50	810-136L	5

Gas or Vapor to be measured	Measuring Range (ppm)	Cat. No.	Tests
1,3-Butadiene	50 - 800	810-174	10
1,3-Butadiene	2.5 - 100	810-174L	10
1,3-Butadiene	0.5 - 5	810-174LL*	5
Butane	25 - 1400	810-104	10
Butane	0.035 - 1.68%	810-103	9
1-Butanol	10 - 150	810-114	10
2-Butanol	5 - 150	810-115	10
2-Butanone (see methyl ethyl ketone (MEK))			
Butyl acetate	0.05 - 0.8%	810-142	10
Butyl acetate	10 - 300	810-142L	10
tert-Butyl alcohol	500 - 12,000	810-102L	10
Butyl acrylate	7 - 210	810-142L	10
Butylamine	8 - 160	810-180	10
Butylamine	0.55 - 11	810-180L	10
tert-Butylamine	5.5 - 110	810-180	10
n-Butyl bromide	24 - 360	810-136H	5
n-Butyl bromide	10 - 100	810-136L	5
n-Butyl bromide	1 - 43.2	810-136LA	5
Butyl mercaptan	0.16 - 12.8	810-70L	10
tert-Butyl mercaptan	2.5 - 150 mg/m ³	810-75	10
tert-Butyl mercaptan	1.25 - 250 mg/m ³	810-75N	10
tert-Butyl mercaptan	0.5 - 30 mg/m ³	810-75L*	10
tert-Butyl mercaptan	0.5 - 39 mg/m ³	810-75LN*	10
tert-Butyl mercaptan	1 - 15 mg/m ³	810-77*	5
tert-Butyl mercaptan	0.1 - 8	810-70L	10
Butyric acid	0.325 - 13	810-81L	10
Butyronitrile	6 - 180	810-191L	5
Carbon dioxide	2.5 - 40%	810-2HH	10
Carbon dioxide	0.5 - 20%	810-2H	10
Carbon dioxide	0.13 - 6%	810-2L	10
Carbon dioxide	300 - 5000	810-2LL	10
Carbon dioxide	100 - 4000	810-2LC	10
Carbon disulfide	20 - 4000	810-13M	5
Carbon disulfide	0.63 - 100	810-13	5
Carbon disulfide	0.1 - 8.1	810-13L	5
Carbon monoxide	1 - 50%	810-1HH	10
Carbon monoxide	0.1 - 10%	810-1H	10
Carbon monoxide	0.05 - 4%	810-1M	10
Carbon monoxide	25 - 2000	810-1LM	10
Carbon monoxide	2.5 - 2000	810-1L	10
Carbon monoxide	8 - 1000	810-1LA	10
Carbon monoxide	5 - 600	810-1LK	10
Carbon monoxide	5 - 100	810-1LKC	5
Carbon monoxide	5 - 50	810-1LL	10
Carbon monoxide	1 - 30	810-1LC	10
Carbon tetrachloride	0.5 - 60	810-134*Δ	5
Carbon tetrachloride	0.25 - 11	810-134L*Δ	5
Carbonyl chloride (see phosgene)			
Carbonyl sulfide	5 - 200	810-21*	5
Carbonyl sulfide	2 - 125	810-21LA*	5
Chlorine	0.25 - 10%	810-8HH	10
Chlorine	25 - 1000	810-8H	10
Chlorine	0.1 - 16	810-8LA	10
Chlorine	0.025 - 2	810-8LL*Δ	10
Chlorine	0.7 - 14	810-80	10

* Store tubes at 33 to 40 F (> 0 to 4.4 C)

Δ One-year shelf-life

Gastec Color Detection

Tube Selection Guide

Grab Sample Tubes for GV110 Piston Pump

Gas or Vapor to be measured	Measuring Range (ppm)	Cat. No.	Tests
Chlorine dioxide	0.1 - 10	810-23M	10
Chlorine dioxide	0.025 - 1.2	810-23L* Δ	10
Chlorine dioxide	45 - 450	810-8H	10
Chlorine dioxide	0.3 - 4.8	810-8LA	10
Chlorobenzene	2 - 500	810-126	10
Chlorobenzene	0.5 - 43	810-126L*	10
Chlorobromomethane	22 - 110	810-135	5
Chlorobromomethane	18 - 270	810-136H	5
Chlorobromomethane	11 - 110	810-136L	5
Chlorobromomethane	0.7 - 12.6	810-136LA	5
Chlorocyclohexane	50 - 1200	810-102L	10
Chlorodifluoromethane (R22)	0.1 - 2.4%	810-51H ‡	5
Chlorodifluoromethane (R22)	25 - 1000	810-51 ‡	5
Chlorodifluoromethane (R22)	2.5 - 135	810-51L ‡	5
1-Chloro-2,3-epoxy propane (see epichlorohydrin)			
2-Chloroethanol (see ethylene chlorohydrin)			
Chloroethylene (see vinyl chloride)			
Chloroform	4 - 400	810-137	5
Chloroform	0.5 - 30	810-137LA* Δ	5
Chloroform	0.3 - 4.5	810-137LL* Δ	5
Chloropicrin	2.5 - 60	810-134	5
Chloropicrin	0.28 - 5.5	810-134L	5
Chloropicrin	0.045 - 22	810-233 Δ	5
2-Chloro-1,1,1,2-tetrafluoroethane (R124)	45 - 1800	810-51‡	5
m-Cresol	1 - 25	810-61*	10
o-Cresol	0.35 - 67.5	810-61*	10
p-Cresol	1 - 25	810-61*	10
Cumene	2 - 100	810-122L	10
Cyclohexane	0.015 - 1.2%	810-102H	10
Cyclohexane	60 - 1440	810-102L	10
Cyclohexanol	5 - 100	810-118	10
Cyclohexanone	2 - 72	810-154*	10
Cyclohexanone	10 - 470	810-91L	10
Cyclohexene	0.05 - 0.8%	810-151	10
Cyclohexylamine	7 - 140	810-180	10
Cyclohexylamine	0.5 - 10	810-180L	10
Cymene	5.6 - 224	810-141L	10
n-Decane	200 - 6000	810-105	10
Diacetone alcohol	2.5 - 100	810-154	10
Diacetyl	25 - 1500	810-92	10
1,2-Diaminoethane (see ethylenediamine)			
Diborane	0.02 - 5	810-22	10
1,1-Dibromoethane	7 - 70	810-136L	5
1,2-Dibromoethane (see ethylene dibromide)			
Dibromomethane	5 - 50	810-136L	5
Di-n-butylamine	5 - 100	810-180	10
Di-n-butylamine	0.4 - 8	810-180L	10
m-Dichlorobenzene	2.5 - 300	810-127	10
o-Dichlorobenzene	2.5 - 300	810-127	10
p-Dichlorobenzene	2.5 - 300	810-127	10

* Store tubes at 33 to 40 F (> 0 to 4.4 C)
 Δ One-year shelf-life

Gas or Vapor to be measured	Measuring Range (ppm)	Cat. No.	Tests
Dichlorodifluoromethane (R12)	325 - 7800	810-51H‡	5
Dichlorodifluoromethane (R12)	11 - 440	810-51‡	5
Dichlorodifluoromethane (R12)	1.8 - 97.2	810-51L‡	5
1,1-Dichloroethane	90 - 450	810-135	5
1,2-Dichloroethane	1 - 39	810-232	5
1,1-Dichloroethylene (see vinylidene chloride)			
1,2-Dichloroethylene	5 - 250	810-139*	10
1,2-Dichloroethylene	80 - 800	810-132HA	10
1,2-Dichloroethylene	0.375 - 6	810-132LL	10
1,1-Dichloro-1-fluoroethane (R141b)	10 - 1000	810-51‡	5
1,1-Dichloro-1-fluoroethane (R141b)	1.1 - 22	810-51L‡	5
Dichloromethane (see methylene chloride)			
Dichloropentafluoropropane (R225)	20 - 800	810-51‡	5
Dichloropentafluoropropane (R225)	1.4 - 28	810-51L‡	5
1,2-Dichloropropane (see propylene dichloride)			
1,3-Dichloropropene	45 - 450	810-132HA	10
1,3-Dichloropropene	0.5 - 10	810-131LA	5
1,2-Dichloro-1,1,2,2-tetrafluoroethane (R114)	475 - 11400	810-51H‡	5
1,2-Dichloro-1,1,2,2-tetrafluoroethane (R114)	20 - 800	810-51‡	5
1,2-Dichloro-1,1,2,2-tetrafluoroethane (R114)	1.8 - 97.2	810-51L‡	5
2,2-Dichloro-1,1,1-trifluoroethane (R123)	14 - 1600	810-51‡	5
2,2-Dichloro-1,1,1-trifluoroethane (R123)	1.4 - 28	810-51L‡	5
Dichlorvos	0.11 - 1.8	810-132LL	10
Diethylamine	5.5 - 110	810-180	10
Diethylamine	0.45 - 9	810-180L	10
Diethylaminoethanol	0.6 - 12	810-180L	10
Diethyl benzene	2 - 150	810-122L	10
Diethylenetriamine	0.95 - 19	810-180L	10
Diethylethanolamine	6 - 120	810-180	10
Diethyl ether (see ethyl ether)			
Diisobutylene	45 - 540	810-121	10
Diisobutyl ketone	0.2 - 1%	810-102L	10
Diisobutyl ketone	0.58 - 29	810-91L	10
Diisopropylamine	5 - 100	810-180	10
Diisopropylamine	0.3 - 6	810-180L	10
Diisopropyl benzene	10 - 400	810-141L	10
N,N-Dimethylacetamide	1.5 - 240	810-184	10
Dimethylamine	1.2 - 19.2%	810-3H	10
Dimethylamine	5.5 - 110	810-180	10
Dimethylamine	0.45 - 9	810-180L	10
2-Dimethylaminoethanol	0.65 - 13	810-180L	10

‡ Pyrotec tube requires Pyrotec Pyrolyzer Cat. No. 810-840; see page 79.



For Gastec Passive
Color Dosimeter Tubes
see page 95

Grab Sample Tubes for GV110 Piston Pump

Gas or Vapor to be measured	Measuring Range (ppm)	Cat. No.	Tests
Dimethylaminopropylamine	8 - 160	810-180	10
Dimethylaminopropylamine	0.6 - 12	810-180L	10
N,N-Dimethylaniline	2.5 - 30	810-181	10
Dimethylbenzene (see xylene)			
Dimethyl disulfide	0.3 - 6	810-53	5
Dimethylethanolamine	6.5 - 130	810-180	10
N,N-Dimethylethylamine	4 - 80	810-180	10
N,N-Dimethylethylamine	0.3 - 6	810-180L	10
N,N-Dimethyl formamide	0.8 - 90	810-183	10
2,6-Dimethyl-4-heptanone (see diisobutyl ketone)			
Dimethylhydrazine	0.1 - 2	810-185	10
Dimethyl sulfide	0.15 - 10	810-53‡	5
Dimethyl sulfide	1 - 15 mg/m ³	810-77	5
1,4-Dioxane	25 - 140	810-159	10
1,4-Dioxane	0.1 - 6%	810-163	10
Dipropylamine	4 - 80	810-180	10
Dipropylamine	0.35 - 7	810-180L	10
Divinyl benzene	1 - 15	810-124L	10
Divinyl methoxysilane	6.5 - 25	810-113L	10
Enflurane (2-chloro-1,1,2-trifluoroethyl difluoromethyl ether)			
Enflurane (2-chloro-1,1,2-trifluoroethyl difluoromethyl ether)	100 - 1230	810-51‡	5
Enflurane (2-chloro-1,1,2-trifluoroethyl difluoromethyl ether)			
Enflurane (2-chloro-1,1,2-trifluoroethyl difluoromethyl ether)	25 - 145	810-51L‡	5
Epichlorohydrin	1.2 - 120	810-163L	5
1,2-Epoxypropane (see propylene oxide)			
Ethanethiol (see ethyl mercaptan)			
Ethanol	0.01 - 7.5%	810-112	10
Ethanol	50 - 2000	810-112L	10
Ethyl alcohol (see ethanol)			
Ethanolamine	1.95 - 39	810-180L	10
Ethyl acetate	0.1 - 1.5%	810-141	10
Ethyl acetate	20 - 800	810-141L	10
Ethyl acrylate	8 - 320	810-141L	10
Ethylamine	5 - 100	810-180	10
Ethylamine	0.45 - 9	810-180L	10
Ethyl benzene	11 - 330	810-122	10
Ethyl benzene	1 - 70	810-122L	10
p-Ethyl benzylchloride	2.5 - 50	810-131LA	5
Ethyl bromide	2.5 - 200	810-136L	5
Ethyl chloroformate	7 - 140	810-131LA	5
Ethyl chloride	15 - 150	810-138	5
Ethylene	25 - 1680	810-172	10
Ethylene	0.2 - 100	810-172L	10
Ethylene	0.35 - 16.8%	810-103	9
Ethylene	0.1 - 2%	810-171	10
Ethylene chlorohydrin	80 - 200	810-111L	10
Ethylenediamine	14 - 280	810-180	10
Ethylenediamine	0.9 - 18	810-180L	10
Ethylene dibromide	14 - 210	810-136H	5
Ethylene dibromide	8 - 80	810-136L	5
Ethylene dichloride	1 - 39	810-232	5
Ethylene dichloride	400 - 2000	810-135	5

* Store tubes at 33 to 40 F (> 0 to 4.4 C)

Δ One-year shelf-life

Gas or Vapor to be measured	Measuring Range (ppm)	Cat. No.	Tests
Ethylene dichloride	104 - 1040	810-135L	5
Ethylene glycol	10 - 100 mg/m ³	810-165L*Δ	5
Ethylene glycol monobutyl ether	200 - 1000	810-113L	10
Ethylene glycol monobutyl ether	60 - 400	810-113LL	10
Ethylene glycol monoethyl ether	110 - 1000	810-113L	10
Ethylene glycol monoethyl ether	46 - 460	810-113LL	10
Ethylene glycol monomethyl ether	75 - 760	810-113L	10
Ethylene glycol monomethyl ether	44 - 440	810-113LL	10
Ethylene glycol monomethyl ether acetate (see 2-methoxyethyl acetate)			
Ethylene oxide	0.05 - 3%	810-163	10
Ethylene oxide	0.4 - 550	810-163L*Δ	5
Ethylene oxide	0.1 - 10	810-163LL*Δ	5
Ethyl ether	0.04 - 1%	810-161	10
Ethyl ether	10 - 1200	810-161L	10
Ethylidene chloride (see 1,1-dichloroethane)			
Ethyl mercaptan	0.5 - 120	810-72	10
Ethyl mercaptan	0.2 - 75	810-72L	10
Ethyl mercaptan	0.15 - 57.5	810-72LN	10
Ethyl mercaptan	0.5 - 120	810-70	10
Ethyl mercaptan	0.1 - 8	810-70L	10
Ethyl mercaptan	100 - 3800	810-71H	10
N-Ethyl morpholine	5 - 100	810-180	10
N-Ethyl morpholine	0.3 - 6	810-180L	10
Fluorine	0.5 - 50	810-17	10
Fluorotrichloromethane (see trichlorofluoromethane [R11])			
Formaldehyde	8 - 6400	810-91M*	10
Formaldehyde	2 - 100	810-91	5
Formaldehyde	0.1 - 40	810-91L*Δ	10
Formaldehyde	0.05 - 1	810-91LL*Δ	10
Formic acid	5.2 - 130	810-81	10
Formic acid	0.5 - 20	810-81L	10
Furfural	2 - 30	810-154	10
Gasoline (petrol)	0.015 - 1.2%	810-101	10
Gasoline (petrol)	30 - 2000	810-101L	10
Gasoline (petrol)	0.1 - 2%	810-1M	10
Halothane (2-bromo-2-chloro-1,1,1-trifluoroethane)			
Halothane (2-bromo-2-chloro-1,1,1-trifluoroethane)	800 - 6400	810-51H‡	5
Halothane (2-bromo-2-chloro-1,1,1-trifluoroethane)			
Halothane (2-bromo-2-chloro-1,1,1-trifluoroethane)	240 - 960	810-51‡	5
Halothane (2-bromo-2-chloro-1,1,1-trifluoroethane)			
Halothane (2-bromo-2-chloro-1,1,1-trifluoroethane)	3 - 60	810-51L‡	5
Heptane	0.015 - 1.2%	810-101	10
Heptane	30 - 2000	810-101L	10
Heptane	0.035 - 1.68%	810-103	9
Heptane	90 - 2700	810-105	10
Hexamethylenediamine	1.55 - 31	810-180L	10
Hexane	0.015 - 1.2%	810-102H	10

‡ Pyrotec tube requires Pyrotec Pyrolyzer Cat. No. 810-840; see page 79.

TECH TIPS

► Use detector tubes for screening and field surveys. Use validated methods for compliance sampling.

► For detector tube reading:

- When the end of the color change layer is flat, read the value at the end of the layer.
- When the end of the color change layer is slanted, read the value in the middle of the slant.
- When the demarcation of the color change layer is pale, read the value in the middle between the dark layer end and pale layer end.

► To aid reading results:

- Hold the tube against a light background.
- Compare the tube against an unused tube from the same box.



Gastec Color Detection

Tube Selection Guide

Grab Sample Tubes for GV110 Piston Pump

Gas or Vapor to be measured	Measuring Range (ppm)	Cat. No.	Tests
Hexane	4 - 1200	810-102L	10
Hexane	0.025 - 1.2%	810-103	9
Hexane	80 - 2400	810-105	10
Hexone (see methyl isobutyl ketone)			
2-Hexyl alcohol	60 - 2400	810-141L	10
Hexylamine	9 - 180	810-180	10
Hexylamine	0.65 - 13	810-180L	10
Hydrazine	0.05 - 2	810-185	10
Hydrocarbons (higher class)	100 - 3000	810-105	10
Hydrocarbons (lower class)	0.05 - 2.4%	810-103	9
Hydrogen	0.5 - 2%	810-30	10
Hydrogen bromide	0.8 - 16	810-15L	10
Hydrogen chloride	50 - 5000	810-14R	10
Hydrogen chloride	10 - 1000	810-14M	10
Hydrogen chloride	0.2 - 76	810-14L	10
Hydrogen chloride	8 - 160	810-80	10
Hydrogen chloride	1.5 - 30%	810-8HH	10
Hydrogen cyanide	0.05 - 1.6%	810-12H	10
Hydrogen cyanide	17 - 2400	810-12M	10
Hydrogen cyanide	0.5 - 150	810-12L	10
Hydrogen cyanide	0.2 - 10	810-12LL	10
Hydrogen fluoride	0.25 - 100	810-17	10
Hydrogen fluoride	0.09 - 72	810-17L	10
Hydrogen fluoride	0.05 - 24	810-17LL	10
Hydrogen peroxide	0.5 - 10	810-32	10
Hydrogen sulfide	1 - 40%	810-4HT	10
Hydrogen sulfide	0.25 - 20%	810-4HP	10
Hydrogen sulfide	0.1 - 4%	810-4HH	10
Hydrogen sulfide	10 - 4000	810-4H	10
Hydrogen sulfide	25 - 1600	810-4HM	10
Hydrogen sulfide	12.5 - 500	810-4M	10
Hydrogen sulfide	1 - 240	810-4L	10
Hydrogen sulfide	0.25 - 120	810-4LL	10
Hydrogen sulfide	1 - 40	810-4LK	10
Hydrogen sulfide	0.5 - 12	810-4LB	10
Hydrogen sulfide	0.05 - 4	810-4LT*	10
Hydrogen sulfide	SO ₂ : 0.25 - 20 H ₂ S: 1.25 - 120	810-45S	5
Hydrogen sulfide + Sulfur dioxide (total quantification)	0.02 - 8%	810-45H	10
4-Hydroxy-4-methyl-2-pentanone (see diacetone alcohol)			
Iodine	0.2 - 12	810-9L	10
Iodine	0.12 - 2.4	810-80	10
Isoamyl acetate	10 - 200	810-148	10
Isoamyl alcohol	5 - 300	810-117	10
Isobutane	0.035 - 1.68%	810-103	9
Isobutane	55 - 3080	810-104	10
Isobutene	0.07 - 2.2%	810-101L	10
Isobutyl acetate	10 - 300	810-144	10
Isobutyl acrylate	2.6 - 78	810-142L	10
Isobutyl alcohol	4 - 150	810-116	10
Isooctane	0.027 - 0.54%	810-101	10
Isopentane	0.045 - 2.16%	810-103	9
Isopentyl acetate (see isoamyl acetate)			

Gas or Vapor to be measured	Measuring Range (ppm)	Cat. No.	Tests
Isopentyl alcohol (see isoamyl alcohol)			
Isophorone	2 - 30	810-154	10
Isopropyl acetate	10 - 500	810-146	10
Isopropyl alcohol	0.02 - 5.0%	810-113	10
Isopropyl alcohol	20 - 800	810-113L	10
Isopropyl alcohol	20 - 460	810-113LL	10
Isopropyl amine	5.5 - 110	810-180	10
Isopropyl amine	0.45 - 9	810-180L	10
Isopropyl ether	18 - 720	810-141L	10
Isopropyl ether	0.018 - 0.45%	810-161	10
Isopropyl mercaptan	10 - 240	810-70	10
Isovaleric acid	2 - 50	810-81	10
Isovaleric acid	0.38 - 15	810-81L	10
LPG (liquefied petroleum gas)	0.02 - 0.8%	810-100A	10
Maleic anhydride	0.8 - 20	810-81	10
Mercaptans	0.5 - 120	810-70	10
Mercaptans	0.1 - 8	810-70LN	10
2-Mercaptoethanol	0.5 - 7.5	810-75L	10
Mercury vapor	0.05 - 13.2 mg/m ³	810-40	10
Mesityl oxide	27 - 1080	810-141L	10
Methacrylic acid	1.8 - 45	810-81	10
Methacrylic acid	0.35 - 14	810-81L	10
Methacrylonitrile	0.2 - 32	810-192	5
Methaldehyde	0.065 - 3.25	810-91L	10
Methanethiol (see methyl mercaptan)			
Methanol	0.002 - 4.5%	810-111	10
Methanol	20 - 1000	810-111L	10
Methanol	2 - 62	810-111LL	10
2-Methoxyethyl acetate	300 - 1300	810-113L	10
1-Methoxy-2-propanol	26 - 260	810-113LL	10
Methyl alcohol (see methanol)			
Methyl acrylate	8 - 320	810-141L	10
2-Methyl allyl chloride	2.8 - 55	810-131LA	5
Methylamine	5 - 100	810-180	10
Methylamine	0.5 - 10	810-180L	10
N-Methyl aniline	3.5 - 42	810-181	10
Methyl bromide	10 - 600	810-136H	5
Methyl bromide	2.5 - 200	810-136L	5
Methyl bromide	1 - 36	810-136LA	5
Methyl bromide	0.1 - 3	810-136LL	5
2-Methyl-3-butenitrile	0.4 - 12	810-191L	5
Methyl chloride	12 - 480	810-51‡	5
Methyl chloride	1.6 - 86.4	810-51L‡	5
Methyl chloroform (see 1,1,1-trichloroethane)			
Methyl chloroformate	58 - 1160	810-131LA	5
Methylcyclohexane	0.04 - 0.84%	810-102H	10
Methylcyclohexanol	5 - 100	810-119	10
Methylcyclohexanone	2 - 100	810-155*	10
Methylene chloride	20 - 500	810-138	5
Methylene chloride	4 - 150	810-138L	5
Methylene chloride	1 - 54	810-51L	5
Methylene iodide	0.22 - 22	810-121L	5
Methyl ether	0.034 - 0.85%	810-161	10
Methyl ethyl ketone	0.02 - 0.6%	810-152	10
Methyl ethyl ketone	10 - 384	810-152L*	5

* Store tubes at 33 to 40 F (> 0 to 4.4 C)

‡ Pyrotec tube requires Pyrotec Pyrolyzer Cat. No. 810-840; see page 79.



For the GV110
Piston Pump
see page 72

Grab Sample Tubes for GV110 Piston Pump

Gas or Vapor to be measured	Measuring Range (ppm)	Cat. No.	Tests
Methyl ethyl ketone	21 - 1680	810-151L	10
Methyl hydrazine	0.6 - 12	810-185	10
Methyl iodide	100 - 34,800	810-230H	10
Methyl iodide	0.5 - 108	810-230*	10
Methyl iodide	0.32 - 32	810-121L	5
Methyl isobutyl ketone	0.05 - 0.6%	810-153	10
Methyl isobutyl ketone	2.5 - 130	810-153L Δ	10
Methyl isothiocyanate	0.07 - 25	810-234L	5
Methyl isothiocyanate	50 - 400	810-141L	10
Methyl mercaptan	20 - 2700	810-71H	10
Methyl mercaptan	0.25 - 140	810-71	10
Methyl mercaptan	0.35 - 84	810-70	10
Methyl mercaptan	0.1 - 8	810-70L	10
Methyl methacrylate	10 - 500	810-149	10
N-Methyl morpholine	5 - 100	810-180	10
N-Methyl morpholine	0.3 - 6	810-180L	10
4-Methyl pyridine	0.38 - 10.5	810-182	10
N-Methyl pyrrolidone	13.5 - 270	810-180	10
Methyl tert-Butyl ether (MTBE)	10 - 660	810-166	10
Monochlorobenzene (see chlorobenzene)			
Morpholine	9 - 180	810-180	10
Morpholine	0.5 - 10	810-180L	10
Naphthalene	0.5 - 14	810-60	10
Nitric acid	0.1 - 40	810-15L	10
Nitric acid	5 - 100	810-80	10
Nitroethane	4 - 240	810-52	10
Nitrogen dioxide	0.5 - 125	810-9L	10
Nitrogen dioxide	2.5 - 200	810-10	5
Nitrogen dioxide	0.2 - 4	810-80	10
Nitrogen dioxide	0.5 - 300	810-52	10
Nitrogen oxide	2.5 - 200	810-10	5
Nitrogen oxides	50 - 2500	810-11HA	10
Nitrogen oxides	5 - 625	810-11S	10
Nitrogen oxides	0.03 - 15	810-11L	10
Nitromethane	5 - 300	810-52 \ddagger	10
1-Nitropropane	4.2 - 252	810-52 \ddagger	10
2-Nitropropane	3.7 - 222	810-52 \ddagger	10
Nitrotrichloromethane (see chloropicrin)			
Nonane	130 - 3900	810-105	10
Octane	0.036 - 0.72%	810-101	10
Octane	100 - 3000	810-105	10
Oxygen	3 - 24%	810-31B	5
Ozone	4 - 400	810-18M	10
Ozone	0.025 - 6	810-18L	10
Pentachloroethane	40 - 500	810-133L	10
1,3-Pentadiene	250 - 4000	810-174	10
1,3-Pentadiene	42.5 - 850	810-174L	10
Pentamethylenediamine	0.75 - 15	810-180L	10
n-Pentane	30 - 1680	810-104	10
n-Pentane	0.0375 - 1.8%	810-103	9
2-Pentenenitrile	0.5 - 15	810-193	5
2-Pentenenitrile	0.24 - 7.2	810-191L	5
3-Pentenenitrile	0.4 - 12	810-191L	5
Pentyl acetate (see amyl acetate)			

* Store tubes at 33 to 40 F (> 0 to 4.4 C)

Δ One-year shelf-life

Gas or Vapor to be measured	Measuring Range (ppm)	Cat. No.	Tests
Perchloroethylene (see tetrachloroethylene)			
Petroleum benzine	0.5 - 28 mg/L	810-106	10
Petroleum distillates (see gasoline [petrol])			
Petroleum ether	0.5 - 28 mg/L	810-106	10
Petroleum naphtha	0.5 - 28 mg/L	810-106	10
Phenol	0.4 - 187	810-60*	10
Phenylethylene (see styrene)			
Phosgene	0.05 - 20	810-16*	10
Phosphine	200 - 5500	810-7H	10
Phosphine	2.5 - 1000	810-7J	10
Phosphine	2.5 - 100	810-7	10
Phosphine	0.15 - 5	810-7L	10
Phosphine	0.05 - 9.8	810-7LA	10
a-Pinene	95 - 1140	810-121	10
Polytec I	Qualitative	810-107	10
Polytec II	Qualitative	810-25	10
Polytec III	Qualitative	810-26	10
Polytec IV	Qualitative	810-27	10
Polytec V	Qualitative	810-28	10
Propane	0.05 - 2.4%	810-103	9
Propionaldehyde	0.76 - 38	810-91L	10
Propionaldehyde	24 - 1880	810-151L	10
Propionic acid	3 - 75	810-81	10
Propionic acid	0.25 - 10	810-81L	10
Propionitrile	50 - 1200	810-191	5
Propyl acetate	20 - 500	810-145	10
Propyl alcohol	0.04 - 2.5%	810-113	10
Propyl alcohol	130 - 560	810-113L	10
Propyl alcohol	55 - 170	810-113LL	10
Propylamine	6 - 120	810-180	10
Propylamine	0.5 - 10	810-180L	10
n-Propyl bromide	1 - 18	810-136LA	5
Propylene	0.02 - 0.8%	810-100A	10
Propylene dichloride	40 - 800	810-131LA	5
Propylene imine	5.5 - 110	810-180	10
Propylene imine	0.35 - 7	810-180L	10
Propylene oxide	0.065 - 3.9%	810-163	10
Propylene oxide	1 - 100	810-163L	5
Propyl mercaptan	22.5 - 540	810-70	10
Propyl mercaptan	0.12 - 9.6	810-70L	10
Pyridine	0.2 - 35	810-182	10
Stoddard solvent	50 - 8000 mg/m ³	810-128	10
Styrene	10 - 1500	810-124	10
Styrene	2 - 100	810-124L	10
Styrene	0.15 - 2.3%	810-153	10
Sulfur dioxide	0.05 - 8%	810-5H	10
Sulfur dioxide	20 - 3600	810-5M	10
Sulfur dioxide	1.25 - 200	810-5L	10
Sulfur dioxide	0.5 - 60	810-5LA	10
Sulfur dioxide	0.1 - 25	810-5LC	10
Sulfur dioxide	0.05 - 10	810-5LB	10
Sulfur dioxide	SO ₂ : 0.25 - 20		
Sulfur dioxide	H ₂ S: 1.25 - 120	810-45S	5
Sulfur dioxide	1.5 - 30	810-80	10
Sulfur dioxide + hydrogen sulfide (total quantification)	0.02 - 8%	810-45H	10

\ddagger Pyrotec tube requires Pyrotec Pyrolyzer Cat. No. 810-840; see page 79.

TECH TIPS

- ▶ Gastec grab sample detector tubes can be used at temperatures from 32 to 104 F (0 to 40 C). For higher temperature applications, see the Hot Probe at skcinc.com.
- ▶ Do not enter closed spaces without confirming safety. When sampling in closed spaces, determine concentration remotely by using an extension hose or probe connected to the detector tube system. Visit skcinc.com.



Gastec Color Detection

Tube Selection Guide

Grab Sample Tubes for GV110 Piston Pump



For Gastec Passive
Color Dosimeter Tubes
see page 95

Gas or Vapor to be measured	Measuring Range (ppm)	Cat. No.	Tests
Sulfuric acid	0.5 - 5 mg/m ³	810-35	10
Sulfuryl fluoride	1 - 20	810-231†	4
1,1,2,2-Tetrabromoethane	0.92 - 9.2	810-135L	5
1,1,2,2-Tetrachloro-1,2-difluoroethane (R112)	125 - 3000	810-51H‡	5
1,1,2,2-Tetrachloro-1,2-difluoroethane (R112)	7 - 280	810-51‡	5
1,1,2,2-Tetrachloro-1,2-difluoroethane (R112)	1 - 54	810-51L‡	5
1,1,2,2-Tetrachloroethane	2 - 30	810-131L	5
Tetrachloroethylene	7 - 900	810-133HA*	10
Tetrachloroethylene	2 - 220	810-133M*	10
Tetrachloroethylene	1 - 75	810-133L*	10
Tetrachloroethylene	0.1 - 9	810-133LL*	10
Tetrachloroethylene	0.075 - 1.5%	810-132HH	10
Tetrachloromethane (see carbon tetrachloride)			
Tetrahydrofuran	20 - 800	810-159	10
Tetrahydrofuran	5 - 232	810-159L*Δ	10
Tetrahydrofuran	0.056 - 1.4%	810-161	10
Tetrahydrothiophene	10 - 200	810-76H	5
Tetrahydrothiophene	10 - 100 mg/m ³	810-76M	5
Tetrahydrothiophene	1 - 10	810-76	5
Tetramethylenediamine	8.5 - 170	810-180	10
Tetramethylenediamine	0.8 - 16	810-180L	10
Thionyl chloride	1.44 - 21.6	810-5LA	10
Toluene	5 - 690	810-122	10
Toluene	1 - 100	810-122L	10
Toluene	0.02 - 0.8%	810-161	10
Toluol (see toluene)			
o-Toluidine	5 - 60	810-181	10
Trichloroacetic acid	1 - 37.5	810-15L	10
1,2,4-Trichlorobenzene	0.65 - 13	810-131LA	5
1,1,1-Trichloroethane (methyl chloroform)	100 - 2000	810-135	5
1,1,1-Trichloroethane (methyl chloroform)	6 - 900	810-135L	5
1,1,1-Trichloroethane (methyl chloroform)	0.06 - 1.2%	810-171	10
1,1,2-Trichloroethane	220 - 750	810-135	5
Trichloroethylene	0.05 - 2.5%	810-132HH	10
Trichloroethylene	20 - 1300	810-132HA*	10
Trichloroethylene	2 - 250	810-132M*	10
Trichloroethylene	1 - 70	810-132L*	10
Trichloroethylene	0.125 - 8.8	810-132LL*	10
Trichlorofluoromethane (R11)	275 - 6600	810-51H‡	5
Trichlorofluoromethane (R11)	8 - 320	810-51‡	5
Trichlorofluoromethane (R11)	0.8 - 43.2	810-51L‡	5

Gas or Vapor to be measured	Measuring Range (ppm)	Cat. No.	Tests
Trichloromethane (see chloroform)			
Trichloronitromethane (see chloropicrin)			
1,2,3-Trichloropropane	36 - 360	810-135L	5
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	250 - 6000	810-51H‡	5
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	10 - 400	810-51‡	5
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	1 - 54	810-51L‡	5
1,1,1-Trichloro-2,2,2-trifluoroethane (R113a)	200 - 4800	810-51H‡	5
1,1,1-Trichloro-2,2,2-trifluoroethane (R113a)	10 - 400	810-51‡	5
1,1,1-Trichloro-2,2,2-trifluoroethane (R113a)	0.8 - 43.2	810-51L‡	5
Triethylamine	4.5 - 90	810-180	10
Triethylamine	0.3 - 6	810-180L	10
Trimethylamine	25 - 250	810-3M	10
Trimethylamine	3.5 - 70	810-180	10
Trimethylamine	0.25 - 5	810-180L	10
Trimethyl benzene	10 - 300	810-123	10
Valeric acid	0.38 - 15	810-81L	10
Vinyl acetate	5 - 250	810-143	5
Vinyl acetate	0.06 - 0.9%	810-141	10
Vinyl benzene (see styrene)			
Vinyl chloride	0.025 - 2%	810-131*	10
Vinyl chloride	0.25 - 54	810-131LA*	5
Vinyl chloride	0.1 - 6.9	810-131L*	5
Vinyl chloride	0.4 - 70	810-131LB*	10
Vinyl cyanide (see acrylonitrile)			
Vinylidene chloride	0.4 - 40.6	810-130L*	5
Vinyl trimethoxysilane	6.5 - 25	810-113L	10
Water vapor	0.5 - 32 mg/L	810-6	10
Water vapor	0.05 - 2 mg/L	810-6L	10
Water vapor	3 - 100 lb/MMCF	810-6LP	10
Water vapor	2 - 10 lb/MMCF	810-6LLP	10
Xylene	5 - 625	810-123	10
Xylene	2 - 200	810-123L	10
Xylene	0.1 - 1.2%	810-100A	10
Xylene	2 - 200	810-122L	10

* Store tubes at 33 to 40 F (> 0 to 4.4 C)

Δ One-year shelf-life

† Requires Pyrotec Pyrolyzer 860

‡ Pyrotec tube requires Pyrotec Pyrolyzer Cat. No. 810-840; see page 79.



Gastec Sampling Accessories



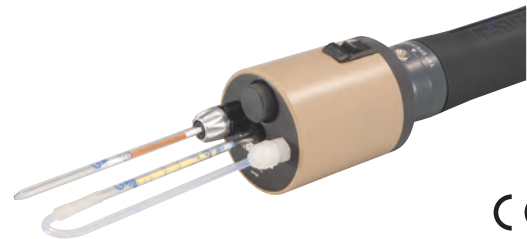
Extension Hoses

Hoses easily screw onto the GV110 Piston Pump to enable remote sampling and are constructed of synthetic rubber for rugged durability. Narrow 1/2-inch (1.3-cm) diameter easily fits into tight spaces.

The convenient hose design eliminates the need to factor in hose line air volume when sampling. Sample results can be read directly from the detector tube without additional calculations, charts, or tables.

Includes hose with pump adapter and instructions

- 5 meter..... Cat. No. 810-351A-5
- 10 meter..... Cat. No. 810-351A-10
- 30 meter..... Cat. No. 810-351A-30



Pyrotec Pyrolyzer

Gastec Pyrotec Pyrolyzer System for measuring chlorofluorocarbons is ready to use in seconds — no tools required. Its compact, lightweight design makes it easy to transport and use anytime, anywhere. The pyrolyzer's high-impact plastic construction is corrosion-resistant and rugged. Powered by AA disposable batteries

Includes Pyrotec Pyrolyzer, 4 AA batteries, tube protector, U tube, clamping nut, and instructions. For use with the Gastec GV110 Piston Pump

Cat. No. 810-840



Hot Probe

For sampling extremely hot gases, such as those found in flues and smokestacks. When used with the Gastec GV110 Piston Pump, the Hot Probe quickly cools gases as hot as 1112 F (600 C) to ambient temperature. The Hot Probe can be held in any direction and used in hard-to-reach spaces. Requires Hot Probe Holder Cat. No. 810-345A (below). *Photo above shows Hot Probe assembled in Holder, Hot Probe, and Hot Probe Holder.*

Includes Hot Probe with manual

Cat. No. 810-340

Hot Probe Holder

Use with Hot Probe Cat. No. 810-340 (above). Cannot be used with Twin-tubes and Oxygen Tube Cat. No. 810-31B.

Cat. No. 810-345A



Gastec Tube Handbook

Easy-to-read reference for the occupational health and safety professional

Cat. No. 810-GV100SH



Deluxe Tube Tip Breaker

Safely scores and breaks detector tube tips; holds approximately 260 tips

Cat. No. 810-722



SKC Passive Samplers

SKC provides a variety of passive samplers to meet OSHA and EPA methods, including those filled with charcoal, chemically coated sorbents, paper tape media, and specialty sorbents for thermal desorption. In addition to validations in agency methods, SKC research chemists have performed in-house validations of passive samplers to meet customer requirements in health care, hydraulic fracturing, general industry, landfills, ambient air, and more.





VOC 575

Industrial Hygiene Sampling of ppm-Level Organic Vapors

See pages 82-83



UME^X 100

Industrial Hygiene, Environmental, and Indoor Air Sampling of Formaldehyde/Other Aldehydes

See page 92



UME^X 200

Industrial Hygiene or Environmental Sampling of Nitrogen Dioxide/Sulfur Dioxide

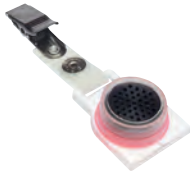
See page 93



UME^X 300

Industrial Hygiene and Environmental Ammonia Sampling

See page 93



Elemental Mercury Passive Sampler

Full-shift Industrial Hygiene Sampling and Extended Environmental Sampling

See page 94



Hydrogen Cyanide Passive Sampler

Accurate Determination of Personal Exposure

See page 94



ULTRA Thermal Desorption Passive Sampler

Environmental Sampling of Sub-ppb Level VOCs and SVOCs

See pages 96-97



Passive Thermal Desorption Tubes

Extended ppb-Level Environmental Sampling of Benzene, Other VOCs, and SVOCs

See pages 98-99

Passive Samplers

ppm-level Organic Vapors

VOC 575 Series Passive Samplers for ppm-Level Organic Vapors

Top Reasons to Choose VOC Chek® 575

Capacity

- More than twice the sorbent found in other samplers

Sample time

- More sorbent means longer sample times for 8 hours or more for most compounds

Cost

- More sorbent in a single layer and one sampler for an 8-hour shift means fewer analyses

STEL Sampling for some compounds

Defensible

- Documented performance in OSHA diffusive methods and SKC online research reports

Easy 3-step sampling!



Remove front cap.



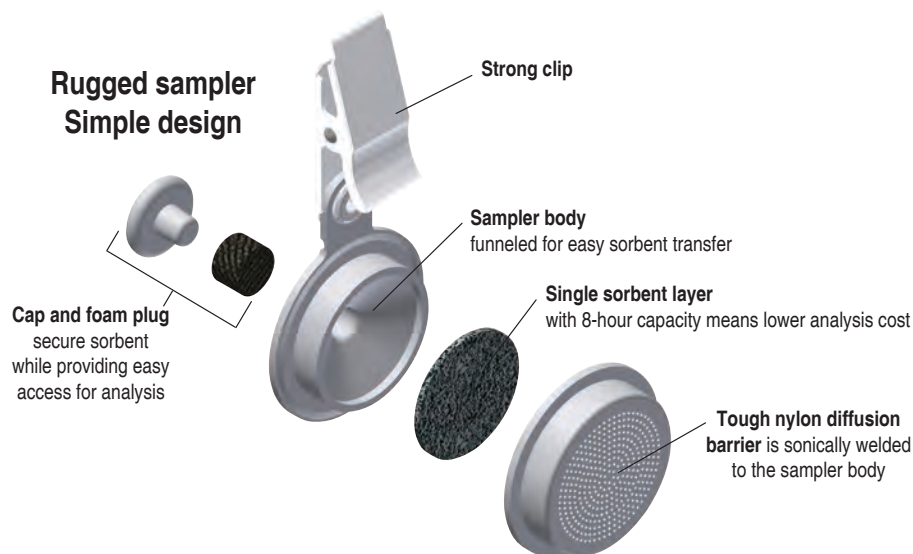
Clip in worker's breathing zone to sample.



Cap and record information.

Passive Samplers

ppm-level Organic Vapors



Attention Laboratory Customers!

Request your VOC Chek 575 Laboratory Reference Guide today!
E-mail skctech@skcinc.com.

See the VOC Chek 575 Series Selection Guide pages 85-91

OSHA Active/Passive Method Cross-reference

Compound	Active Method	Tube Cat. No.	Passive Method	Sampler Cat. No.
Benzene	OSHA 1005	226-01	OSHA 1005	575-002
Butyl acetates	OSHA 1009	226-01	OSHA 1009	575-002
MEK/MIBK	OSHA 16 (MEK)	226-10	OSHA 1004	575-002
Styrene	OSHA 89	226-73	OSHA 1014	575-006
Toluene	OSHA 111	226-81A or 226-01	OSHA 111	575-002
Trichloroethylene/tetrachloroethylene	OSHA 1001	226-01	OSHA 1001	575-002
Trimethylbenzene	OSHA 1020	226-01	OSHA 1020	575-002
Xylenes/ethylbenzene	OSHA 1002	226-01	OSHA 1002	575-002



SKC VOC Chek 575 Passive Samplers are listed in OSHA passive methods!

See table at left.

VOC Chek 575 Series Passive Samplers

Passive Sampler for:	Sorbent	Cat. No.	Qty.
Organic vapors	Anasorb CSC Charcoal, 350 mg	575-001†	5
		575-001A	25
Organic vapors	Anasorb 747, 500 mg	575-002†	5
		575-002A	25
Ethylene oxide	Anasorb 747 treated with hydrobromic acid, 500 mg	575-005†	5
		575-005A	25
Styrene	Anasorb 747 treated with tert-butyl catechol, 500 mg	575-006	5
Methanol	Anasorb 747, 500 mg, includes secondary diffusion barrier	575-007	5

† Larger quantity packages are available. Contact SKC.



Passive Samplers

Specialty Compounds

VOC 575 Series Passive Samplers

Targeted Compounds

- Validated sampling rates
- Lightweight, miniature – convenient for workers to wear in any industry
- Easy to use and analyze

Siloxanes: D4, D5, L2, L3

SKC validated method

VOC Chek 575 Passive Sampler

Cat. No. 575-001

See page 83 for ordering.

Anesthetic Gases

Halothane, isoflurane, desflurane,
enflurane, sevoflurane
Easy wear for health care workers

VOC Chek 575 Passive Sampler

Cat. No. 575-002

See page 83 for ordering.

Ethylene Oxide (EtO)

Hydrobromic acid-treated Anasorb 747 sorbent
Fully validated for 15-min and 8-hr sampling

VOC Chek 575 Passive Sampler

Cat. No. 575-005

See page 83 for ordering.

Methanol

Validated for 15-min and 8-hr sampling
Ideal for the fracking industry

VOC Chek 575 Passive Sampler

Cat. No. 575-007

See page 83 for ordering.



Visit the Knowledge Center at skcinc.com for passive (diffusive) sampler validation reports.

Siloxanes Are Health and Equipment Hazards

Currently, air quality standards do not regulate siloxanes, and no state or federal promulgated methods exist for sampling and analysis. However, several non-agency methods exist to address known health and equipment issues. Siloxanes, such as octamethylcyclotetrasiloxane (D4), pose health hazards. The Globally Harmonized System (GHS) has classified D4 as suspected to cause reproductive toxicity. Recently, the European Chemical Agency (ECHA) added D4, D5, and D6 to its Candidate List of Substances of Very High Concern (SVHC). These persistent, bioaccumulative, and toxic siloxanes are contained in cleaners, polishes, waxes, cosmetics, and personal care products. In landfills, siloxanes volatilize into biogas. When biogas is combusted, siloxanes convert to sand that then becomes deposited in combustion equipment and causes failure.

VOC Chk 575 Series Selection Guide ppm-Level Sampling of Organic Vapors

SKC VOC Chk 575 Series Passive Samplers are available with sorbents such as activated carbon and Anasorb 747 that strongly retain the collected compounds and require solvent extraction for laboratory analysis.

Use the following guide to locate target compounds and get an overview of critical sampling parameters along with the SKC catalog number of the recommended SKC VOC Chk 575 Series Passive Sampler.

Validation Levels

See the Validation Level column in this guide to determine the level of scientific testing. For online research reports, go to skcinc.com/reports and search on the compound name.

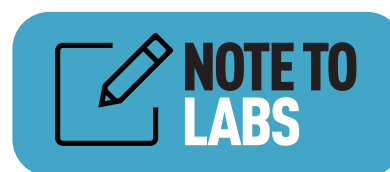
Full – Stringent NIOSH testing protocol has been applied to verify sampler desorption efficiency, sampling rate, capacity, and the effects of relative humidity, temperature, concentration, reverse diffusion, and storage on accuracy.

Bilevel – NIOSH testing protocol has been applied to the most volatile member of a related (homologous) series of chemicals; therefore, related less volatile series members require only partial validation (*described below*) to achieve the same level of sampling accuracy. See *Guid* et al. (<http://doi.org/cjzqd7>) or request a copy from SKC.

Partial – NIOSH testing protocol has been applied to verify sampling rate, desorption efficiency, and storage stability.

(Not validated) Calculated – This calculation of a sampling or uptake rate uses the diffusion coefficient of a specific chemical (D) and the cross-sectional area (A) and length (L) of the sampler's diffusion path (based on sampler geometry).

OSHA – Sampler has been validated by OSHA and is referenced in a published OSHA method.



SKC Universal Desorption Solvent

Save money with this single-solvent option. SKC Universal D-solvent (10% 1-propanol in CS₂) simplifies desorption of polar compounds as efficiently as a solvent mix, but without the expense. SKC continues to add more compounds to its Universal D-solvent list. Visit skcinc.com and look for the SKC Passive Sampling Guide. Search for the compound of interest.



Chemical Hazard	Validation Level	Research Report	OSHA PELs Δ		Sampling Rate (ml/min)	Sampling Time		Analytical Method	DE %		SKC VOC Chk 575 Cat. No.
			TWA (ppm)	CLG/STEL (ppm)		Min (min)	Max (hrs)		Std. \S	Universal	
Acetic acid	Calculated		10	15 #	19.6			GC-FID	99.2		575-001
Acetic acid	Calculated		10	15 #	19.6			GC-FID	107.9		575-002
Acetoin (acetyl methyl carbinol)	Calculated				14.9			GC-FID			575-001 or 575-002
Acetone	Full	1303	1000		15.2	60	8	GC-FID	90.2	105.0	575-002
Acetone	Full	1303	1000		20.3	15	4	GC-FID	90.2		575-002
Acetonitrile	Calculated		40		22.4			GC-FID	103		575-001
Acetonitrile	Calculated		40		22.4			GC-FID	108	99.4	575-002
Acetyl methyl carbinol (acetoin)	Calculated				14.9			GC-FID			575-001 or 575-002
Acrylonitrile	Full		2	10 C	20.4	15	8	GC-FID	81		575-002
Allyl alcohol	Calculated		2	4 #	18.4			GC-FID	64		575-001
Allyl alcohol	Calculated		2	4 #	18.4			GC-FID	76		575-002
Allyl chloride	Calculated		1	2 #	17.8			GC-FID	95.1		575-001
Allyl chloride	Calculated		1	2 #	17.8			GC-FID	101.3		575-002
n-Amyl acetate	Calculated		100		11.7			GC-FID	93.5		575-001
n-Amyl acetate	Calculated		100		11.7			GC-FID	96		575-002
sec-Amyl acetate (2-pentyl acetate)	Calculated		125		11.8			GC-FID			575-001
n-Amyl alcohol	Calculated				13.9			GC-FID	87.3		575-001
n-Amyl alcohol	Calculated				13.9			GC-FID	100.6		575-002
t-Amyl methyl ether (methyl tert-amyl ether)	Bilevel	1355			13.1	30	8	GC-FID	99		575-001
Benzene	Full	1312	1	5	16	15	8	GC-FID	93.5		575-001
Benzene	OSHA 1005		1	5	17.1	15	8	GC-FID	93.6	96	575-002
Benzotrifluoride (trifluoromethyl benzene; OXSOL 2000)	Bilevel		100 \diamond		13.3	15	8	GC-FID	106		575-001
Benzotrifluoride (trifluoromethyl benzene; OXSOL 2000)	Bilevel		100 \diamond		13.3	15	8	GC-FID	107		575-002
Benzyl acetate	Calculated		10		11.3			GC-FID	91.2		575-002
Benzyl chloride	Calculated		1	1 C	12.9			GC-FID	98.7		575-001
Benzyl chloride	Calculated		1	1 C	12.9			GC-FID	98.9		575-002

See page 244 for abbreviations.

VOC Chk 575 Passive Samplers

Selection Guide

Chemical Hazard	Validation Level	Research Report	OSHA PELs Δ		Sampling Rate (ml/min)	Sampling Time		Analytical Method	DE %		SKC VOC Chk 575 Cat. No.
			TWA (ppm)	CLGSTEL (ppm)		Min (min)	Max (hrs)		Std. §	Universal	
Bromobenzene	Calculated				13.8			GC-FID			575-001
Bromodichloromethane (dichlorobromomethane)	Calculated				16.1			GC-FID			575-001
Bromoethane (ethyl bromide)	Calculated		200	250 #	18.5			GC-FID			575-001
Bromoform	Calculated		0.5		15.2			GC-FID			575-001
Bromomethane (methyl bromide)	Calculated			20 C	22.1			GC-FID			575-001
1-Bromopropane (propyl bromide)	Full	1740	0.1		14.4	30	8	GC-FID	100		575-001
1-Bromopropane (propyl bromide)	Full	1740	0.1		14.7	30	8	GC-FID	107		575-002
n-Butane	Calculated				18.1			GC-FID			575-001
n-Butanol (n-butyl alcohol)	Calculated		100	50 #	15.5			GC-FID	94		575-001
n-Butanol (n-butyl alcohol)	Calculated		100	50 #	15.5			GC-FID	100	101.6	575-002
2-Butanol (sec-butyl alcohol)	Calculated		150	150 #	15.6			GC-FID	93		575-001
2-Butanol (sec-butyl alcohol)	Calculated		150	150 #	15.6			GC-FID	100	102.6	575-002
2-Butanone (methyl ethyl ketone, MEK)	Bilevel	1306	200		17.1	15	12	GC-FID	100		575-002
2-Butanone (methyl ethyl ketone, MEK)	OSHA 1004		200		16.88	15	8	GC-FID	92.3	96.4	575-002
2-Butoxyethanol (butyl CELLOSOLVE solvent)	Calculated		50		12			GC-FID	89.7	102	575-002
n-Butyl acetate	OSHA 1009		150	200 #	13.07	15	8	GC-FID	99.2		575-002
n-Butyl acetate	Partial	1894	150	200 #	12.3	30	8	GC-FID	90.4		575-001
n-Butyl acetate	Partial	1894	150	200 #	13.2	30	8	GC-FID	98.7		575-002
sec-Butyl acetate	Calculated		200		12.8			GC-FID	96.2		575-001
sec-Butyl acetate	Calculated		200		12.8			GC-FID	96.6		575-002
sec-Butyl acetate	OSHA 1009		200		12.74	15	8	GC-FID	98.9		575-002
t-Butyl acetate	Calculated		200		12.7			GC-FID	95.1		575-001
t-Butyl acetate	Calculated		200		12.7			GC-FID	94.8		575-002
t-Butyl acetate	OSHA 1009		200		13.09	15	8	GC-FID	98.9		575-002
Butyl acrylate	Bilevel		10 ‡		11.7	30	8	GC-FID	95		575-002
t-Butyl alcohol	Calculated		100	150	15.8			GC-FID	84	103	575-002
n-Butyl alcohol (1-butanol)	Calculated		100	50 #	15.5			GC-FID	94		575-001
n-Butyl alcohol (1-butanol)	Calculated		100	50 #	15.5			GC-FID	100	101.6	575-002
sec-Butyl alcohol (2-butanol)	Calculated		150	150 #	15.6			GC-FID	93		575-001
sec-Butyl alcohol (2-butanol)	Calculated		150	150 #	15.6			GC-FID	100	102.6	575-002
t-Butyl benzene	Calculated				11.3			GC-FID		102	575-002
Butyl CELLOSOLVE acetate (ethylene glycol monobutyl ether acetate)	Calculated		5		10.4			GC-FID			575-002
Butyl CELLOSOLVE solvent (2-butoxyethanol)	Calculated		50		12			GC-FID	89.7	102	575-002
t-Butyl ethyl ether (ethyl tert-butyl ether)	Bilevel	1356			13.1	15	8	GC-FID	101		575-001
n-Butyl glycidyl ether	Calculated		50	5.6 ‡	11.6			GC-FID	104		575-002
t-Butyl methyl ether (methyl t-butyl ether, MTBE)	Full	1352			13.6	8.5	8	GC-FID	97.4		575-001
p-tert-Butyl toluene	Bilevel		10		10.4	15	8	GC-FID	100		575-001
n-Butylbenzene	Calculated				11.23			GC-FID	103		575-002
sec-Butylbenzene	Calculated				11.3			GC-FID			575-002
gamma-Butyrolactone	Calculated				16.6			GC-FID	80.9		575-002
Camphor	Calculated		2 mg/m ³		10.8			GC-FID	94.2		575-001
Camphor	Calculated		2 mg/m ³		10.8			GC-FID	113		575-002
Carbolic acid (phenol)	Calculated		5	15.6 C	14.5			GC-FID			575-001 or 575-002
Carbon disulfide	Calculated		20	30	19.54			GC-FID			575-001
Carbon tetrachloride	Bilevel		10	25 C	14.1	30	8	GC-FID	98.3		575-001
2-CELLOSOLVE acetate (2-ethoxyethyl acetate)	Calculated		100		12.1			GC-FID	95.4		575-002
1-Chloro-2-methyl benzene (monochlorotoluene; OXSOL 10)	Bilevel		50 ‡		13	15	8	GC-FID	91.8		575-001
1-Chloro-2-methyl benzene (monochlorotoluene; OXSOL 10)	Bilevel		50 ‡		13	15	8	GC-FID	91		575-002
1-Chloro-4-(trifluoromethyl)benzene (parachlorobenzotrifluoride; OXSOL 100)	Bilevel		25 ◊		11.8	15	8	GC-FID	102		575-001
1-Chloro-4-(trifluoromethyl)benzene (parachlorobenzotrifluoride; OXSOL 100)	Bilevel		25 ◊		11.8	15	8	GC-FID	108		575-002
Chlorobenzene	Partial		75		14.41	15	8	GC-FID	93.3		575-001
Chlorobenzene	Partial	1838	75		14.41	15	8	GC-FID	87.6		575-002
Chlorobromomethane	Calculated		200		18.3			GC-FID	103		575-002
Chloroethane (ethyl chloride)	Calculated		1000		20.02			GC-FID			575-001
Chloroform	Bilevel		10	50 C	13	60	8	GC-FID	97.3		575-001
Chloromethane (methylchloride)	Calculated				24.6			GC-FID			575-001
o-Chlorostyrene	Bilevel	1374	50 ‡		9.8	15	8	GC-FID	75.2		575-002
4-Chlorotoluene	Calculated				12.4			GC-FID			575-001
Cumene (isopropyl benzene)	Bilevel		50		12.8	15	8	GC-FID	99.3		575-001
Cumene (isopropyl benzene)	Bilevel		50		12.8	15	8	GC-FID	106		575-002
Cyclohexane	Bilevel		300		15.6	15	8	GC-FID	105		575-001
Cyclohexane	Bilevel		300		15.6	15	8	GC-FID	109		575-002
Cyclohexanol	Calculated		50		13.5			GC-FID	98		575-001
Cyclohexanol	Calculated		50		13.5			GC-FID	105	89.6	575-002
Cyclohexanone	partial		50		16.41	15	8	GC-FID	100		575-002
Cyclohexene	Calculated		300		15.4			GC-FID	102		575-001
Cyclohexene	Calculated		300		15.4			GC-FID	106		575-002
Cyclopentane	Calculated				16.8			GC-FID			575-001
p-Cymene (4-isopropyltoluene)	Calculated				11.3			GC-FID			575-001

See page 244 for abbreviations.

VOC Chk 575 Passive Samplers

Selection Guide

Chemical Hazard	Validation Level	Research Report	OSHA PELs Δ		Sampling Rate (ml/min)	Sampling Time		Analytical Method	DE %		SKC VOC Chk 575 Cat. No.
			TWA (ppm)	CLG/STEL (ppm)		Min (min)	Max (hrs)		Std. $\%$	Universal	
Decamethylcyclopentasiloxane (D5)	Partial	1891	5 †		5.66	15	8	GC-FID	99.0		575-001
Decamethyltetrasiloxane	Calculated				7.36			GC-FID			575-001
n-Decane	Partial				12.2			GC-FID	103	102	575-002
1-Decanol (decyl alcohol)	Calculated				9.6			GC-FID	97.3		575-002
Decyl alcohol (1-decanol)	Calculated				9.6			GC-FID	97.3		575-002
Desflurane	Partial	1893		2	13.8	30	4	GC-FID	94.3		575-002
Diacetone alcohol	Calculated		50		12.4			GC-FID	92.9	97.7	575-002
1, 2-Dibromo-3-chloropropane	Calculated		1 ppb		12.6			GC-FID	101.3		575-002
Dibromochloromethane	Calculated				15.6			GC-FID			575-001
1,2-Dibromoethane (ethylene dibromide)	Calculated		20	30	15.3			GC-FID	92.3		575-001
1,2-Dibromoethane (ethylene dibromide)	Calculated		20	30	15.3			GC-FID	99.4		575-002
1, 6-Dibromohexane (hexamethylene dibromide)	Calculated				10.7			GC-FID			575-001
o-Dichlorobenzene (1,2-dichlorobenzene)	Partial			50 C	12.5	15	8	GC-FID	79.2		575-001
o-Dichlorobenzene (1,2-dichlorobenzene)	Partial	1875		50	12.5	15	8	GC-FID	77.1		575-002
m-Dichlorobenzene (1,3-dichlorobenzene)	Calculated				12.95			GC-FID	91.8		575-001
m-Dichlorobenzene (1,3-dichlorobenzene)	Calculated				12.95			GC-FID	92.7		575-002
p-Dichlorobenzene (1,4-dichlorobenzene)	Calculated		75		12.95			GC-FID	91.1		575-001
p-Dichlorobenzene (1,4-dichlorobenzene)	Calculated		75		12.95			GC-FID	94.7		575-002
1,3-Dichlorobenzene (m-dichlorobenzene)	Calculated				12.95			GC-FID	91.8		575-001
1,3-Dichlorobenzene (m-dichlorobenzene)	Calculated				12.95			GC-FID	92.7		575-002
1,2-Dichlorobenzene (o-dichlorobenzene)	Partial			50 C	12.5	15	8	GC-FID	79.2		575-001
1,2-Dichlorobenzene (o-dichlorobenzene)	Partial	1875		50 C	12.5	15	8	GC-FID	77.1		575-002
1,4-Dichlorobenzene (p-dichlorobenzene)	Calculated		75		12.95			GC-FID	91.1		575-001
1,4-Dichlorobenzene (p-dichlorobenzene)	Calculated		75		12.95			GC-FID	94.7		575-002
Dichlorobromomethane (bromodichloromethane)	Calculated				16.1			GC-FID			575-001
Dichlorodifluoromethane (Freon 12)	Calculated		1000		18.6			GC-FID			575-001
1,1-Dichloroethane	Calculated		100		16.85			GC-FID			575-001
1,2-Dichloroethane (ethylene dichloride)	Bilevel		50	100	14.2	60	8	GC-FID	95.8		575-001
1,2-Dichloroethane (1,2-dichloroethylene)	Full				14.8	15	8	GC-FID	97.1		575-001
1,1-Dichloroethene (vinylidene chloride)	Bilevel		1		12.3	60	8	GC-FID	95.2		575-001
Dichloroethyl ether	Calculated		5 ‡	15 C	12.5			GC-FID			575-001
1,2-Dichloroethylene (1,2-dichloroethene)	Full		200		14.8	15	8	GC-FID	97.1		575-001
1,2-Dichloroethylene (1,2-dichloroethene)	Full				14.8	15	8	GC-FID	97.1		575-001
Dichloromethane (methylene chloride)	Full	1323	25	125	14.7	60	8	GC-FID	96		575-001
1,2-Dichloropropane (propylene dichloride)	Bilevel		75		14.3	15	8	GC-FID	97.7		575-001
1,1-Dichloropropene	Calculated				15.6			GC-FID			575-001
cis-1,3-Dichloropropene	Partial	1886	1 ‡		13.6	15	8	GC-FID	101		575-002
trans-1,3-Dichloropropene	Partial	1886			14.4	15	8	GC-FID	99.4		575-002
1,2-Dichlorotetrafluoroethane (Freon 114)	Calculated		1000		15.3			GC-FID			575-001
Dicyclopentadiene	Calculated		5 ‡		11.8			GC-FID			575-001
Diesel	Calculated				11.2			GC-FID			575-001 or 575-002
Diethyl ether (ethyl ether)	Calculated		400		16.4			GC-FID			575-001
Diethyl ketone (3-pentanone)	Calculated		200 ‡		14.8			GC-FID	83.9		575-001
Diethyl ketone (3-pentanone)	Calculated		200 ‡		14.8			GC-FID	100.3		575-002
Diethylene glycol dimethyl ether (2-methoxyethyl ether)	Calculated				11.5			GC-FID			575-002
Diethylene glycol monobutyl ether	Calculated				9.97			GC-FID			575-002
Diethylene glycol monoethyl ether	Calculated				9.85			GC-FID			575-002
Diethylene glycol monoethyl ether acetate	Calculated				9.88			GC-FID			575-002
Diethylene glycol monomethyl ether (2-[2-methoxyethoxy] ethanol)	Calculated				11.3			GC-FID			575-002
Diisobutyl ketone (DIBK), (isovalerone)	Bilevel	1305	50		10.3	30	8	GC-FID	98.3		575-002
1,2-Dimethoxyethane (ethylene glycol dimethyl ether)	Calculated				14.7			GC-FID			575-001 or 575-002
Dimethoxymethane (methylal)	Calculated		1000		17.1			GC-FID			575-001
Dimethyl adipate	Calculated				10.73			GC-FID			575-001
Dimethyl disulfide	Calculated				15.4			GC-FID			575-001
2,5-Dimethyl hexane	Calculated				11.86			GC-FID			575-001
2,2-Dimethyl methane	Calculated				21.7			GC-FID			575-001
Dimethyl pentanedioate	Calculated				10.8			GC-FID			575-001
Dimethyl sulfide	Calculated				19			GC-FID			575-001
Dimethyl sulfoxide	Calculated				16.3			GC-FID			575-002
N,N-Dimethylaniline	Calculated		5		12			GC-FID			575-001
2,2-Dimethylbutane (neohexane)	Calculated				14.2			GC-FID			575-001
trans-1,2-Dimethylcyclohexane	Calculated				12.4			GC-FID	106.1		575-001
N,N-Dimethylformamide (DMF)	Calculated		10		16.4			GC-FID	87.2		575-002
2,3-Dimethylpentane	Calculated				12.8			GC-FID			575-001
1,4-Dioxane	Calculated		100		15.8			GC-FID	91.4		575-002
Diphenyl oxide (phenyl ether)	Calculated		1		10.4			GC-FID			575-001
Dipropyl ketone (4-heptanone)	Calculated		50 ‡		12.1			GC-FID	85.3		575-001
Dipropyl ketone (4-heptanone)	Calculated		50 ‡		12.1			GC-FID	112		575-002
Dipropylene glycol methyl ether	Calculated		100		10.8			GC-FID	84.3		575-002
Dodecamethylcyclohexasiloxane	Calculated				6.75			GC-FID			575-001
n-Dodecanol (lauryl alcohol)	Calculated				8.7			GC-FID	107.5		575-001
n-Dodecanol (lauryl alcohol)	Calculated				8.7			GC-FID	103	103.8	575-002

See page 244 for abbreviations.

VOC Chk 575 Passive Samplers

Selection Guide

Chemical Hazard	Validation Level	Research Report	OSHA PELs Δ		Sampling Rate (ml/min)	Sampling Time		Analytical Method	DE %		SKC VOC Chk 575 Cat. No.
			TWA (ppm)	CLGSTEL (ppm)		Min (min)	Max (hrs)		Std. §	Universal	
1-Dodecene	Calculated				9.29			GC-FID			575-001
1-Dodecyl alcohol (lauryl alcohol)	Calculated				8.7			GC-FID	107.5		575-001
1-Dodecyl alcohol (lauryl alcohol)	Calculated				8.7			GC-FID	103	103.8	575-002
Dodecyl methacrylate	Calculated				7.6			GC-FID			575-002
Enflurane (ethrane)	Partial	1893		2	13.8	30	4	GC-FID	101		575-002
Epichlorohydrin	Calculated		5		16.4			GC-FID	88.2		575-002
2,3-Epoxy-1-propanol (glycidol)	Calculated		50		17.8			GC-FID			575-002
2,3-Epoxypropyl methacrylate (glycidyl methacrylate)	Calculated				11.45			GC-FID			575-002
Ethanol (ethyl alcohol)	Partial	1876	1000		20.3	15	8	GC-FID	99	103	575-002
2-Ethoxyethanol	Calculated		200		14.4			GC-FID	100.8		575-001
2-Ethoxyethanol	Calculated		200		14.4			GC-FID	111.2	101	575-002
2-Ethoxyethyl acetate (2-CELLOSOLVE acetate)	Calculated		100		12.1			GC-FID	95.4		575-002
Ethane (enflurane)	Partial	1893		2	13.8	30	4	GC-FID	101		575-002
Ethyl acetate	Partial	1894	400		13.1	30	8	GC-FID	92.8		575-001
Ethyl acetate	Partial	1894	400		14.1	30	8	GC-FID	100	101	575-002
Ethyl acrylate	Bilevel		5		13.7	15	8	GC-FID	94.2		575-002
Ethyl alcohol (ethanol)	Partial	1876	1000		20.3	15	8	GC-FID	99	103	575-002
Ethyl benzene	Bilevel		100		12.9	15	6	GC-FID	100		575-001
Ethyl benzene	Bilevel		100		12.9	15	6	GC-FID	104		575-002
Ethyl benzene	OSHA 1002		100		13.83	15	8	GC-FID	99.1		575-002
Ethyl bromide (bromoethane)	Calculated		200	250 #	18.5			GC-FID			575-001
Ethyl butyl ketone (3-heptanone)	Calculated		50		12.2			GC-FID	87.9		575-001
Ethyl butyl ketone (3-heptanone)	Calculated		50		12.2			GC-FID	103.4		575-002
Ethyl chloride (chloroethane)	Calculated		1000		20.2			GC-FID			575-001
Ethyl cyanide	Calculated				18.61			GC-FID			575-001
Ethyl ether	Calculated		400		16.4			GC-FID			575-001
Ethyl formate	Calculated		100		17.8			GC-FID			575-001
2-Ethyl hexyl acetate	Calculated				9.8			GC-FID	99		575-002
Ethyl methacrylate	Full		100		13.1	15	8	GC-FID	84.7		575-001
Ethyl methacrylate	Full		100		13.1	15	8	GC-FID	104		575-002
Ethyl propionate	Calculated				14			GC-FID			575-001
Ethyl tert-butyl ether (tert-butyl ethyl ether)	Bilevel	1356			13.1	15	8	GC-FID	101		575-001
Ethylene dibromide (1,2-dibromoethane)	Calculated		20	30	15.3			GC-FID	92.3		575-001
Ethylene dibromide (1,2-dibromoethane)	Calculated		20	30	15.3			GC-FID	99.4		575-002
Ethylene dichloride (1,2-dichloroethane)	Bilevel		50	100 C	14.2	60	8	GC-FID	95.8		575-001
Ethylene glycol	Calculated			100mg/m ³ C	17.44			GC-FID			575-002
Ethylene glycol diethyl ether	Calculated				12.27			GC-FID			575-002
Ethylene glycol dimethyl ether (1,2-dimethoxyethane)	Calculated				14.7			GC-FID			575-001 or 575-002
Ethylene glycol monobutyl ether acetate (butyl CELLOSOLVE acetate)	Calculated		5		10.4			GC-FID			575-002
Ethylene glycol monohexyl ether	Calculated				10.5			GC-FID			575-001
Ethylene glycol monomethyl ether acetate (methyl CELLOSOLVE acetate)	Calculated		25		12.9			GC-FID	92.4		575-002
Ethylene oxide	Full	1543	1	5 EL	21.2	15	8	GC-ECD	102		575-005
2-Ethylhexanol	Calculated				10.93			GC-FID	93.7	109	575-002
2-Ethyltoluene	Calculated				12.1			GC-FID	106		575-002
3-Ethyltoluene	Calculated				12.1			GC-FID	101		575-002
4-Ethyltoluene	Calculated				12.1			GC-FID	91		575-002
Freon 11 (trichlorofluoromethane)	Calculated				16.65			GC-FID			575-001
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	Calculated		1000	1250 #	14.1			GC-FID			575-001
Freon 114 (1,2-dichlorotetrafluoroethane)	Calculated		1000		15.3			GC-FID			575-001
Freon 12 (dichlorodifluoromethane)	Calculated		1000		18.6			GC-FID			575-001
Gasoline	Calculated				13.84			GC-FID			575-001 or 575-002
Glutaric acid dimethyl ester	Calculated				11.5			GC-FID			575-002
Glycidol (2,3-epoxy-1-propanol)	Calculated		50		17.8			GC-FID			575-002
Glycidyl methacrylate (2,3-epoxypropyl methacrylate)	Calculated				11.45			GC-FID			575-002
Haloethane	Full	1893			14.1	15	8	GC-FID	99.9		575-002
n-Heptane	Bilevel		500		13.9	15	8	GC-FID	105		575-001
n-Heptane	Bilevel		500		13.9	15	8	GC-FID	108		575-002
4-Heptanone (dipropyl ketone)	Calculated		50 ‡		12.1			GC-FID	85.3		575-001
4-Heptanone (dipropyl ketone)	Calculated		50 ‡		12.1			GC-FID	112.2		575-002
3-Heptanone (ethyl butyl ketone)	Calculated		50		12.2			GC-FID	87.9		575-001
3-Heptanone (ethyl butyl ketone)	Calculated		50		12.2			GC-FID	103.4		575-002
2-Heptanone (methyl n-amyl ketone)	Calculated		100		12.2			GC-FID	99.8		575-002
1-Heptene	Calculated				13.1			GC-FID			575-001
Hexachlorobutadiene	Calculated		0.02 ‡		10.5			GC-FID			575-001
Hexachloroethane	Calculated		1		11.5			GC-FID			575-001
Hexadecane	Calculated				7.7			GC-FID			575-001
Hexamethyldisiloxane (L2)	Partial	1892	200 †		9.98	15	8	GC-FID	102.9		575-001
Hexamethylene dibromide (1,6-dibromohexane)	Calculated				10.7			GC-FID			575-001
n-Hexane	Bilevel		500		14.3	15	8	GC-FID	100		575-001
n-Hexane	Bilevel		500		14.3	15	8	GC-FID	112		575-002
Hexanol (hexyl alcohol)	Calculated				12.64			GC-FID	92.9	97	575-002

See page 244 for abbreviations.

VOC Chk 575 Passive Samplers

Selection Guide

Chemical Hazard	Validation Level	Research Report	OSHA PELs Δ		Sampling Rate (ml/min)	Sampling Time		Analytical Method	DE %		SKC VOC Chk 575 Cat. No.
			TWA (ppm)	CLG/STEL (ppm)		Min (min)	Max (hrs)		Std. §	Universal	
2-Hexanone (methyl butyl ketone MBK)	Partial	1873	100		14.3	15	8	GC-FID	104	97.8	575-002
2-Hexene	Calculated				14.5			GC-FID			575-001
Hexone (methyl isobutyl ketone [MIBK])	Bilevel	1304	100		13.5	30	8	GC-FID	94.6		575-002
Hexone (methyl isobutyl ketone [MIBK])	OSHA 1004		100		13.62	30	8	GC-FID	92.9	99.5	575-002
sec-Hexyl acetate	Calculated		50		11.1			GC-FID			575-002
Hexyl alcohol (hexanol)	Calculated				12.64			GC-FID	92.9	97	575-002
Hexylene	Calculated				14.5			GC-FID			575-001
Hexylene glycol	Calculated			25 C	11.81			GC-FID			575-002
Iodomethane (methyl iodide)	Calculated				18.7			GC-FID			575-001
Isoamyl acetate	Calculated		100		11.9			GC-FID	91.9		575-001
Isoamyl acetate	Calculated		100		11.9			GC-FID	108		575-002
Isoamyl alcohol	Calculated		100	125 #	13.9			GC-FID			575-002
Isobutyl acetate	Calculated		150		12.8			GC-FID	106		575-002
Isobutyl acetate	OSHA 1009		150		13.16	15	8	GC-FID	99.1		575-002
Isobutyl acrylate	Calculated				12.2			GC-FID			575-002
Isobutyl alcohol	Calculated		100		15.6			GC-FID			575-001
Isobutyl alcohol	Calculated		100		15.6			GC-FID	100.0	100	575-002
Isoflurane	Full	1893			13.2	15	8	GC-FID	96.0		575-002
Isooctyl alcohol	Calculated		50 ‡		10.9			GC-FID			575-002
Isopentane (2-methyl butane)	Calculated		1000	610 #	15.8			GC-FID			575-001
Isophorone	Partial		25		13.38	15	8	GC-FID		95	575-002
Isopropanol (isopropyl alcohol)	Partial	1839	400	500 #	18.42	15	8	GC-FID	103.5	102	575-002
Isopropyl acetate	Calculated		250		14.2			GC-FID	88.5		575-001
Isopropyl acetate	Calculated		250		14.2			GC-FID	101		575-002
Isopropyl alcohol (isopropanol)	Partial	1839	400	500 #	18.42	15	8	GC-FID	103.5	102	575-002
Isopropyl benzene (cumene)	Bilevel		50		12.8	15	8	GC-FID	99.3		575-001
Isopropyl benzene (cumene)	Bilevel		50		12.8	15	8	GC-FID	106		575-002
Isopropyl ether	Calculated		500		13.4			GC-FID			575-001
Isopropyl glycidyl ether	Calculated		50	50 #	12.8			GC-FID			575-001
4-Isopropyltoluene (p-cymene)	Calculated				11.3			GC-FID			575-001
Isovalerone (diisobutyl ketone [DIBK])	Bilevel	1305	50		10.3	30	8	GC-FID	98.3		575-002
Jet Fuel	Calculated				11.3			GC-FID			575-001
Kerosene	Calculated				11.03			GC-FID			575-001 or 575-002
Lauryl alcohol (1-dodecanol)	Calculated				8.7			GC-FID	107.5		575-001
Lauryl alcohol (1-dodecanol)	Calculated				8.7			GC-FID	103	103.8	575-002
Limonene	Calculated				11.1			GC-FID	102		575-002
Mesityl oxide	Calculated		25		13.7			GC-FID			575-001
Mesitylene (1,3,5-trimethylbenzene)	Calculated		25		12.1			GC-FID	93.6		575-001
Mesitylene (1,3,5-Trimethylbenzene)	Calculated		25		12.1			GC-FID	96		575-002
Mesitylene (1,3,5-trimethylbenzene)	OSHA 1020		25		12.1	15	8	GC-FID	101		575-002
Methanol (methyl alcohol)	Partial	1895	200	250	1.2	15	8	GC-FID	101	93.8	575-007
2-Methoxy-1-propyl acetate	Calculated				12.1			GC-FID			575-002
1-Methoxy-2-propanol (propylene glycol monomethyl ether)	Calculated		100 ‡	150 #	14.7			GC-FID	82.9		575-001
1-Methoxy-2-propanol (propylene glycol monomethyl ether)	Calculated		100 ‡	150 #	14.7			GC-FID	100	106	575-002
1-Methoxy-2-propyl acetate (propylene glycol monomethyl ether acetate)	Calculated				12.2			GC-FID	108		575-001
1-Methoxy-2-propyl acetate (propylene glycol monomethyl ether acetate)	Calculated				12.1			GC-FID	103	105	575-002
2-Methoxyethanol (methyl CELLOSOLVE)	Calculated		0.1		16.1			GC-FID	94.7		575-001
2-Methoxyethanol (methyl CELLOSOLVE)	Calculated		0.1		16.1			GC-FID	91.1	81.8	575-002
2-(2-Methoxyethoxy) ethanol (diethylene glycol monomethyl ether)	Calculated				11.3			GC-FID			575-002
2-Methoxyethyl ether (diethylene glycol dimethyl ether)	Calculated				11.5			GC-FID			575-002
Methoxyflurane	Calculated			2	13.3			GC-FID	95.7		575-002
Methyl acetate	Calculated		200	250 #	17.8			GC-FID			575-002
Methyl acrylate	Full		10		15.7	15	8	GC-FID	94.3		575-002
Methyl alcohol (methanol)	Partial	1895	200	250	1.2	15	8	GC-FID	101	93.8	575-007
Methyl amyl alcohol (methyl isobutyl carbinol)	Calculated		25		12.8			GC-FID			575-002
Methyl bromide (bromomethane)	Calculated			20C	22.1			GC-FID			575-002
2-Methyl butane (isopentane)	Calculated		1000	610 #	15.8			GC-FID			575-001
Methyl butyl ketone (MBK), (2-hexanone)	Partial	1873	100		14.3	15	8	GC-FID	104	97.8	575-002
Methyl CELLOSOLVE (2-methoxyethanol)	Calculated		0.1		16.1			GC-FID	94.7		575-001
Methyl CELLOSOLVE (2-methoxyethanol)	Calculated		0.1		16.1			GC-FID	91.1	81.8	575-002
Methyl CELLOSOLVE acetate (ethylene glycol monomethyl ether acetate)	Calculated		25		12.9			GC-FID	92.4		575-002
Methyl chloroform (1,1,1-trichloroethane)	Bilevel		350		14.1	15	8	GC-FID	99.9		575-001
Methyl cyclohexane	Bilevel		500		14.2	15	8	GC-FID	106		575-001
Methyl ethyl ketone (MEK), (2-butanone)	Bilevel	1306	200		17.1	15	12	GC-FID	100		575-002
Methyl ethyl ketone (MEK), (2-butanone)	OSHA 1004		200		16.88	15	8	GC-FID	92.3	96.4	575-002
Methyl formate	Calculated		100		20.58			GC-FID			575-001
Methyl iodide (iodomethane)	Calculated				18.7			GC-FID			575-001
Methyl isoamyl ketone	Calculated		50		12.3			GC-FID			575-002
Methyl isobutyl carbinol (methyl amyl alcohol)	Calculated		25		12.8			GC-FID			575-002

See page 244 for abbreviations.

VOC Chk 575 Passive Samplers

Selection Guide

Chemical Hazard	Validation Level	Research Report	OSHA PELs Δ		Sampling Rate (ml/min)	Sampling Time		Analytical Method	DE %		SKC VOC Chk 575 Cat. No.
			TWA (ppm)	CLG/STEL (ppm)		Min (min)	Max (hrs)		Std. §	Universal	
Methyl isobutyl ketone (MIBK), (hexone)	Bilevel	1304	100		13.5	30	8	GC-FID	94.6		575-002
Methyl isobutyl ketone (MIBK), (hexone)	OSHA 1004		100		13.62	30	8	GC-FID	92.9	99.5	575-002
Methyl isopropyl ketone	Calculated				14.8			GC-FID			575-002
Methyl isothiocyanate	Calculated				17.36			GC-FID			575-001
Methyl methacrylate (MMA)	Bilevel	1308	100		13.1	7.5	8	GC-FID	100.5		575-002
Methyl n-amyl ketone (2-heptanone)	Calculated		100		12.2			GC-FID	99.8		575-002
2-Methyl pentane	Calculated				14.1			GC-FID			575-001
Methyl propyl ketone (2-pentanone)	Calculated		200		14.8			GC-FID	92.6		575-002
3-Methyl pyrrolidinone	Calculated				13.28			GC-FID			575-002
Methyl styrene (vinyl toluene)	Calculated		100		12.3			GC-FID			575-001
Methyl t-butyl ether (MTBE)	Full	1352			13.6	8.5	8	GC-FID	97.4		575-001
Methyl tert-amyl ether (tert-amyl methyl ether)	Bilevel	1355			13.1	30	8	GC-FID	99		575-001
n-Methyl-2-pyrrolidinone	Calculated		51		13.97			GC-FID			575-001
5-Methyl-3-heptanone	Calculated		25		11.4			GC-FID	87.5		575-001
5-Methyl-3-heptanone	Calculated		25		11.4			GC-FID	110.7		575-002
Methylal (dimethoxymethane)	Calculated		1000		17.1			GC-FID			575-001
Methylchloride (chloromethane)	Calculated				24.6			GC-FID			575-002
1-Methylcyclohexanol	Full		100		12.4	15	8	GC-FID	94.7		575-001
1-Methylcyclohexanol	Full		100		12.4	15	8	GC-FID	108		575-002
Methylcyclopentane	Calculated				14.9			GC-FID			575-001
Methylene chloride (dichloromethane)	Full	1323	25	125	14.7	60	8	GC-FID	96		575-001
3-Methylhexane	Calculated				12.8			GC-FID			575-001
alpha-Methylstyrene	Bilevel	1359		100 C	12.6	15	12	GC-FID	95.7		575-002
Mineral spirits	Calculated		500		10.95			GC-FID			575-001
Monochlorotoluene (1-chloro-2-methylbenzene; OXSOL 10)	Bilevel		50 ‡		13.0	15	8	GC-FID	91.8		575-001
Monochlorotoluene (1-chloro-2-methylbenzene; OXSOL 10)	Bilevel		50 ‡		13.0	15	8	GC-FID	91		575-002
Neohexane (2,2-dimethylbutane)	Calculated				14.2			GC-FID			575-001
Nitrobenzene	Calculated				12.6			GC-FID			575-001
Nonane	Bilevel				10.6	15	8	GC-FID	103		575-001
Nonyl alcohol	Calculated				10.2			GC-FID	96.80		575-002
Octadecane	Calculated				7.1			GC-FID			575-001
Octamethylcyclotetrasiloxane (D4)	Partial	1890	10 ▼		6.32	15	8	GC-FID	97.2		575-001
Octamethyltrisiloxane (L3)	Partial	1902	200 †		8.47	15	8	GC-FID	98.3		575-001
n-Octane	Bilevel		500		12.7	15	8	GC-FID	106		575-001
n-Octane	Bilevel		500		12.7	15	8	GC-FID	110		575-002
Octanol (octyl alcohol)	Calculated				10.86			GC-FID			575-002
1-Octene	Calculated				11.99			GC-FID			575-001
Octyl alcohol (octanol)	Calculated				10.86			GC-FID			575-002
OXSOL 10 (monochlorotoluene [1-chloro-2-methyl benzene])	Bilevel		50 ‡		13	15	8	GC-FID	91.8		575-001
OXSOL 10 (monochlorotoluene [1-chloro-2-methyl benzene])	Bilevel		50 ‡		13	15	8	GC-FID	91		575-002
Parachlorobenzotrifluoride (1-chloro-4-[trifluoromethyl] benzene; OXSOL 100)	Bilevel		25 ◊		11.8	15	8	GC-FID	102		575-001
Parachlorobenzotrifluoride (1-chloro-4-[trifluoromethyl] benzene; OXSOL 100)	Bilevel		25 ◊		11.8	15	8	GC-FID	108		575-002
Pentadecane	Calculated				7.93			GC-FID			575-001
n-Pentane	Full	1311	1000		14.9	15	8	GC-FID	105.2		575-001
3-Pentanone (diethyl ketone)	Calculated		200 ‡		14.8			GC-FID	83.9		575-001
3-Pentanone (diethyl ketone)	Calculated		200 ‡		14.8			GC-FID	100.3		575-002
2-Pentanone (methyl propyl ketone)	Calculated		200		14.8			GC-FID	92.6		575-002
1-Pentene	Calculated				16.3			GC-FID			575-001
2-Pentyl acetate (sec-amyl acetate)	Calculated		125		11.8			GC-FID			575-001
Perchloroethylene (tetrachloroethylene)	Full	1686	100	200 C	13.1	7.5	12	GC-FID	100.8		575-001
Perchloroethylene (tetrachloroethylene)	OSHA 1001		100	200 C	13.06	15	8	GC-FID	95.4		575-002
Perfluoromethylcyclohexane	Partial				10.2			GC-FID	102		575-002
Phenol (carbolic acid)	Calculated		5	15.6 C	14.5			GC-FID			575-001 or 575-002
Phenyl ether (diphenyl oxide)	Calculated		1		10.4			GC-FID			575-001
Phenyl glycidyl ether	Calculated		10		11.6			GC-FID			575-001
4-Phenylcyclohexene	Calculated				11.53			GC-FID			575-001 or 575-002
alpha-Pinene	Partial	1840			11.3	15	8	GC-FID	108.6		575-002
Propane	Calculated		1000		21.73			GC-FID			575-001
n-Propanol (propyl alcohol)	Calculated		200		17.7			GC-FID	87.3		575-001
n-Propanol (propyl alcohol)	Calculated		200		17.7			GC-FID	97.8		575-002
Propionitrile	Calculated		6 ‡		18.61			GC-FID			575-001
n-Propyl acetate	Calculated		200		14.1			GC-FID	87.5		575-001
n-Propyl acetate	Calculated		200		14.1			GC-FID	101.1		575-002
Propyl alcohol (n-propanol)	Calculated		200		17.7			GC-FID	87.3		575-001
Propyl alcohol (n-propanol)	Calculated		200		17.7			GC-FID	97.8		575-002
Propyl bromide (1-bromopropane)	Full	1740	0.1		14.4	30	8	GC-FID	100		575-001
Propyl bromide (1-bromopropane)	Full	1740	0.1		14.7	30	8	GC-FID	107		575-002
n-Propylbenzene	Calculated				12.1			GC-FID	101		575-002
Propylene dichloride (1,2-dichloropropane)	Bilevel		75		14.3	15	8	GC-FID	97.7		575-001
Propylene glycol monomethyl ether (1-methoxy-2-propanol)	Calculated		100 ‡	150 #	14.7			GC-FID	82.9		575-001
Propylene glycol monomethyl ether (1-methoxy-2-propanol)	Calculated		100 ‡	150 #	14.7			GC-FID	100	106	575-002

See page 244 for abbreviations.

VOC Chk 575 Passive Samplers

Selection Guide

Chemical Hazard	Validation Level	Research Report	OSHA PELs Δ		Sampling Rate (ml/min)	Sampling Time		Analytical Method	DE %		SKC VOC Chk 575 Cat. No.
			TWA (ppm)	CLG/STEL (ppm)		Min (min)	Max (hrs)		Std. §	Universal	
Propylene glycol monomethyl ether acetate (1-methoxy-2-propyl acetate)	Calculated				12.2			GC-FID	108		575-001
Propylene glycol monomethyl ether acetate (1-methoxy-2-propyl acetate)	Calculated				12.1			GC-FID	103	105	575-002
Propylene oxide	Calculated		100		19.9			GC-FID	98		575-001
Propylene oxide	Calculated		100		19.9			GC-FID	99.7		575-002
Pyridine	Calculated		5		16.6			GC-FID	88.2	93.8	575-002
Sevoflurane	Partial	1893		2	12.8	30	4	GC-FID	100		575-002
Siloxane D4 (octamethylcyclotetrasiloxane-D4)	Partial	1890	10 ▼		6.32	15	8	GC-FID	97.2		575-001
Siloxane D5 (decamethylcyclopentasiloxane-D5)	Partial	1891	5 †		5.66	15	8	GC-FID	99.0		575-001
Siloxane L2 (hexamethyldisiloxane-L2)	Partial	1892	200 †		9.98	15	8	GC-FID	102.9		575-001
Siloxane L3 (octamethyltrisiloxane-L3)	Partial	1902	200 †		8.47	15	8	GC-FID	98.3		575-001
Styrene	OSHA 1014		100	200 C	13.55	15	8	GC-FID	96.7		575-006
1,1,1,2-Tetrachloroethane	Calculated				13.63			GC-FID	98.3		575-002
1,1,2,2-Tetrachloroethane	Bilevel		5		11.8	480 ∞	8	GC-FID	64.4*		575-001
Tetrachloroethylene (perchloroethylene)	Full	1686	100	200 C	13.1	7.5	12	GC-FID	100.8		575-001
Tetrachloroethylene (perchloroethylene)	OSHA 1001		100	200 C	13.06	15	8	GC-FID	95.4		575-002
Tetradecane	Calculated				8.3			GC-FID			575-001
Tetrahydrofuran	Partial	1841	200		17.7	15	8	GC-FID	100.6		575-002
1,2,3,4-Tetramethylbenzene	Calculated				11.1			GC-FID			575-001
1,2,3,5-Tetramethylbenzene	Calculated				10.8			GC-FID			575-001
1,2,4,5-Tetramethylbenzene	Calculated				11.2			GC-FID	86.6		575-002
Toluene	Bilevel		200	300 C	14.5	15	8	GC-FID	97.9		575-001
Toluene	OSHA 111		200	300 C	14.89	10	8	GC-FID	97	93.1	575-002
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	Calculated		1000	1250 #	14.1			GC-FID			575-001
1,2,3-Trichlorobenzene	Calculated				11.34			GC-FID			575-001
1,2,4-Trichlorobenzene	Calculated			5 C	11.4			GC-FID			575-001
1,1,2-Trichloroethane	Bilevel		10		12.5	15	8	GC-FID	96.7		575-001
1,1,1-Trichloroethane (methyl chloroform)	Bilevel		350		14.1	15	8	GC-FID	99.9		575-001
Trichloroethylene	Full		100	200 C	14.9	15	8	GC-FID	102		575-001
Trichloroethylene	OSHA 1001		100	200 C	14.24	15	8	GC-FID	97.5		575-002
Trichlorofluoromethane (Freon 11)	Calculated				16.65			GC-FID			575-001
1,2,3-Trichloropropane	Bilevel		50		11.9	15	8	GC-FID	98.1		575-001
Tridecane	Calculated				9.2			GC-FID			575-001
Trifluoromethyl benzene (benzotrifluoride; OXSOL 2000)	Bilevel		100 ◇		13.3	15	8	GC-FID	106		575-001
Trifluoromethyl benzene (benzotrifluoride; OXSOL 2000)	Bilevel		100 ◇		13.3	15	8	GC-FID	107		575-002
1,2,3-Trimethylbenzene	Calculated		25 ¶		12.0			GC-FID	91.1		575-001
1,2,3-Trimethylbenzene	Calculated		25 ¶		12.0	15	8	GC-FID	93.8		575-002
1,2,3-Trimethylbenzene	OSHA 1020		25 ¶		11.6	15	4	GC-FID	98.3		575-002
1,2,4-Trimethylbenzene	OSHA 1020		25 ¶		11.7	15	4	GC-FID	93.8		575-002
1,2,4-Trimethylbenzene	Partial		25 ¶		13.05			GC-FID	88.4		575-001
1,2,4-Trimethylbenzene	Partial	1837	25 ¶		13.05	15	8	GC-FID	88.9		575-002
1,3,5-Trimethylbenzene (mesitylene)	Calculated		25 ¶		12.1			GC-FID	93.6		575-001
1,3,5-Trimethylbenzene (mesitylene)	Calculated		25 ¶		12.1			GC-FID	96		575-002
1,3,5-Trimethylbenzene (mesitylene)	OSHA 1020		25 ¶		12.1	15	8	GC-FID	101		575-002
2,2,4-Trimethylpentane	Calculated				11.89			GC-FID			575-001
n-Undecane	Calculated				9.62			GC-FID			575-001
Vinyl acetate	Full	1860		4 C #	16.4	30	8	GC-FID	92		575-002
Vinyl toluene (methyl styrene)	Calculated		100		12.3			GC-FID			575-001
n-Vinyl-2-pyrrolidone	Calculated				13.9			GC-FID			575-001
4-Vinylcyclohexene	Calculated				12.4			GC-FID			575-001
Vinylidene chloride (1,1-dichloroethene)	Bilevel		1		12.3	60	8	GC-FID	95.2		575-001
m-Xylene	Bilevel		100	150 #	12.5	15	8	GC-FID	96.6		575-001
m-Xylene	Bilevel		100	150 #	12.5	15	8	GC-FID	101		575-002
m-Xylene	OSHA 1002		100	150 #	13.82	15	8	GC-FID	96.1		575-002
o-Xylene	Bilevel		100	150 #	11.9	15	8	GC-FID	91		575-001
o-Xylene	OSHA 1002		100	150 #	14.24	15	8	GC-FID	89.4		575-002
p-Xylene	Bilevel		100	150 #	12.8	15	8	GC-FID	95.6		575-001
p-Xylene	Bilevel		100	150 #	12.8	15	8	GC-FID	103		575-002
p-Xylene	OSHA 1002		100	150 #	13.94	15	8	GC-FID	95.3		575-002
Xylenes, Total	Partial		100		12.64	15	8	GC-FID			575-001 or 575-002

* Lower than the NIOSH-accepted guideline

NIOSH Short Term Exposure Limit (STEL)

∞ Depends on detector sensitivity

† In-house exposure level

‡ NIOSH Recommended Exposure Limit (REL)

◇ Occidental Chemical corporate exposure limits

Δ Agency standards for OSHA listings represent the OSHA PELs reported in 29 CFR 1910.1000 Part 1910, Section 1000.

§ The values given for the desorption efficiency were obtained in SKC Inc. Laboratories. See the online guide at skcinc.com for details on the desorption solvent used.

¶ OSHA construction industry standards

▼ OARS-WEEL TWA Level (Occupational Alliance for Risk Science - Workplace Environmental Exposure Levels)

EL Excursion Limit

LFC Lowest feasible concentration

More information at skcinc.com/samplingleguide/passive

See page 244 for abbreviations.

Passive Samplers

Formaldehyde

UMEX¹⁰⁰ Passive Sampler for Formaldehyde Industrial Hygiene, Environmental, and Indoor Air Sampling

Sampling Rates for Other Aldehydes

Compound	Sampling Rate (ml/min)
Formaldehyde (full validation)	28.6 (velocity 5 to 100 cm/sec, 15 min to 24 hrs)
	20.4 (velocity < 5 cm/sec, 1 to 7 days)
Acetaldehyde	22.8 [‡]
Benzaldehyde	13.5 [‡]
Butyraldehyde	15.8 [‡]
Crotonaldehyde	9.71 [‡]
Glutaraldehyde	14 [‡]
Hexanaldehyde	9.66 [‡]
Isovaleraldehyde	15.5 [‡]
Propionaldehyde	14 [‡]
Chloroacetaldehyde	19.4 ^{**}
Decylaldehyde	10.4 ^{**}
Heptanaldehyde	12.8 ^{**}
Nonanaldehyde	11.6 ^{**}
o-Phthalaldehyde	12.83 ^{**}
o-Tolualdehyde	12.7 ^{**}
Valeraldehyde	15.4 ^{**}

[‡] Partial Validation

^{**} Calculated sampling rate; see online Passive Sampling Guide at skcinc.com

- Meets OSHA Method 1007 specifications
- Conforms to EU ISO 16000-4-2004
- Accuracy meets OSHA requirements
- Uses 2,4-DNPH chemistry
- Documented formaldehyde uptake rates for 15-minute to 24-hour and 7-day samples
 - Sampling rates available for other aldehydes (see left)
- Permits detection of low ppb levels of formaldehyde



VERSATILE UMEX¹⁰⁰ SAMPLER



Industrial Hygiene Sampling
OSHA PEL 0.75 ppm (TWA)
2 ppm (STEL)
DFG MAK 0.3 ppm (TWA)
1 ppm (Ceiling)



Indoor Air Sampling
2 ppb (24 hours)
0.2 ppb (7 days)



Description	Cat. No.	Qty.
UMEX¹⁰⁰ Passive Sampler for Formaldehyde^{††Δ}	500-100	10
<i>Suitable for sampling other aldehydes; see table above left</i>	500-100A	25
Treated Tape for QC - UME^X 100^{††}	P20084	50

Accessory	Cat. No.	Qty.
Stand for Area Sampling (shown above)	690-302	ea

* Limited shelf-life, single use only; do not reuse

† Store at ≤ 39.2 F (4 C)

Δ If sampling in an atmosphere containing formalin, see information at skcinc.com/knowledgecenter.

V Video	P PowerPoint	W Webinar	S Sampling Solution
Visit skcinc.com/Training			

UMEX²⁰⁰ Passive Sampler for NO₂ and SO₂ Industrial Hygiene and Environmental Sampling

- Same chemistry as active OSHA Method ID-182
- Validated sampling of sulfur dioxide and/or nitrogen dioxide from 15 minutes to 24 hours
- 3-week sample storage at ambient temperature
- Documented sampling rate of 17.3 ml/min for NO₂ and 15.2 ml/min for SO₂



VERSATILE UMEX²⁰⁰

Industrial Hygiene Sampling

NO₂: TLV 0.2 ppm (TWA)
SO₂: OSHA PEL 5 ppm (TWA)
NIOSH REL 2 ppm (TWA)
SO₂: DFG MAK 1 ppm (TWA)

Environmental Sampling

NO₂: As low as 2 ppb (24 hours)
SO₂: As low as 17.4 ppb (24 hours) and
EPA NAAQS Standard 100 ppb (1 hour)

Description	Cat. No.	Qty.
UMEX²⁰⁰ Passive Sampler for Nitrogen Dioxide and/or Sulfur Dioxide*	500-200	10
	500-200A	25
Treated Tape for QC - UME ^X 200*	P20098	25

Accessory	Cat. No.	Qty.
Shelter for Outdoor Sampling	690-303	ea

* Limited shelf-life, single use only; do not reuse

UMEX³⁰⁰ Passive Sampler for Ammonia Industrial Hygiene and Environmental Sampling

- Chemistry similar to active OSHA Method ID-188 and NIOSH 6016
 - Analysis by ion chromatography with conductivity detector or visible absorption spectrometry
- Safe – no glass or sulfuric acid liquid in the sampler
- Enhanced sensitivity with documented 39.92 ml/min uptake rate
- Validated sampling of ammonia from 15 minutes to 24 hours



Best Practice

Store and prepare sampling media in a solvent-free environment.

VERSATILE UMEX³⁰⁰

Industrial Hygiene Sampling

TLV 25 ppm (TWA)
TLV 35 ppm (STEL)
DFG MAK 20 ppm (TWA)

Environmental Sampling

As low as 25 ppb (24 hours)

Description	Cat. No.	Qty.
UMEX³⁰⁰ Passive Sampler for Ammonia**	500-300	10
Treated Tape for QC - UME ^X 300**	P20083	25

Accessory	Cat. No.	Qty.
Stand for Area Sampling	690-302	ea

* Limited shelf-life, single use only; do not reuse

† Store at ≤ 39.2 F (4 C)

Passive Samplers

Elemental Mercury, Hydrogen Cyanide

TECH TIPS

► The 520 Elemental Mercury Passive Sampler only samples elemental mercury (Hg) in the vapor phase; it does not sample elemental Hg in the particulate phase or organic mercury compounds.

- **Lowest cost per measurement available**
 - Reusable capsule holder
 - Replaceable sorbent capsule
- **Lightweight and easy to use; no pump needed**
- **No moisture or chlorine interferences**
- **Long-term sampling up to 120 hours**
- **Validated by OSHA Method ID-140**
 - Documented extended sampling to 120 hours
(*contact OSHA for backup report*)
- **High accuracy, sensitivity, and capacity**
 - Positive analysis of mercury
 - Removable sorbent capsule eliminates false high readings

The SKC Passive Sampler for Elemental Mercury is specified in OSHA ID-140 for eight-hour TWA sampling. A backup report by OSHA expands application of this sampler for long-term sampling up to 120 hours. Following analysis by atomic absorption, the housing can be cleaned and reused.



Description	Cat. No.	Qty.
Sorbent Capsules contain Anasorb C300* and include replacement foams and resealable bags	520-02A	10
	520-02C	30
Reusable Capsule Holder	520-03	ea
	520-03A	5

* Anasorb C300 is equivalent to Carulite and Hydrar.
Note: To sample low levels of mercury, use a sorbent tube.

APPLICATIONS

HCN Passive Sampler

- Fumigation
- Agriculture
- Electroplating
- Mining
- Chemical synthesis
- Synthetic fiber, plastic, dye, and pesticide production
- Steel and iron hardening

Hydrogen Cyanide (HCN) Passive Sampler

- **Specified in OSHA Method 1015**
- **Same soda lime sorbent as in NIOSH 6010 and 6017**
- **Operates at a sampling rate of 28.4 ml/min**
- **Collects HCN from 0.44 to 20 ppm**
- **Suitable for 15-minute to 8-hour samples**

The lightweight, miniature HCN Passive Sampler provides accurate HCN exposure results. Its unique design allows easy field loading of sorbent into the housing before sampling and transfer of sorbent to a vial after sampling. Samples are extracted with water and analyzed by ion chromatography/electrochemical detector (IC/ELCHM).



Description	Cat. No.	Qty.
HCN Passive Sampler	590-400	5

V Video	P PowerPoint	W Webinar	S Sampling Solution
Visit skcinc.com/Training			

Passive Color Tubes Easy, Economical Screening Tools

- **On-the-spot results**
- **Easy to use**
 - No interpretations, long calculations, or charts
 - No pump needed
- **TWA measurements**
- **Convenient, lightweight tube holder**
 - Securely clips to a worker's collar for unobtrusive measurements in the breathing zone
- **Low-cost screening device**



ABOUT

Using Passive Color Tubes

Dosimeter tubes offer quick on-the-spot determination of exposure to chemical hazards without the need for a pump or training. Time-weighted average (TWA) measurements up to eight hours are as simple as:

- 1 Inserting tube in holder
- 2 Breaking tube tips
- 3 Reading results on tube in ppm-hours
- 4 Dividing reading by number of hours sampled

Gastec Color Dosimeter Tubes

Chemical Hazard	Measuring Range (ppm-hours)	Cat. No.	Qty.
Acetaldehyde	0.1 - 20	810-91D ^{†*} Δ	10
Acetaldehyde	1.2 - 360	810-152D ^{†*}	10
Acetaldehyde	4 - 1200	810-151D ^{†*}	10
Acetic acid	0.5 - 100	810-81D	10
Acetic anhydride	0.45 - 90	810-81D [†]	10
Acetone	5 - 1500	810-151D [*]	10
Acetone	1.4 - 420	810-152D ^{†*}	10
Ammonia	0.1 - 10	810-3DL	10
Ammonia	2.5 - 1000	810-3D	10
Benzene	2.4 - 600	810-122DL [†]	10
1,3-Butadiene	1.3 - 200	810-174D	10
Carbon dioxide	0.02 - 12%-hr	810-2D	10
Carbon monoxide	1.04 - 2000	810-1D	10
Carbon monoxide	0.4 - 400	810-1DL [*]	10
Chlorine	0.08 - 100	810-8D	10
Chlorine	2.4 - 240	810-132D ^{†*} Δ	10
Cumene	3.4 - 850	810-122DL [†]	10
1,2 Dichloroethylene	3.9 - 600	810-174D [†]	10
1,2 Dichloroethylene	6 - 600	810-132D ^{†*} Δ	10
Dimethyl amine	1.9 - 750	810-3D [†]	10
N,N-Dimethylethyl amine	4 - 1600	810-3D [†]	10
Ethyl alcohol	100 - 25,000	810-112D	10
Ethyl benzene	2.8 - 700	810-122DL [†]	10
Ethylene	1.56 - 240	810-174D [†]	10
Formaldehyde	0.1 - 20	810-91D [*] Δ	10
Formic acid	0.55 - 110	810-81D [†]	10
Furfural	0.2 - 40	810-91D ^{†*} Δ	10
Hydrazine	0.05 - 650	810-3D [†]	10
Hydrogen chloride	1 - 100	810-14D	10

[†] Secondary application; requires correction factor

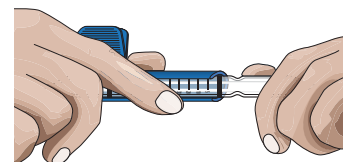
^{*} Store tubes at 40 to 50 F (5 to 10 C).

Chemical Hazard	Measuring Range (ppm-hours)	Cat. No.	Qty.
Hydrogen chloride	1.8 - 180	810-132D ^{†*} Δ	10
Hydrogen cyanide	1 - 200	810-12D	10
Hydrogen fluoride	1 - 100	810-17D	10
Hydrogen peroxide	0.5 - 40	810-32D	10
Hydrogen sulfide	0.2 - 200	810-4D	10
Isoprene	2.6 - 400	810-174D [†]	10
Methyl amine	0.19 - 19	810-3DL [†]	10
Methyl ethyl ketone	6.5 - 1950	810-151D ^{†*}	10
Methyl ethyl ketone	2 - 600	810-152D [*]	10
Methyl ethyl ketone	0.125 - 25	810-91D ^{†*} Δ	10
Methyl isobutyl ketone	4 - 1200	810-152D ^{†*}	10
Methyl isobutyl ketone	11.5 - 3450	810-151D ^{†*}	10
Nitric acid	0.32 - 32	810-17D [†]	10
Nitric acid	0.8 - 80	810-14D [†]	10
Nitrogen dioxide	0.01 - 3	810-9DL [*] Δ	10
Nitrogen dioxide	0.1 - 30	810-9D [*] Δ	10
Perchloroethylene	3 - 150	810-133D	10
Styrene	26 - 6500	810-122DL	10
Sulfur dioxide	0.2 - 100	810-5D	10
Sulfur dioxide	10 - 600	810-5DH	10
Tetrachloroethylene	1.5 - 150	810-132D [*] Δ	10
Tetrachloroethylene	3 - 150	810-133D [*] Δ	10
Toluene	2 - 500	810-122DL	10
Trichloroethylene	3 - 300	810-132D [*] Δ	10
Triethylamine	5.3 - 2100	810-3D [†]	10
Trimethylamine	0.23 - 23	810-3DL [†]	10
Vinyl chloride	1.56 - 240	810-174D [†]	10
Xylene	3.4 - 850	810-122DL [†]	10
Dosi Tube Holders		810-710	3

Δ One-year shelf-life

TECH TIPS

- When using passive color tubes, the time-weighted average (TWA) can be calculated at the end of the measurement period by simply dividing the length of the tube reading (in ppm-hours) by the elapsed sampling time (in hours).
- To avoid overstating carbon dioxide levels because of exhalation, place passive color tubes for carbon dioxide at the waist instead of the normal position in the breathing zone.
- When breaking the tube, the holder should be directed away from the body.



Passive Samplers

Sub-ppb Level VOCs and SVOCs

ULTRA Passive Samplers

Thermal Desorption Enhances Detection

Compare ULTRA® to Canisters

Side-by-side studies using ULTRA Passive Samplers (Anasorb GCB1) and stainless steel canisters demonstrate excellent sampling correlation.

Compound	ULTRA (µg/m³)	Canister (µg/m³)
Benzene	4.2	4.5
	2.1	2.0
	1.9	1.6
	6.67	6.8
	1.58	1.5

Compound	ULTRA (µg/m³)	Canister (µg/m³)
Perchloroethylene	1.1	1.6
	2.3	2.2
	32.9	30.0
	1.37	2.0
	2.85	2.6

Compound	ULTRA (µg/m³)	Canister (µg/m³)
o-Xylene	7.55	7.9
	1.16	0.93
	1.96	1.9
	8.3	6.2
	13.3	11.0

Compound	ULTRA (µg/m³)	Canister (µg/m³)
Toluene	30.0	26.0
	20.3	19.0
	44.0	46.0
	10.8	8.8
	6.1	3.8

Compound	ULTRA (µg/m³)	Canister (µg/m³)
m,p-Xylene	21.2	19.2
	5.52	5.6
	34.1	36.7
	3.7	2.51
	5.7	5.1

- ▶ **Results comparable to canisters for EPA Method TO-15 without the expense**
 - No cleaning or certification costs
 - Lower purchase price
 - No expensive shipping
- ▶ **Validated sampling (uptake) rates**
 - See skcinc.com/samplingguide/passive
- ▶ **Built-in blank/correction sorbent section available**
- ▶ **Sample integrity**
 - Manufactured in an ultra-clean environment
 - Extensive cleaning and QC procedures
 - Sonically welded housing
- ▶ **Passive alternative to EPA TO-17 — no pump required**
- ▶ **Choose from 5 sorbents for environmental air sampling**
 - Anasorb GCB1
 - Tenax TA
 - Chromosorb 106
 - Carbopack X
 - Charcoal (solvent extraction)

Compare ULTRA Samplers to Passive TD Tubes

Sampler	ULTRA Passive Sampler	Passive TD Tubes
Sampling Rate for Benzene	16 ml/min	0.67 ml/min
Sampling Time	8 to 24 hours	14 days
Desorption	Transfer to thermal desorption tube	Direct insertion into thermal desorber
Recommended Applications	Environmental monitoring, vapor intrusion	Compliance fence-line monitoring of petroleum refineries according to EPA 325, vapor intrusion

Convenient Sampling Accessories



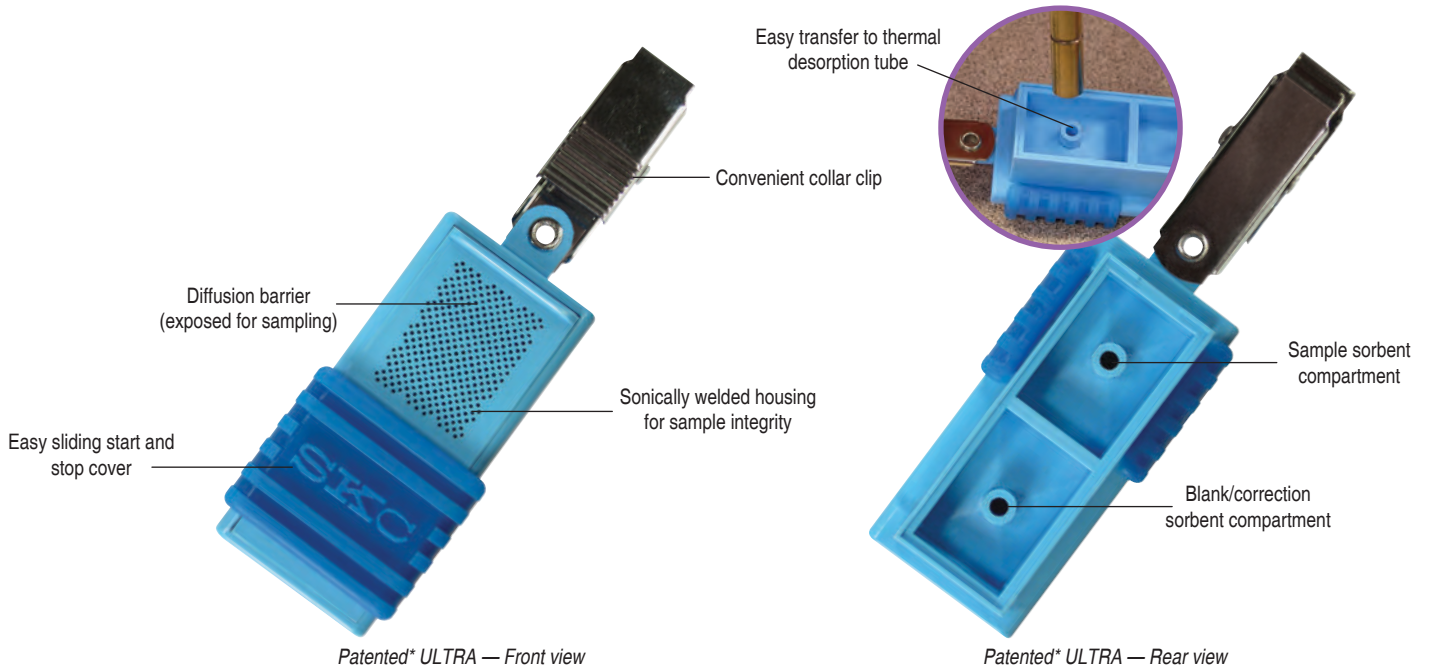
Outdoor sampling shelter protects multiple samplers.



Indoor air sampling stand holds up to two samplers.

ULTRA Passive Samplers

Convenient Alternative to Canisters and Thermal Desorption Tubes



Ordering

Select from prefilled samplers or separate sampler housing and sorbent vials.

Sorbent/Amount	Economy Prefilled Samplers, without built-in blank Qty/5	Prefilled Samplers, with built-in blank Qty/5	Sorbent Vials for User-filled Samplers, require empty housing Cat. No. 690-200 Qty/2
Anasorb GCB1 ,** 370 mg in each compartment or vial	Cat. No. 690-101-NB	Cat. No. 690-101	Cat. No. 690-201
Chromosorb 106 ,**† 285 mg in each compartment or vial	690-103-NB	690-103	690-203
Tenax TA ,# 253 mg in each compartment or vial	690-104-NB	690-104	690-204
Charcoal ,# 500 mg in each compartment or vial (solvent extraction)	690-105-NB	690-105	690-205
Carbopack X ,# 400 mg in each compartment or vial	690-106-NB	690-106	690-206
Empty Sampler Housing , for user-filled ULTRA, required			690-200

Limited shelf-life

‡ Comparable to Carbopack B

† Search osha.gov for "ULTRA Chromosorb 106" for additional information.

Sampling Accessories	Cat. No.	Qty.
Rate Reducer , 12 holes, lowers sampling rate for extended sampling time and higher concentrations	690-300	ea
Transfer Funnel , for filling sampler housing with sorbent from vials, for ULTRA only	690-301	ea
Stand for Indoor Sampling	690-302	ea
Shelter for Outdoor Sampling	690-303	ea

Analysis Accessories	Cat. No.	Qty.
Thermal Desorption Tube , Perkin Elmer, 0.25-inch OD x 3.5-inch length, includes screens and end caps	P226530	ea
Analysis Transfer Funnel , facilitates transfer of sorbent from vial to 0.25-inch OD thermal desorption tube	590-264	ea

* U.S. Patent No. 6,607,581

See skcinc.com/samplingguide/passive for uptake rates.

V Video	P PowerPoint	W Webinar	S Sampling Solution
Visit skcinc.com/Training			

Passive Samplers

BTEX, Other VOCs, SVOCs

Passive Thermal Desorption Tubes

Meet EPA Method 325 Requirements for Benzene Monitoring

- ▶ EPA-validated sampling rates available for benzene, toluene, ethylbenzene, xylenes, and many other VOCs
- ▶ May be used to sample SVOCs
- ▶ Contain pre-conditioned sorbent to meet EPA 325 requirements
 - Lower cost option available with Anasorb GCB1 sorbent
- ▶ SilcoNert® 2000 deactivated 3.5-inch length x 0.25-inch OD stainless steel tubes for sample integrity
- ▶ Allow for extended sample times for low-level measurements
- ▶ Reusable after laboratory conditioning
- ▶ Unique identification number and bar code
- ▶ Weatherproof tube shelter available
- ▶ Airflow direction and cap placement arrow indicators printed on tube
- ▶ Sealed with brass Swagelok screw caps with PTFE ferrules for transport
- ▶ Collected compounds are analyzed quantitatively using GC or GC-MS



SKC Passive Thermal Desorption Tubes offer users an easy, accurate way to sample low-level VOCs and SVOCs over extended periods of time. These passive samplers meet requirements of the EPA 325 regulation for fence-line monitoring of benzene at petroleum refineries with extended sample periods of 14 days. SKC supplies sampling rates for other VOCs to expand the use of these passive devices for other applications. A weatherproof shelter is available for protecting samplers during outdoor sampling.

APPLICATIONS

Passive Thermal Desorption Tube

- Fence-line monitoring
- Indoor air sampling
- Vapor intrusion studies

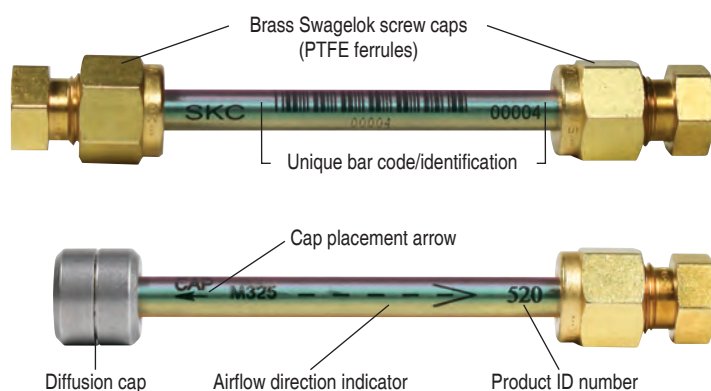
Description	Cat. No.	Qty.
SKC Passive TD Tubes ,* 3.5 x 0.25-inch OD (sized for Perkin Elmer and Markes Int'l. thermal desorbers), deactivated stainless steel tubes filled with pre-conditioned sorbent and supplied with diffusion caps and brass Swagelok screw caps with PTFE ferrules		
Carbopack X, 400 mg	226-520	10
Anasorb GCB1,† 400 mg	226-521	10
Diffusion Caps	226-525	10
Shelter	226-526	ea

* Tubes must be used within 30 days of conditioning.

† Equivalent to Carbopack B/Carbograph 1

ECONOMICAL
OPTION

Accurate Sampling of BTEX, Other VOCs, and SVOCs



SKC Passive TD Tubes are conditioned and quality control tested to assure low background.



Weatherproof shelter accessory protects TD tubes.

Validated Uptake Rates (ml/min) for Selected Clean Air Act Compounds Using Carpack X and Anasorb GCB1 Sorbents

Compound	Carpack X	Anasorb GCB1*
Benzene	0.67 ± 0.06	0.63 ± 0.07
Carbon tetrachloride	0.51 ± 0.06	N/A
Chlorobenzene	0.51 ± 0.06	N/A
3-Chloropropene	0.51 ± 0.3	N/A
p-Dichlorobenzene	0.45 ± 0.05	N/A
1,1-Dichloroethane	0.57 ± 0.1	N/A
1,2-Dichloroethane	0.57 ± 0.08	N/A
1,1-Dichloroethene	0.57 ± 0.14	N/A
1,2-Dichloropropane	0.52 ± 0.1	N/A
Ethylbenzene	0.46 ± 0.07	0.5
Styrene	0.50 ± 0.14	N/A
Tetrachloroethene	0.48 ± 0.05	N/A
Toluene	0.52 ± 0.14	0.56 ± 0.06
1,1,1-Trichloroethane	0.51 ± 0.1	N/A
1,1,2-Trichloroethane	0.49 ± 0.13	N/A
Trichloroethene	0.50 ± 0.05	N/A
m,p-Xylene	0.46 ± 0.09	0.47 ± 0.04
o-Xylene	0.46 ± 0.12	0.47 ± 0.04

* SKC Anasorb GCB1 is equivalent to Carpack B/Carbograph 1.

Reference: EPA Method 325B-Volatile Organic Compounds from Fugitive and Area Sources, Table 12.1, epa.gov/emc, search "325b"

MORE INFORMATION

24-hour Sampling on Carpack X

doi.org/fhgn4s

V Video	P PowerPoint	W Webinar	S Sampling Solution
Visit skcinc.com/Training			

A man wearing a grey cap, safety glasses, and a blue and white striped shirt is working with equipment. He has a small orange device clipped to his shirt. The background shows a window with blinds.

SKC Particulate Samplers

SKC is well-known in the field of aerosol science for innovative size-selective particulate samplers. Choose from a wide range of samplers for industrial hygiene and environmental sampling of inhalable, thoracic, and respirable particulate, as well as environmental PM fractions and bioaerosols.



SKC Filters

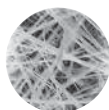
Top Quality Materials for All Agency Methods

SKC provides top quality air sampling solutions for your applications. Choose from a range of filter diameters and configurations including bulk, preloaded, preweighed, and matched-weight. Professionals rely on our filters and scientific innovations such as Solu-CAP, Accu-CAP, coated filters, and the DPM Cassette. SKC – SCIENCE. SERVING PEOPLE.

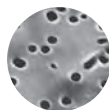
Filter	Features	Pages
Mixed Cellulose Ester (MCE)	<ul style="list-style-type: none"> • Hydrophilic • Low metal background • Autoclavable • Biologically inert • Low artifact – dissolves/clears completely 	102-104
Silver	<ul style="list-style-type: none"> • Chemically inert • High temperature resistant and autoclavable • Uniform porosity and thickness • Bacteriostatic • Hydrophilic and inorganic 	105
Polycarbonate	<ul style="list-style-type: none"> • Smooth surface • Thin, transparent, and non-staining • Chemically resistant; biologically inert • Thermally stable up to 284 F (140 C) • Hydrophobic • Exceptionally low tare weight 	105
Polyvinyl Chloride (PVC)	<ul style="list-style-type: none"> • Low tare weight • Very hydrophobic • Low ash 	106-107
Polytetrafluoroethylene (PTFE)	<ul style="list-style-type: none"> • Strong and resistant to acids, bases, and solvents • Hydrophobic • Low background • Low tare mass • Autoclavable 	108
Quartz	<ul style="list-style-type: none"> • Binder-free • Low metal background • Hydrophobic • Autoclavable • Heat treated 	109
Glass Fiber	<ul style="list-style-type: none"> • Binder-free • High temperature tolerant • Autoclavable • Hydrophobic • High particle retention 	110
Cellulose	<ul style="list-style-type: none"> • 100% pure • Ashless • Autoclavable • Hydrophilic 	110
Gelatin	<ul style="list-style-type: none"> • Pre-sterilized by gamma irradiation • High moisture content • Water soluble – dissolves easily on agar • Suitable for bioaerosols 	111

ABOUT

Filter Pore Size



Glass fiber filter,
1- μ m equivalent
pore diameter



Polycarbonate filter,
1- μ m pore size

Fibrous and porous membrane filters (glass fiber, MCE, and some PTFE) are not like sieves with well-defined pores but capture particles through a combination of impaction, direct interception, Brownian diffusion, and other physical processes. **Pore size** does not determine collection efficiency but is a liquid filtration rating. Filters are typically 10 times more efficient **in air** than the pore size rating. For example, a 0.8- μ m filter will trap at least 50% of particles as small as 0.08 μ m, so even nanosized particles cannot pass through pores of traditional filters used for industrial hygiene sampling.

Nano-Neat Cassettes – Certified Background Level for 12 Metals

SKC tests and certifies background traces of 12 metals to ensure suitability of Nano-Neat for sampling and analysis with NIOSH Method 7300. Each box of Nano-Neat Cassettes contains the following list of metals and background testing results for each. *See ordering below right.*

Aluminum (Al)
Arsenic (As)
Beryllium (Be)
Cadmium (Cd)
Chromium (Cr)
Copper (Cu)
Iron (Fe)
Magnesium (Mg)
Manganese (Mn)
Nickel (Ni)
Lead (Pb)
Zinc (Zn)

Questions?

Contact skctech@skcinc.com.

MCE Filters

A Gold Standard for IH Sampling

MCE Filters

All SKC MCE filters are independently tested to verify low background.

Diameter (mm)	Pore Size (μ m)	Support Pad†	Notes	Cat. No.	Qty.
13	5.0	No		225-8050	100
25	0.45	No		225-1911	100
25	0.8	Yes		225-19	100
25	0.8	No	use with IOM (pp. 122-123)	225-1930	100
25	0.8	No	black grid	225-1913	100
25	1.2	No	recommended for Button Sampler (p. 124)	225-1912	100
37	0.45	No		225-1914	100
37	0.45	Yes		225-9	100
37	0.8	No		225-1939	100
37	0.8	Yes		225-5	100
37	5.0	No		225-1938	100
47	0.45	No		225-506	100
47	0.8	No		225-504	100

† Filter supports available on page 117

Matched-weight MCE Filter Pairs for User-loading

Matched-weight MCE filter pairs are certified as matched in weight to within 50 μ g. Load the filters into a cassette; the top filter collects the contaminant, the bottom filter acts as a control. No preweighing or conditioning is required. After sampling, both filters are weighed and the difference between weights is the sample weight.

Diameter (mm)	Filter Specifications	Cat. No.	Qty.
37	MCE, 0.8 μ m, matched-weight within 50 μ g, filter pairs only	225-532	50
47	MCE, 0.8 μ m, matched-weight within 50 μ g, filter pairs only	225-531	50

Preloaded MCE Filters

These preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 119.

Diameter (mm)	Filter Specifications	Cassette Description	Cat. No.	Qty.
25	MCE, 0.8 μ m	3-pc clear plastic, banded	225-3100	50
25	MCE, 1.2 μ m	3-pc black conductive, banded	225-507*	50
37	MCE, 0.45 μ m	3-pc black conductive, banded	225-1924	50
37	MCE, 0.45 μ m	4-pc clear styrene, banded	225-1925*†	50
37	MCE, 0.8 μ m	2-pc clear styrene, banded	225-508	50
37	MCE, 0.8 μ m	3-pc clear styrene, banded	225-3-01	50
37	MCE, 0.8 μ m	3-pc clear styrene, not banded	225-3-01NB	50

* BestChek certified; see page 104 for details

† Available in conductive cassette

Matched-weight MCE Filters Preloaded in Cassettes

These preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 119.

Diameter (mm)	Filter Specifications	Cassette Description	Cat. No.	Qty.
25	MCE, 0.8 μ m, matched-weight within 50 μ g	2-pc clear styrene, banded	225-525	50
37	MCE, 0.8 μ m, matched-weight within 100 μ g	3-pc clear styrene, banded	225-3-02	50
37	MCE, 0.8 μ m, matched-weight within 50 μ g	2-pc clear styrene, banded	225-502	50
37	MCE, 0.8 μ m, matched-weight within 50 μ g	3-pc clear styrene, banded	225-503	50
			225-528A	10

Nano-Neat MCE Filter Cassettes—for Clean Environments

Ultra-pure for sampling workplace metals; certified background levels for 12 metals per filter (see left). Cassettes are tinted purple for easy identification. Each box contains a Certificate of Compliance. These preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 119. Nano-Neat is also available in 37-mm, 2-piece cassettes; contact SKC.

Diameter (mm)	Filter Specifications	Cassette Description	Cat. No.	Qty.
25	MCE, 0.8 μ m, Nano-Neat	2-pc purple styrene, banded	225-8402	50

Solu-CAP Internal Capsule Sampler Captures the Entire Sample for Metals Analysis

- Design specified in NIOSH Method 7306
- Meets NIOSH wall deposits requirement
- Eliminates need for lab to wipe or rinse cassette walls
- Ensures all collected sample is analyzed
- No assembly required
 - Supplied preloaded into 37-mm, 2-piece SKC cassette with support pad
- Digestible cellulose acetate dome on MCE filter contains entire sample
 - Completely soluble for analysis following NIOSH 7300 digestive procedure



*AirChek Series
Sample Pumps – Perfect
partners for Solu-CAP
see pages 12-21*

Use Solu-CAP® Internal Capsule Samplers to eliminate sample loss and meet NIOSH requirements for inclusion of all wall deposits. Solu-CAP's digestible cellulose acetate dome is sealed to a quality MCE filter. The user samples and sends the cassette to a laboratory. The lab removes the Solu-CAP insert, digests it in an acid solution per standard procedures, and performs analysis for airborne metals following published methods. **No sample loss!** The Solu-CAP design is specified in NIOSH 7306.

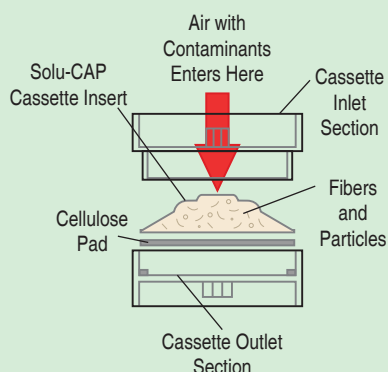
New to Air Sampling?

Access the free SKC Knowledge Center!



Visit skcinc.com.

Solu-CAP = 100% Sample Contained



Eliminate sample loss from:

- ✗ Excessive filter loading during collection
- ✗ Filter transfer in the lab
- ✗ Cassette wall losses

References

Harper, M. and Ashley, K., "Acid-Soluble Internal Capsules for Closed-Face Cassette Elemental Sampling and Analysis of Workplace Air," *Jnl. of Occup. and Env. Hyg.*, 10:6, 2013, pp. 297-306, <https://doi.org/xj6>

Ashley, K. and Harper, M., "Analytical Performance Issues: Closed-Face Filter Cassette (CFC) Sampling – Guidance on Procedure for Inclusion of Material Adhering to Internal Sampler Surfaces," *Jnl. of Occup. and Env. Hyg.*, 10:3, 2013, pp. D29-D33, <https://doi.org/ww3>

Preloaded Solu-CAP Internal Capsule Sampler

Description	Cat. No.	Qty.
Preloaded 37-mm Solu-CAP with cellulose acetate dome sealed to 0.8-µm MCE filter in 2-piece SKC cassette with support, requires a sample pump (pp. 12-21) and SureSeal Cassette Opener (see below)	225-8517	50
Accessory		
SureSeal Cassette Opener	225-13-5A	ea



Filters and Pumps

Asbestos Sampling

ABOUT

The 5 Cs of Asbestos Cassettes

Only from SKC — BestChek® cassettes meet or exceed NIOSH, OSHA, and ASTM standards in Count, Clearing, Conductivity, Collection Area, and Construction.

SKC BestChek cassettes are certified only after they are tested twice for low background.

Specify SKC BestChek Asbestos Cassettes — your assurance of reliability and accuracy.



Microvacuum Cassettes for Asbestos

- Nozzle for easy sampling of settled dust on surfaces
- Meet specifications of ASTM Method D5755
- Use with personal sample pump at 2 L/min

Carbon-filled polypropylene with cowl and nozzle, BestChek 25-mm, 0.45- μ m MCE filter for TEM analysis, and cellulose support
Cat. No. 225-322

Styrene (non-conductive) with nozzle, 37-mm, 0.45- μ m MCE filter, for TEM analysis, and cellulose support
Cat. No. 225-9543

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Certified BestChek Asbestos Cassettes The Highest Standard for Cassette Reliability

SKC Certified BestChek Filters in Carbon-filled Polypropylene Cassettes

These preloaded filters include cellulose supports.

Diameter (mm)	Filter Specifications	Cassette Description	Cat. No.	Qty.
25	MCE, 0.8 μ m	with cowl, banded	225-321	50
25	MCE, 0.8 μ m	with cowl, banded, with stand-up plug in outlet end	225-321A	50
25	MCE, 0.8 μ m, black grid	with cowl, banded	225-326	50
25	MCE, 1.2 μ m, black grid	with cowl, banded	225-1934	50
25	MCE, 0.45 μ m* TEM analysis	with cowl, banded, with support and 5.0- μ m diffuser pad	225-327	50

* Available as microvacuum carpet cassette with nozzle; see below left

Asbestos Sampling Pumps

AirLite Personal Pump

Easy, Economical Asbestos Sampling

- Constant flows to 3000 ml/min
- Alkaline battery powered, over 10 hours run time
- Rugged
- Weighs only 12 ounces
- Simple operation with flow fault feature
- Model available with timer



See details and ordering on page 31.

Flite4 Area Pump

Programmable High Flow Asbestos Pump

- Flows from 2 to 20 L/min
- Battery or AC operation, long run times
- Robust steel casing with handle
- Weighs 4.5 pounds (2.06 kg)
- Programmable



See details and ordering on page 30.

QuickTake 30 Area Pump

Li-Ion-powered High Flow Asbestos Pump

- Constant flows from 10 to 30 L/min
- 9+ hours run time for asbestos clearance
- Tough, compact case with handle weighs 4.8 pounds
- Programmable with flow fault feature
- Low-noise battery-powered alternative to vacuum pumps

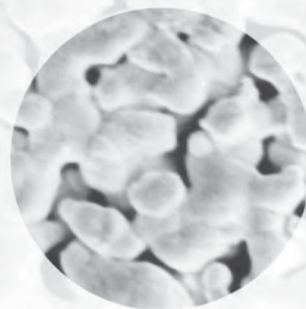


See details and ordering on pages 28-29.

Silver Membrane Filters

Specified for X-ray Diffraction Analysis

- **Chemically inert, high temperature resistant**
 - Autoclave and reuse repeatedly[#] without loss of performance
- **99.97% pure inorganic metallic silver**
- **Uniform porosity and thickness, smooth surface**
 - Ideal for NIOSH X-ray diffraction methods for crystalline silica, lead sulfide, boron carbide, and chrysotile asbestos
- **Hydrophilic and bacteriostatic**



*For size-selective samplers
see pages 120-134*

Diameter (mm)	Pore Size (µm)	Cat. No.	Qty.
25	0.8	225-1803	50
25	0.45	225-1802	50
37	0.8	225-1801	25
47	0.8	225-1804	25

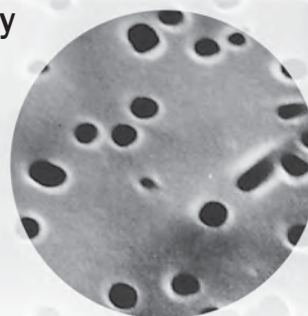
[#] Single use only for silica analysis

Additional diameter and pore size silver membrane filters are available as a special order.

Polycarbonate Membrane Filters

Ideal for Microscopy

- **Chemically resistant, thermally stable,[†] and strong**
- **Thin, transparent, non-staining, and smooth**
 - Ideal for light and electron microscopy
 - Exceptional background for sample observations
- **Hydrophobic, with exceptionally low tare weight**
- **Biologically inert**



*For filter sampling
accessories
see pages 116-119*

Diameter (mm)	Pore Size (µm)	Support Pad [‡]	Notes	Cat. No.	Qty.
25	0.4	No		225-1608	100
25	0.8	No	use with IOM (pp. 122-123)	225-1601	100
37	0.4	No		225-1609	100
37	0.8	No		225-1602	100
47	0.4	No		225-1610	100

[‡] Filter supports available on page 117

[†] Maximum operating temperature is 284 F (140 C).

Preloaded Polycarbonate Filters

These preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 119.

Diameter (mm)	Pore Size (µm)	Support Pad	Cassette Description	Cat. No.	Qty.
25	0.8	Yes	3-piece conductive, with cowl, banded	225-1604	50

Microvacuum Cassette with Polycarbonate Filter

These preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 119.

Diameter (mm)	Pore Size (µm)	Support Pad	Cassette Description	Cat. No.	Qty.
37	0.4	Yes	3-piece styrene (non-conductive) with nozzle; microvacuum*	225-9542*	ea

* Available in a Carpet Sampling Cassette Kit; see page 140



*For sample pumps
see pages 16-21*

Filters

PVC Filter Capsule Sampler

Accu-CAP Internal Capsule Eliminates Cassette Wall Losses

For filter cassette holders, openers, adapters, and other accessories see pages 116-119



SKC recommends AirChek Series Pumps for use with Accu-CAP see pages 12-21

- Meets specifications of NIOSH Method 0501 for gravimetric analysis
- Ensures entire sample is captured and analyzed
- Fits inside a 37-mm, 2-piece SKC cassette with support pad
- Static-dissipative plastic dome on PVC filter contains entire sample
 - No cassette rinsing or wiping required
 - Prevents loss of sample during transport
 - No particles dislodged from filter during analysis preparation
- Suitable for sampling total dust (NIOSH 0500 and 0501), respirable dust (NIOSH 0600), carbon black (NIOSH 5000), and more



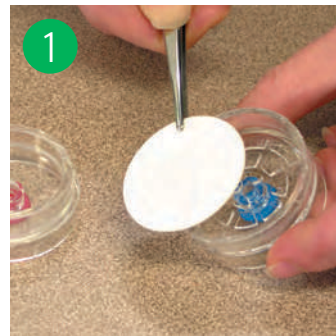
Use Accu-CAP® Internal Capsules to meet NIOSH 0501 requirements for inclusion of all wall deposits in the sample. Accu-CAP features a static-dissipative plastic dome sealed to a quality PVC filter. The user preweighs the Accu-CAP, places it between the inlet and outlet sections of a two-piece 37-mm SKC-manufactured cassette with support pad, samples, removes Accu-CAP from the cassette, and postweighs it. **Accu-CAP effectively contains 100% of sampled particulate!**

Accu-CAP is Easy to Use

References

Ashley, K. and Harper, M., "Analytical Performance Issues: Closed-Face Filter Cassette (CFC) Sampling – Guidance on Procedure for Inclusion of Material Adhering to Internal Sampler Surfaces," *Jnl. of Occup. and Env. Hyg.*, 10:3, 2013, pp. D29-D33, <https://doi.org/wv3>

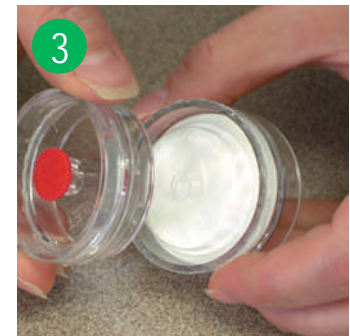
NIOSH Method 0501, cdc.gov/niosh/docs/2003-154/pdfs/0501.pdf



1 Prepare SKC 2-piece cassette with support pad.



2 Weigh Accu-CAP and insert in cassette.



3 Complete cassette assembly. After sampling, remove Accu-CAP from cassette and weigh.

Accu-CAP Internal Capsule

60 pk means more savings!

Description	Cat. No.	Qty.
37-mm Accu-CAP with plastic dome sealed to 5.0-µm pore size PVC filter, requires 37-mm cassettes (p. 115) and support pads (p. 117)	225-8516GLA	60

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GLA-5000 PVC Membrane Filters

The No. 1 Filter for Silica and Other Dusts

► **Low ash, suitable for multiple NIOSH/OSHA/ASTM air sampling methods**

- Silica, metals, dust (total and respirable)
- OSHA Method ID-215 (V.2) for hexavalent chromium

► **Low tare weight and moisture pickup for gravimetric stability**

- ≤ 0.5% after 24 hours at 48% RH and 122 F (50 C)

► **Preloaded 25 and 37-mm cassettes available**

► **Available in Accu-CAP Internal Capsule**

► **Both gravimetric and chemical analyses on the same filter using NIOSH 7300 or 7301 for metals (elements)**



For PPI Sampler with preweighed PVC filter see page 129

PVC Filters

Diameter (mm)	Pore Size (µm)	Support Pad [‡]	Cat. No.	Qty.
25	5.0	No	225-5-25 [†]	100
37	5.0	Yes	225-5-37-P 225-80601K	100 1000
37	5.0	No	225-5-37	100
47	5.0	No	225-5-47	100

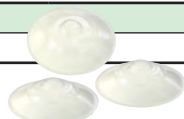
[‡] Filter supports available on page 117

[†] Recommended for use with IOM and Button Samplers; see pages 122-124

Accu-CAP PVC Internal Capsule — see page 106

Clear plastic capsule heat-sealed to a filter; fits between parts of a two-piece SKC cassette with support pad; prevents cassette wall losses; ideal for gravimetric determinations for NIOSH 0500, 0501, 0600, and 5000

Diameter (mm)	Pore Size (µm)	Cat. No.	Qty.
37	5.0	225-8516GLA	60



Preloaded PVC Filters

These preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 119.

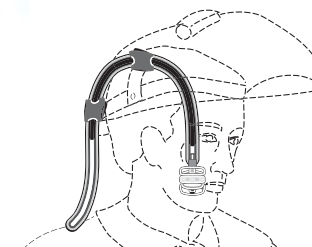
Diameter (mm)	Filter Specifications	Cassette Description	Cat. No.	Qty.
25	5.0 µm	2-piece clear styrene, banded	225-8214**	50
25	5.0 µm	3-piece clear styrene, banded	225-8215	50
37	5.0 µm	2-piece clear styrene, banded	225-802	50
37	5.0 µm	3-piece clear styrene, banded	225-803**	50
Preloaded Prewighed PVC Filters				
37	5.0 µm, preweighed, 5 decimals	2-piece clear styrene, banded	225-8204A 225-8205A	10 50
37	5.0 µm, preweighed, 5 decimals	3-piece clear styrene, banded	225-8208A 225-8209A	10 50

**Available with tamper-evident band around plugs

Matched-weight PVC Filters

Diameter (mm)	Filter Specifications	Description	Cat. No.	Qty.
37	5.0 µm, matched-weight within 25 µg	Filter pairs only*	225-8222*	50
37	5.0 µm, matched-weight within 25 µg	2-piece clear styrene, banded	225-8201	50
37	5.0 µm, matched-weight within 25 µg	3-piece clear styrene, banded	225-8202	50

* Not preloaded in cassettes



Helmet Adapter[#]

Ideal for welders or workers who wear a helmet with face shield; effectively holds a filter cassette or sample tube in the breathing zone regardless of visor position

Cat. No. 225-600

[#] Developed in Canada by IRSST (Institut de recherche Robert-Sauvé en santé et en sécurité du travail)



Face Level Headset

With its headband-behind-the-neck design, the Face Level Headset securely holds welding aerosol sampling media while providing a comfortable fit under a welding helmet.

see page 119 for details

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PTFE Membrane Filters

Aerosol Sampling in Aggressive Chemical Environments

TECH TIPS

- ▶ Back pressure on PTFE filters can vary within the same lot.
- ▶ The low back pressure on PTFE filters allows longer run times at higher flow rates.
- ▶ PTFE filter temperature resistance provides stability up to 500 F (260 C).
- ▶ Use PTFE filters for industrial hygiene sampling of polynuclear aromatic hydrocarbons (PNAs).
- ▶ These hydrophobic PTFE filters are specified for environmental particulate sampling with gravimetric analysis.

- ▶ **Hydrophobic**
- ▶ **Low background for interference-free chemical determinations**
- ▶ **Strong and resistant to acids, bases, and solvents**
- ▶ **Low tare mass for accurate gravimetric analysis**
- ▶ **Temperature resistant to 500 F (260 C) — autoclavable**
- ▶ **Suitable for sampling in environments also containing water vapor**
- ▶ **Also available in 10.0-µm pore size — contact SKC**

PTFE filters are the versatile choice for size-selective samplers. The material's unique properties make it ideal for gravimetric, chemical, and/or microscopic analysis of sample particulate. PTFE filters are used for environmental particulate matter sampling, metalworking fluids, in the pharmaceutical industry, and more.

PTFE Membrane Filters

Diameter (mm)	Pore Size (µm)	Support Pad [†]	Notes	Cat. No.	Qty.
25	0.5	No	unlaminated	225-3708	250
25	1.0	No	unlaminated	225-3714	250
25	1.0	No	unlaminated	225-1727	100
25	2.0	No	unlaminated	225-3726	250
25	5.0	No	unlaminated	225-1728A	100
37	1.0	No	unlaminated	225-3705	150
37	2.0	No	unlaminated	225-37-07	50
37	5.0	Yes	unlaminated	225-17P	100
47	0.5	No	unlaminated	225-3753	150
47	2.0	No	unlaminated	225-3748	150
<hr/>					
37	0.45	Yes	on polypropylene support	225-17-04	100
37	1.0	Yes	on polypropylene support	225-17-01	100
<hr/>					
25	3.0	No	with PMP support ring	225-1711 [†]	50
37	2.0	No	with PMP support ring	225-1709	50
47	2.0	No	with PMP support ring	225-1747	50
<hr/>					
37	0.3	No	for viruses and other bioaerosols, laminated spun-bound polyester; available preloaded, see below	225-1722	100

[†] Recommended for use with the Button Sampler; see page 124

[‡] Filter support pads available on page 117



For size-selective samplers
see pages 120-134

Preloaded PTFE Membrane Filters

These preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 119.

Diameter (mm)	Filter Specifications	Cassette Description	Cat. No.	Qty.
25	PTFE, 1.0 µm, with polyethylene support pad	2-piece black conductive, goblet style	225-1725	50
		3-piece black conductive, goblet style	225-1721	50
37	PTFE, 0.3 µm, laminated with spun-bound polyester with cellulose support; for viruses and other bioaerosols	3-piece clear styrene, banded	225-1723	50
37	PTFE, 1.0 µm, with cellulose support	3-piece clear styrene, banded	225-1715	50
37	PTFE, 2.0 µm, with cellulose ring	2-piece opaque plastic, banded	225-1713**	50

** Available with tamper-evident band around plugs



For Sample Pumps
see pages 16-21

Diesel Particulate Matter Cassettes

Also Suitable for Carbon Nanotubes and Fibers

DPM Cassette — Preloaded Quartz Filters with Submicron Impactor

- Preloaded in specially designed cassette with internal size-selective impactor
 - Screens particles ≥ 1 micron
 - Contains two quartz filters: one for sample collection and one for dynamic blank
- Use for elemental carbon analysis of DPM or for carbon nanotubes (CNTs) and carbon nanofibers (CNFs) (NIOSH Method 5040); see NIOSH CIB 65, cdc.gov/niosh/docs/2013-145



DPM Cyclone

- Extended retaining ring and special sealing securely hold SKC DPM Cassettes (at left)
- Conductive plastic construction prevents static interference
- Operate at 2 L/min when used with the DPM Cassette



DPM Cyclone includes grit pot and retaining ring
Cat. No. 225-68

Diameter (mm)	Filter Specifications	Cassette Description	Notes	Cat. No.	Qty.
37	2 heat-treated, binder-free Tissuquartz	1-piece with impactor, tamper-evident sealed, single use†	NIOSH 5040 analysis, average sample deposition area is 8.04 cm ²	225-317*	10

* Limited shelf-life † Requires 1/4-inch ID tubing or Filter Cassette/Cyclone Holder; see pp. 116

Preloaded Quartz Filters Without Submicron Impactor

- An economical choice when no interfering respirable dusts are present
- Meets NIOSH 5040 specifications for elemental carbon
- Preloaded into standard 37 or 25-mm, 3-piece clear styrene cassette

These preloaded filters include supports and are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 119.

Diameter (mm)	Filter Specifications	Cassette Description	Notes	Cat. No.	Qty.
25	Heat-treated, binder-free Tissuquartz, support pad	3-piece clear styrene, banded	Meets NIOSH NEAT 2.0 protocols for NIOSH 5040 analysis	225-401-25	50
37	Heat-treated, binder-free R-100 quartz, support pad	3-piece clear styrene, banded	NIOSH 5040	225-401**	50

** Available with tamper-evident band around plugs



See GS-1 Cyclone on page 126

ABOUT

Quartz Depth Filters

Q: What is the difference between Type R-100 and Tissuquartz depth filters?

A: Type R-100 filters meet NIOSH requirements: 99.97% retention efficiency for 0.3- μ m dioctylphthalate (DOP) particles up to a 200-mg filter loading.

Tissuquartz has a typical retention efficiency of 99.90% for 0.3- μ m DOP particles at 32 L/min per 100 cm² filter media.

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Quartz Depth Filters

For Elemental/Organic Carbon, DPM, and Trace-level Contaminants

Quartz Filters

- Heat treated to reduce trace organics
- Binder-free
- Low metal background

Diameter (mm)	Description	Cat. No.	Qty.
25	Type R-100	225-1824#	100
25	Tissuquartz	225-1825 [¥]	100
37	Tissuquartz	225-1822 [¥]	25
37	Type R-100	225-1827#	100
47	Tissuquartz	225-1823 [¥]	25
		225-1811 [¥]	100
47	Type R-100	225-1830#	100
102	QM-A	225-1808 [‡]	100
Preloaded Quartz Filters specified in NIOSH 7908 for Phosphoric Acid and Sulfuric Acid			
37	Tissuquartz with cellulose support, 2-piece clear styrene, banded	225-9033	10

¥ 432 μ m thick

380 μ m thick

‡ 450 μ m thick

ABOUT

Depth Filter Pore Size Rating

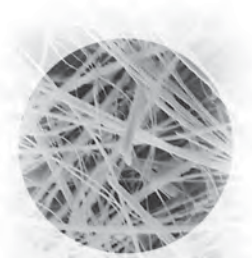
The pore size rating for depth filters is commonly termed “nominal” or approximate. This is due to the method for determining pore size. Depth filters are made of intertwined fibers or sintered particles. These form irregular openings through which air passes, but most particles do not. Pore size testing for depth filters is usually achieved by passing liquid containing particles of a known size through the filter. If an acceptable number of particles are trapped, that particle size becomes the “liquid nominal,” which is typically stated as, “Filter removes > xx% of particles $\geq x \mu\text{m}$.”

Need a different size or tamper-evident banded cassette?

Contact SKC!

Glass Fiber Depth Filters

- High-temperature tolerant — autoclavable
- Chemical and pH resistant; biologically inert
- High particle retention
- Hydrophobic
- Made of binder-free borosilicate glass fiber for purity
- Available with binder for excellent wet strength, easier handling, and filter integrity



Specified in EPA methods for environmental particulate matter gravimetric analysis

SKC quality Glass Fiber Depth Filters are suitable for both liquid and air filtration and are used where high flow rate and micron/submicron filtration are required. Select from several options.

A/E Glass Fiber Filters

Pure and ideal for gravimetric analysis of air pollutants and testing dissolved/suspended wastewater solids.

Dia. (mm)	Pore Size (μm) ^Δ	Description	Cat. No.	Qty.
13	1.0	Binder free	225-16	500
25	1.0	Binder free, recommended for IOM & Button Sampler (pp. 122-124)	225-702	500
37	1.0	Binder free	225-7	500
47	1.0	Binder free	225-7047	100
			225-714	500
8 x 10 inches	1.0	Binder free	225-7-07	100

Δ Liquid nominal; see About at above left

Specialty Glass Fiber Filters

These specialty options provide for applications that require additional characteristics such as high purity, strength, and long duration or suitability for high pressure, wet, high dirt loading, and large sample volumes.

Dia. (mm)	Pore Size (μm) ^Δ	Description	Cat. No.	Qty.
25	1.0	Acrylic binder, 50 ml thick	225-703	100
25	1.6	Binder free, GF/A	225-58F	100
37	1.0	Binder free, A/B	225-701	100
37	—	PTFE coated	225-705	100
90	1.0	Ultra pure	225-712	25

Δ Liquid nominal; see About at above left

Preloaded Glass Fiber Filters

SKC preloaded filters are in SureSeal leak-free cassettes requiring a SureSeal Cassette Opener; see page 119.

Dia. (mm)	Filter Specifications	Cassette Description	Cat. No.	Qty.
25	Glass Fiber, A/E, 1.0 μm , ^Δ no support	2-piece clear plastic, banded	225-710	50
37	Glass Fiber, A/E, 1.0 μm , ^Δ cellulose support	2-piece clear plastic, banded	225-709**	50
37	Glass Fiber, A/E, 1.0 μm , ^Δ cellulose support	3-piece clear plastic, banded	225-706**	50

Δ Liquid nominal; see About at above left

** Available with tamper-evident band around plugs

Cellulose Depth Filters

- Ideal for gravimetric sampling methods
- 100% pure, ashless cellulose fiber

Dia. (mm)	Pore Size (μm)	Description	Cat. No.	Qty.
37	—	Type 40	225-18A	500

Gelatin Filters

Maintain Viability of Collected Microorganisms

► Absolute retention rate

- 99.9995% for *Bacillus subtilis* var. niger spores[†]
- 99.94% for T3 phages (coli phages)[‡]
- 99.9% T1 phages (coli phages)[‡]

► High moisture content

- Maintain microbe viability for short sampling periods

► Completely water soluble

- Dissolve easily when placed on agar
- Provide the solubility required for virus sampling

► Pre-sterilized by gamma irradiation

► Ideal for monitoring in pharmaceutical plants

► Can be used to monitor in areas where disinfectants or antibiotics are present

ABOUT

Why Use Gelatin Filters?

Sampling microbes with traditional filter materials has been known to reduce culturability due to desiccation of the microbes. The high moisture content of gelatin filters helps to maintain microorganism viability for sampling periods up to 30 minutes. In addition, studies with T3 viruses have shown gelatin filters to be the most suitable for sampling viruses (low passage and high detection sensitivity) due to their complete solubility.

The unique properties of gelatin filters provide unequalled bacteria retention levels for quantitative analysis. Sampling with gelatin filters is easy and efficient and can provide information about relative changes in microorganism concentration throughout the day. Gelatin filters dissolve easily when placed on agar, allowing for a gentle transition from sample medium to growth medium. **For maximum culturability and superior collection of inhalable-size bioaerosols, combine 25-mm gelatin filters with the SKC Button Sampler; see below.**

Dia. (mm)	Support Pad	Notes	Cat. No.	Qty.
25	No	water soluble	225-9551 ^{†*}	50
37	No	water soluble	225-9552 [*]	50

[†] Recommended for use with IOM and Button Samplers; see pages 122-124

^{*} Storage at 39.2 to 46.4 F (4 to 8 C) recommended. Avoid temperatures < 39.2 F (4 C), moisture, and chemical vapors.

[‡] At inlet velocities of 0.25 m/s, 0.3 m/s (80% RH), and 0.3 m/s (50% RH), respectively

Reference

Fairfield Estill, C., Baron, P., et al., "Comparison of Air Sampling Methods for Aerosolized Spores of *B. anthracis* Sterne," *Jnl. of Occ. and Env. Hyg.*, 8:3, 2011, pp. 179-186, <https://doi.org/cppbh7>

Gelatin Filters with the Button Sampler Autoclavable Inhalable Sampler

The sterile, high moisture properties of gelatin filters combine with the unique features of the Button Sampler for maximum microorganism survivability and superior collection of inhalable-size bioaerosols. The autoclavable Button Sampler's unique inlet contains evenly spaced holes that act as sampling orifices for multi-directional sampling. The proximity of the gelatin filter to the inlet minimizes transmission losses and provides for equal distribution of particles and low intersample variation for viable and non-viable analyses. **For more information on the Button Sampler, see page 124.**



*For sample pumps
see pages 16-21*

Description	Cat. No.	Qty.
Button Sampler Pump Kit includes Button Sampler, standard AirChek XR5000 Sample Pump, single charger, 3 feet (0.9 meter) of Tygon tubing, and calibration adapter, requires a 25-mm filter	100-240 V 210-4121	ea



Coated Filter Selection Guide

Chemical	Method	Preloaded Filter; Coating (in 37-mm cassettes)	Cat. No.*	Qty.
Acetic anhydride	OSHA 102	2 Glass Fiber filters; veratrylamine and di-n-octyl phthalate	225-9010 §	10
4-Aminobiphenyl	OSHA 93	2 Glass Fiber filters; sulfuric acid	225-9004	10
Aniline	NIOSH 2017 †	2 Glass Fiber filters; sulfuric acid	225-9004 †	10
Arsenic, volatile compounds	OSHA ID-1006	1 MCE filter and plastic pad; untreated and 1 cellulose support pad; sodium carbonate	225-9001	10
Benzidine	OSHA 65	2 Glass Fiber filters; sulfuric acid	225-9004	10
Bromine, chlorine	NIOSH 6011	1 25-mm PTFE pre-filter and polypropylene support; 1 25-mm specially cleaned silver membrane and polypropylene support (in 25-mm cassette)	225-9006	5
Crotonaldehyde	OSHA 81	2 Glass Fiber filters; 2,4-dinitrophenylhydrazine and phosphoric acid	225-9019 §	10
o-Dianisidine	OSHA 71	2 Glass Fiber filters; sulfuric acid	225-9004	10
3,3'-Dichlorobenzidine	OSHA 65	2 Glass Fiber filters; sulfuric acid	225-9004	10
Diisocyanates (HDI; 2,6-TDI; 2,4-TDI)	ASTM D5836 Δ OSHA 42	1 Glass Fiber filter and cellulose support; 1-(2-pyridyl)piperazine	225-9013 §† 225-9002 §	10 10
Diphenylamine	OSHA 78	2 Glass Fiber filters; sulfuric acid	225-9004	10
Fluorides	OSHA ID-110 NIOSH 7902 ASTM D4765	1 MCE filter and plastic pad; untreated and 1 cellulose support pad; sodium carbonate	225-9001 #	10
Fluorides, particulate	NIOSH 7906	2 Nitrocellulose filters; 1 coated with sodium carbonate, 1 uncoated	225-9031	10
Glutaraldehyde	OSHA 64	2 Glass Fiber filters; 2,4-dinitrophenylhydrazine and phosphoric acid	225-9003 §	10
Glyoxal	For IFV	1 25-mm Glass Fiber filter; 2,4-dinitrophenylhydrazine (filters only, in jar)	225-9036 §	10
Hydrazine	OSHA 108	2 Glass Fiber filters; sulfuric acid	225-9012	10
Hydrofluoric acid	NIOSH 7906	2 Nitrocellulose filters; 1 coated with sodium carbonate, 1 uncoated	225-9031	10
Hydrogen bromide	NIOSH 7907	2 Quartz filters (R-100); 1 coated with sodium carbonate, 1 uncoated	225-9032	10
Hydrogen chloride	NIOSH 7907	2 Quartz filters (R-100); 1 coated with sodium carbonate, 1 uncoated	225-9032	10
Hydrogen peroxide	OSHA 1019	2 25-mm Quartz filters (R-100); titanium oxysulfate hydrate (in 25-mm cassette)	225-9030	10
Isocyanates	ASTM Methods	1 PTFE filter; 1 Glass Fiber filter impregnated with MAMA (ISO-CHEK Sampling System, see p. 113)	225-9022 ‡ 225-9022A ‡	12 36
Isocyanates (HDI; 2,6-TDI; 2,4-TDI)	ASTM D5836 Δ OSHA 42	1 Glass Fiber filter and cellulose support; 1-(2-pyridyl)piperazine	225-9013 §† 225-9002 §	10 10
Isocyanates (HDI, MDI, TDI, IPDI, HDI-BT, HDI-IC)	OR-OSHA 1010	1 13-mm Glass Fiber filter; MAMA (in 13-mm Swinnex holder) (also requires impinger)	225-9029 §	5
Isocyanates, organic	MDHS 25/4 (UK)	1 25-mm A/E Glass Fiber filter; methoxyphenyl piperazine (filters only, in jar)	Special order §	
n-Isopropylaniline	OSHA 78	2 Glass Fiber filters; sulfuric acid	225-9004	10
Maleic anhydride	OSHA 86	2 Glass Fiber filters; veratrylamine	225-9021 §	10
Maleic anhydride	For IFV	1 25-mm Glass Fiber filter; veratrylamine (filters only, in jar)	225-9028 §	10
Mercaptans (methyl-, ethyl-, n-butyl-, phenyl-)	NIOSH 2542 OSHA 26	1 Glass Fiber filter; mercuric acetate	225-9007 §	10
4,4'-Methylene bis (2-chloroaniline) (MOCA)	OSHA 71	2 Glass Fiber filters; sulfuric acid	225-9004	10
4,4'-Methylene bis (phenyl isocyanate) (MDI)	OSHA 47	1 Glass Fiber filter and cellulose support; 1-(2-pyridyl)piperazine	225-9013 §† 225-9002 §	10 10
4,4'-Methylenedianiline	OSHA 57 NIOSH 5029	2 Glass Fiber filters; sulfuric acid	225-9004	10
1-Naphthylamine, 2-naphthylamine	OSHA 93	2 Glass Fiber filters; sulfuric acid	225-9004	10
Nitric acid	NIOSH 7907	2 Quartz filters (R-100); 1 coated with sodium carbonate, 1 uncoated	225-9032	10
Nitrobenzene	NIOSH 2017 †	2 Glass Fiber filters; sulfuric acid	225-9004 †	10
Ozone	OSHA ID-214	2 Glass Fiber filters; nitrite-impregnated	225-9014 §	10
Peracetic acid (PAA)	OSHA PV2321	1 25-mm Quartz filter (R-100); titanium oxysulfate hydrate (in 25-mm cassette)	225-9037 •	10
Phenylenediamine (o-, m-, p-)	OSHA 87	2 Glass Fiber filters; sulfuric acid	225-9004	10
Phosphine	OSHA 1003	1 Glass Fiber filter; 1 polyester filter coated with mercuric chloride	225-9018 †§	10
Phosphoric acid	NIOSH 7908	1 Quartz filter (Tissuquartz)	225-9033	10
Phthalic anhydride	OSHA 90	2 Glass Fiber filters; veratrylamine	225-9034 §	10
Sulfur dioxide	NIOSH 6004 (modified)	1 MCE pre-filter and support/1 cellulose filter and support; sodium carbonate	225-9005	10
Sulfuric acid	NIOSH 7908	1 Quartz filter (Tissuquartz)	225-9033	10
2,4-Toluenediamine	OSHA 65	2 Glass Fiber filters; sulfuric acid	225-9004	10
2,6-Toluenediamine	OSHA 65	2 Glass Fiber filters; sulfuric acid	225-9004	10
o-Tolidine	OSHA 71	2 Glass Fiber filters; sulfuric acid	225-9004	10
Toluene-2,4-diisocyanate and toluene-2,6-diisocyanate	For IFV	1 25-mm Glass Fiber filter; 1-(2-pyridyl)piperazine (filters only, in jar)	225-9035 §	10
o-Toluidine	NIOSH 2017 †	2 Glass Fiber filters; sulfuric acid	225-9004 †	10
Toluidine (o-, m-, p-)	OSHA 73	2 Glass Fiber filters; sulfuric acid	225-9004	10
Trimellitic anhydride	OSHA 98	2 Glass Fiber filters; veratrylamine and di-n-octyl phthalate	225-9010 §	10
Valeraldehyde	OSHA 85	3 Glass Fiber filters; 2,4-dinitrophenylhydrazine and phosphoric acid	225-9020 §	10
m-Xylenediamine (m-XDA, p-XDA)	OSHA 105	2 Glass Fiber filters; sulfuric acid	225-9004	10

* Coated filters have a limited shelf-life.

† Custom order due to very limited shelf-life

Δ ASTM D5836 and D5932 for 2,4-TDI, 2,6-TDI only

§ Storage below 39.2 F (4 C) required

‡ Also requires Sorbent Tube Cat. No. 226-15, see page 48

Collects both vapor and aerosol phases of fluorides

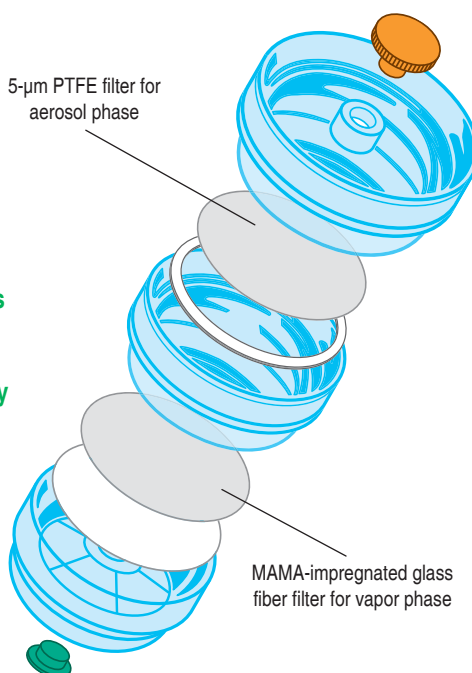
• Requires 22-ml threaded midjet impinger and sorbent-containing trap. See method and p. 70 for more information.

‡ Limited shelf-life, storage below 39.2 F (4 C) required; refrigerated shipping not required. Requires Cat. No. 225-9050; see p. 113.

ISO-CHEK

Simultaneous and Separate Collection of Isocyanate Phases

- ▶ **Accurately samples diisocyanates: HDI, MDI, IPDI, HMDI, 2,4-TDI, and 2,6-TDI**
- ▶ **Meets the specifications of several methods**
 - ASTM D5932 for 2,4 and 2,6-TDI
 - ASTM D6561 for HDI
 - ASTM D6562 for HDI
- ▶ **The only filter-based system that simultaneously traps and separates both monomers and oligomers**
 - For better determinations of control strategies
- ▶ **Decreases sample preparation and analysis time by 40% compared to other methods**
 - Premade calibration standards are available
- ▶ **Highly stable — low temperature storage and transport not required**
- ▶ **Highly sensitive analysis provides detection limits below current regulated exposure levels**
 - Ideal for occupational sampling and environmental surveys
 - Requires only a 15-minute sample time
- ▶ **Round-robin proficiency testing for ISO-CHEK labs ensures accurate, consistent analysis**
 - Visit skcinc.com/lab



Exploded view of ISO-CHEK Filter Cassette (Cassette in image is tinted for clarification.)

Calibration standards available!

ADVANTAGES

- ✓ **Simultaneous collection and separation of phases at the point of collection**
Less time-consuming and more accurate analysis of each phase
- ✓ **Reagent is stable at room temperature.**
- ✓ **1 L/min flow rate efficiently captures aerosol phase isocyanates compared to denuder collectors.**
- ✓ **No handling precautions**
Eliminates the inconveniences of impingers

ABOUT

ISO-CHEK Development
ISO-CHEK was developed and patented by IRSST (Institut de recherche Robert-Sauvé en santé et en sécurité du travail).

Suitable for most isocyanates, the ISO-CHEK® Sampling System employs a two-stage filter arrangement that results in the simultaneous collection and separation of vapor from aerosol at the point of collection. The filter that collects the vapor phase is impregnated with 9-(N-methyl-aminomethyl) anthracene (MAMA), a highly stable reagent that minimizes storage and handling requirements.

Description	Cat. No.	Qty.
ISO-CHEK Sampling System with Derivatizing Reagent, ^{†††} preloaded clear cassettes and jars of Derivatizing Solution (MOPIP in toluene)	225-9023	4
	225-9023A	10
ISO-CHEK Sampling Cassettes, ^{††} preloaded clear cassettes for isocyanates, require Derivatizing Solution; see below	225-9022	12
	225-9022A	36

Accessories	Cat. No.	Qty.
Derivatizing Solution, ^{†††} 5 ml of MOPIP in toluene, in jars	225-9050	12
Jars, 37 mm with PTFE-lined cap	225-8377	36
Calibration Standard, [‡] MAMA-HDI, 1 gram	225-9053	ea
Calibration Standard, [‡] MAMA-IPDI, 1 gram	225-9054	ea
Calibration Standard, [‡] MAMA-MDI, 1 gram	225-9062	ea
Calibration Standard, [‡] MAMA-2,4-TDI and 2,6-TDI, 1 gram	225-9052	ea
Calibration Standard Set, [‡] HDI, MDI, IPDI, 2,4-TDI, 2,6-TDI, 1 gram each	225-9055	ea
Packaging Kit, materials for shipping 10 packages of 10 samplers and jars	225-9059	ea

* Limited shelf-life

† Hazmat shipping charges for air shipments only, ground shipments exempt

‡ Limited shelf-life, storage below 39.2 F (4 C) required; refrigerated shipping not required

For ISO-CHEK analytical laboratories visit skcinc.com/lab



Filter Cassettes

Spore Trap

▲ ADVANTAGES

- ☑ **Uniform particle deposition**
Provides for accurate analysis using standard equipment
- ☑ **High collection efficiency**
Target specific size particles for true versatility. See table below right for more information.
- ☑ **SureSeal cassette for sample integrity**
- ☑ **Fast, easy alignment on microscope stage**

• TECH TIPS •

► VersaTrap cassettes can be operated at 30 L/min to trap the smallest *Penicillium/Aspergillus* spores that other spore traps do not. VersaTrap provides a 150-liter sample at 30 L/min in only 5 minutes.

QuickTake 30 Pump
Ideal for Spore Traps
see pages 28-29

MORE INFORMATION

VersaTrap

skcinc.com/knowledgecenter

VersaTrap Spore Trap Cassette

Traps Smaller Mold Spores Using Higher Flows

- **High collection efficiency from 5 to 30 L/min**
 - VersaTrap captures *Aspergillus* and *Penicillium* mold spores as small as 1.5 µm at 30 L/min
- **A standard collection method for mold spore count and genus identification**
- **Easy analysis — ASTM Method D7391-20**
 - Positioning notches and flat edges provide for easy alignment on microscope stage
 - Uniform, well-defined rectangular deposition
- **Optimized slide adhesive**
 - Optically clear and tested for superior adhesion
- **SureSeal leak-free cassettes for sample integrity**
- **Unique serial number on each cassette for sample traceability**



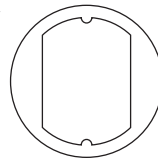
VersaTrap® Spore Trap Cassettes provide the sampling versatility needed to capture mold spores and other particles ranging from 1.5 to 3.9 µm. Sampling is as easy as selecting the flow rate that will target the desired particle size (*see table below*), calibrating a pump to the flow rate, and collecting the sample.

VersaTrap Design

The narrow slit inlet focuses particles toward the clear glass slide coated with a sticky substrate that holds the sample securely. Targeted size particles are effectively held in a well-defined rectangular footprint. Each slide is encased in a SureSeal leak-free cassette to ensure sample integrity.

VersaTrap Makes Analysis Easy

- Designed for easy slide removal
- Positioning notches and flat edges for fast, easy alignment
- Well-defined rectangular footprint for accurate analysis using standard equipment
- Adhesive prevents blurring or wash off during staining
- Unique serial numbers for sample traceability










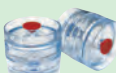

High Flows + Low Cut-points + No Particle Bounce = High Collection Efficiency









Flow Rate (L/min)	VersaTrap 50% Cut-point (µm)
30	1.5
25	1.7
20	1.9
15	2.3
10	2.8
5	3.9

Description	Cat. No.	Qty.
VersaTrap Spore Trap Cassettes, 37 mm, <i>limited shelf-life</i>	225-9820	10
	225-9821	50

For a list of microbiological laboratories, go to skcinc.com/lab.

SureSeal Cassette Blanks

Diameter (mm)	Description	Cat. No.	Qty.
25	2 piece, standard; styrene, clear	225-2-25LF 225-2258LF	50 250
			
25	3 piece, standard; styrene, clear	225-3-25LF 225-2259LF	50 250
			
25	3 piece, goblet style; polypropylene, opaque white; solvent-resistant	225-8585	50
			
25	2 piece, goblet; polypropylene, conductive black	225-2257	50
			
25	3 piece, 2-inch middle cowl; polypropylene, conductive black	225-3-23	50
			
25	3 piece, 1/2-inch middle ring; polypropylene, conductive black	225-329	50
			
37	2 piece, standard; styrene, clear	225-2LF 225-2050LF 225-2250	10 50 250
			
37	3 piece, standard; styrene, clear	225-3LF 225-3050LF 225-3250	10 50 250
			
37	Middle ring only; styrene, clear, 1/2 inch	225-304	50
			
<i>Available in 25 mm as Cat. No. 225-300R; visit skcinc.com.</i>			

Diameter (mm)	Description	Cat. No.	Qty.
37	2 piece, standard; styrene, opaque brown	225-4	50
			
37	3 piece, standard; styrene, opaque brown	225-8451	50
			
37	2 piece, standard; polypropylene, opaque white; solvent-resistant	225-8483	50
			
37	3 piece, standard; polypropylene, opaque white; solvent-resistant	225-45A	50
			
37	2 piece, standard; polypropylene, conductive black	225-308	50
			
37	3 piece, standard; polypropylene, conductive black	225-309	50
			
<i>Static free – ideal for cyclones!</i>			
47	2 piece, standard; polypropylene, conductive black	225-8496A	25
			
47	3 piece, standard; polypropylene, conductive black	225-8497A	25
			

SureSeal Cassettes require the use of SureSeal Cassette Opener Cat. No. 225-13-5A.

Best Practice

Minimize cassette wall losses while sampling with a cyclone. NIOSH suggests using a static-dissipative (conductive) black polypropylene filter cassette such as Cat. No. 225-309. See Ashley, K., Harper, M., *Journal of Occupational and Environmental Hygiene*, 10:3, 2013, pp. D29-D33, <https://doi.org/wv3>.

For additional cassette blanks, spacers, and accessories, visit skcinc.com!

Filter Sampling Accessories

Filter and Cassette Holders

Cassette and Filter Holders

SKC Filter Cassette Holder — Reinforced to Prevent Tube Kinking

The lightweight SKC Filter Cassette Holder attaches firmly to the collar for sampling in the breathing zone. Its special design securely holds a two or three-piece 37-mm cassette with or without cyclone, 25-mm cassette with cowl, or DPM Cassette with GS-1 Cyclone. The Filter Cassette Holder includes 3 feet of 1/4-inch ID Tygon tubing and a 25-mm adapter ring (cassette in photo **not** included).

Cat. No. 225-1



Specialty Filter Holders

13-mm Swinnex

- 2-section polypropylene with silicone seal
- Reusable
- Autoclavable with filter in place
- Specified in NIOSH Method 5503 for PCBs



Cat. No. 225-32.....Qty/10

Replacement silicone gaskets

Cat. No. 225-3201.....Qty/100

25-mm Delrin — Inline

- 2 section with inline stainless steel support
- Broad chemical compatibility and strength
- Useful for low pressure applications



Cat. No. 225-1109.....Qty/6

25-mm Delrin — Open-face

- Open-face with stainless steel support
- Lightweight and corrosion-resistant
- Includes 1/4-inch ID hose barb adapter



Cat. No. 225-1107.....Qty/6

47-mm Polycarbonate

- Lightweight polycarbonate is ideal for air monitoring applications
- Opens and closes easily without disturbing the filter
- Autoclavable



Cat. No. 225-4702

47-mm Savillex PFA

- Includes 1/4-inch ferrule nuts and wrench set
- Replace filters without disconnecting lines
- Operate within -328 to 500 F (-200 to 260 C)



Cat. No. 225-1712

47-mm Polypropylene

- Ideal for vacuum and pressure air sampling applications
- Can be used with pressures up to 100 psig



Cat. No. 225-1147

View more accessories at [skcinc.com!](http://skcinc.com)

Filter Supports

Various materials are used to support filters during sampling. **Cellulose support pads** feature a smooth surface and uniform airflow distribution. **Porous plastic pads** are impervious to most solvents. Use **stainless steel screens** when cellulose or plastic will interfere with analysis.

Diameter (mm)	Support Material	Cat. No.	Qty.
25	Cellulose pad	225-28	100
25	Stainless steel screen, wide mesh	225-2625	ea
25	Porous plastic (polyethylene)	225-2901	100
37	Cellulose pad	225-27	100
		225-2700	500
37	Cellulose spacer ring	225-23	100
37	Porous plastic (polyethylene)	225-2902	100
37	Stainless steel screen, wide mesh	225-26	ea
37	Stainless steel screen, fine mesh	225-2637	ea
47	Cellulose pad	225-2903	100
47	Stainless steel screen, wide mesh	225-2647W	ea



*For Cassette Blanks
see page 115*

TECH TIPS

- ▶ Consider your application before selecting tubing.
 - **Tubing attached to the sampling media outlet** does **not** contact the sample; therefore, the tubing material used is not critical, but should not be prone to kinking. Select the tubing best suited for the media and pump.
 - **Tubing attached to the sampling media inlet for gas/vapor sampling** contacts the sample during specialized applications such as bag sampling. Inert PTFE tubing is recommended because it prevents adsorption of the sample on the tubing's inner surface.
 - **Tubing attached to the sampling media inlet for particulate sampling** contacts the sample during specialized applications such as microvacuum sampling. Tygon tubing is typically used to prevent sample loss in the tubing due to static effect.

Cassette Shrink Bands

Specifically designed for use with sampling cassettes, SKC Cassette Shrink Bands are self-sealing, provide a smooth writing surface for sample identification, and make tampering evident.



Fit Cassette Diameter (mm)	Color	Cat. No.	Qty.	Quantity Pricing	
				Cat. No.	Qty.
25	White	225-2503	100	225-2503A	1400
25	Clear	Contact SKC	100	225-2510	1400
37	White	225-25	100	225-25A	1000
37	Clear	225-2509	100	225-2509A	1000
37	Orange	225-2504	100	225-2504A	1000
37	Yellow	225-2507	100	225-2507A	1000
37	Red	225-2508	100	225-2508A	1000
37	Black	Contact SKC	100	225-2515A	1000

Contact your SKC distributor.

Tubing for Connecting Pump and Media

Description/Applications	ID in (mm)	OD in (mm)	Cat. No.	Qty.
Tygon, sampling trains	3/16 (4.76)	5/16 (7.94)	225-1346	ea
Tygon, sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	1/4 (6.35)	3/8 (9.53)	225-13-4A	ea
			225-13-4	ea
			225-1345	ea
Tygon, for calibrating DCS/DPS	5/16 (7.94)	9/16 (14.29)	225-1349	ea
Tygon, sampling trains; for calibrating QuickTake Pumps	3/8 (9.53)	1/2 (12.7)	225-1351	ea
			225-1352	ea
Latex Rubber, black, sampling trains	3/16 (4.76)	5/16 (7.94)	226-03-003	ea
Latex Rubber, black, sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	1/4 (6.35)	3/8 (9.53)	226-03-004	ea
Latex Rubber, amber, sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	1/4 (6.35)	3/8 (9.53)	225-1347	ea
Polyurethane, reinforced to prevent kinking, sampling trains; fits over impinger sidearm, impinger inlet, filter cassette outlet, or Luer adapter	1/4 (6.35)	15/32 (11.9)	225-1350	ea
Spring Tubing Supports, use with 5/16-inch OD flexible tubing to prevent kinking			225-1348	5



Filter Sampling Accessories

Sampling and Calibrating

Sampling and Calibrating

SKC Filter Cassette Holder

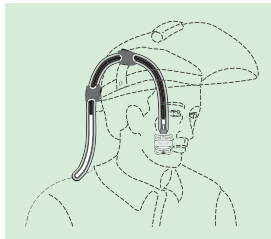
The lightweight SKC Filter Cassette Holder attaches firmly to the collar for sampling in the breathing zone. Its special design securely holds a two or three-piece 37-mm cassette with or without cyclone, 25-mm cassette with cowl, or DPM Cassette with GS-1 Cyclone. The Filter Cassette Holder includes 3 feet of 1/4-inch ID Tygon tubing and a 25-mm adapter ring (cassette in photo **not** included).



Cat. No. 225-1

Helmet Adapter*

Ideal for welders or workers who wear a helmet with face shield; effectively holds a filter cassette or sample tube in the breathing zone regardless of visor position



Cat. No. 225-600

* Developed in Canada by IRSST (Institut de recherche Robert-Sauvé en santé et en sécurité du travail)

Cassette Adapters

PVC Luer taper adapters connect a cassette to 1/4-inch ID tubing.

Cat. No. 225-13-2.....Qty/10
Cat. No. 225-132AQty/250

Nickel-plated Brass
Cat. No. 225-13-3.....Qty/10



Sampling Labels

Identify samples with sample number, date, flow rate, pump number, time on, and time off

Cat. No. 225-1370.....Qty/500



Tubing, Collar Clip, and Cable Tie

For attachment of a sampling cassette to the collar; includes 3 feet of 1/4-inch ID Tygon tubing and one alligator clip attached to a nylon cable tie

Cat. No. 225-13-8

Collar Clip and Cable Ties Only
Cat. No. 225-13-6.....Qty/10
Cat. No. 225-13-6A.....Qty/25



Calibration Adapters

Use the guide below to find the calibration adapter or jar required to calibrate your SKC sampler.

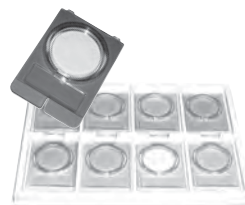
For SKC sampler	You need	
Disposable PPIs	Disposable PPI Calibration Adapter Cat. No. 225-389	
Reusable PPIs GS Cyclones Low-volume PUF Tubes	Calibration Jar, Standard Cat. No. 225-111	
Devices up to 8-inch length x 3.25-inch diameter	Calibration Jar, Large Cat. No. 225-112	
Aluminum Cyclones (25 and 37 mm)	Aluminum Cyclone Calibration Adapter Cat. No. 225-01-03	
Button Sampler IFV Pro Sampler	Button Sampler/IFV Pro Sampler Calibration Adapter Cat. No. 225-361	

For SKC sampler	You need	
IMPACT Sampler	IMPACT Sampler Calibration Adapter Cat. No. 225-394	
IOM Sampler	IOM Calibration Adapter Cat. No. 391-01	
PEM Sampler	PEM Calibration Adapter Cat. No. 761-202	
PMI Sampler	PMI Calibration Adapter Cat. No. 225-358	
BioStage Impactor	BioStage Calibration Adapter for BioStage Cat. No. P33100	

Sampling, Transporting, and Storing

Filter-Keeper Filter Transport and Storage

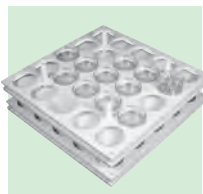
Minimize sample loss with static-dissipative plastic Filter-Keepers. The clamshell design locks the periphery of filters into place away from any surface. Eight Filter-Keepers can be kept in a numbered Filter-Keeper Archiving Tray that contains an area for labeling.



Description	Cat. No.	Qty.
25-mm Filter-Keepers include labels	225-8301	100
37-mm Filter-Keepers include labels	225-8303	100
	225-8303A	10
Archiving Trays Only	225-8305	6

Kasset-Kaddy

Each Kasset-Kaddy tray securely holds twenty-five 37-mm cassettes for convenient transport or storage. The polypropylene trays measure 10 x 10 inches to fit commercially available desiccators and ovens.



Cat. No. 225-8321..... Qty/2

Petri Dish Slides

Easily transport filters up to 47 mm in diameter with Petri Dish Slides. The rectangular base fits most microscope stages.



Cat. No. 225-2-01..... Qty/100

Stainless Steel Filter Lifter

Speeds removal of filters from cassettes without damage.



Cat. No. 225-13-7

Filter Transport Case

Conductive plastic case securely holds 25-mm filters for transport.



Cat. No. 225-67

Mini Sampler for Welding Aerosols

The Mini Sampler makes sampling inhalable manganese and other hazardous metals in welding fume easy! The Mini Sampler's open-face aluminum entry nozzle cassette fits onto the Face Level Sampling Headset that features the headband behind the neck, making it an easy, comfortable fit under a welding helmet. Validated for sampling manganese, the Mini Sampler and the Headset are identified in ISO 10882-1:2011 as the best mounting arrangement for sampling particulates (metals) in the breathing zone inside a welder's face mask. *Requires a 13-mm filter (see pages 102 and 110) and sample pump (see pages 12-23)*

Mini Sampler^Δ
Cat. No. 225-6201

Face Level Sampling Headset^Δ
Cat. No. 225-6200

Tube Holder/Cover for Use with Face Level Headset
Fits a single 6-mm OD x 70-mm L sorbent tube
Cat. No. 225-6220

Calibration Adapter
Cat. No. 225-6202



^Δ Developed in a research project partly funded by the Swedish Work Environment Authority at Stockholm University, Sweden

Reference
Liden, G. and Surakka, J., "A Headset-Mounted Mini Sampler for Measuring Exposure to Welding Aerosol in the Breathing Zone," *Ann. Occup Hyg.*, Vol. 53, no. 2, 2009, pp. 99-116

Filter Handling Kit

Includes SureSeal Cassette Opener, filter lifter, and non-serrated flat-tip forceps in a convenient carry case.



Cat. No. 225-8372

Glass Jars

Sturdy 37-mm glass jars with PTFE-lined caps are ideal for transport and solvent extraction of filter samples in the field or the lab.



Cat. No. 225-8377..... Qty/36

SureSeal Cassette Opener

The SureSeal Cassette Opener is a sturdy stainless steel crowbar with extended handle that makes opening 25 or 37-mm cassettes easy. *Required for all SureSeal Cassettes*



Cat. No. 225-13-5A

Forceps

Non-serrated flat tips for delicate membranes



Cat. No. 225-8371

Serrated pointed tips

Cat. No. 225-13-1

PTFE-coated pointed tips to avoid contaminants when sampling for hexavalent chromium

Cat. No. 225-1344

Size-selective Samplers

Overview

The SKC Particle Size-

Use this convenient guide to help select

Select a 50% Cut-point or	< 1 µm	< 0.25 to > 2.5 µm	2.5 µm	4 µm
Classification	Sub-micron	Ultrafine, Fine, and > PM2.5	PM2.5	Respirable

Select a Flow Rate (L/min)	1.7 or 2	9	2	3	4	10	10	2	2.5	2.75	3	4 and 8
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SKC Size-selective Samplers	DPM Cassette	Sioutas Impactor	PEM	PMI	PEM	IMPACT	PEM	PPI	Aluminum Cyclone	GS-3 Cyclone	Plastic Cyclone	PPI
Main Feature/Benefit	Ideal for DPM and nano-particles	Samples ultrafine, fine, and > PM2.5 particles simultaneously	Referenced in EPA IP-10A	High collection efficiency	Referenced in EPA IP-10A	High flow for increased sensitivity	Referenced in EPA IP-10A	Precisely matches ISO 7708/CEN criteria	Specified in NIOSH 7500 and 0600	Meets ISO 7708/CEN criteria	For MDHS 14/4, 101/2, and 91/2 Meets ISO/CEN	High flow for enhanced sensitivity
Page	109	134	132	133	132	131	132	128-130	127	126	127	128-130



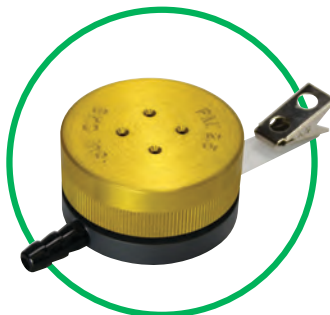
DPM Cassette
Diesel Particulate Matter
Page 109



IMPACT Sampler
PM2.5/PM10/Coarse
Page 131



Sioutas Personal Cascade Impactor
Ultrafine/Fine/ > PM2.5
Page 134



Personal Modular Impactor (PMI)
PM2.5/PM10/Coarse
Page 133



Disposable Parallel Particle Impactor (PPI)
Respirable and Thoracic
Pages 128-129



Reusable Parallel Particle Impactor (PPI)
Respirable and Thoracic
Page 130

selective Sampler Guide

sampling devices to meet your applications.

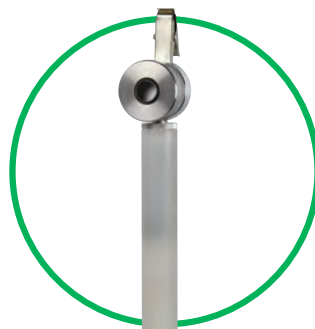
Select a 50% Cut-point or Classification	10 µm	100 µm	Particles < 10 µm but > 2.5 µm
	Thoracic or PM10	Inhalable	PM Coarse

Select a Flow Rate (L/min)	2	2	3	4	10	10	1	2	4	3	10
----------------------------	---	---	---	---	----	----	---	---	---	---	----

SKC Size-selective Samplers	PPI	PEM	PMI	PEM	PEM	IMPACT	IFV Pro	IOM	Button Sampler	PMI	IMPACT
Main Feature/Benefit	Precisely matches ISO 7708/CEN criteria	Referenced in EPA IP-10A	High collection efficiency	Referenced in EPA IP-10A	Referenced in EPA IP-10A	High flow for increased sensitivity	Simultaneous sampling of mixed-phase (aerosol and vapor)	Meets U.S. and international standards	Low-level PM sampling	High collection efficiency	High flow for increased sensitivity
Page	128-130	132	133	132	132	131	125	122-123	124	133	131



Aluminum and Plastic Cyclones
Page 127



IFV Pro Inhalable Sampler
Mixed-phase
Page 125



GS-3 Cyclone Respirable
Page 126



For sample pumps
see pages 12-25



IOM Sampler Inhalable
Pages 122-123



Button Sampler Inhalable
Page 124



Personal Environmental Monitor (PEM)
PM2.5/PM10
Page 132



For real-time particulate monitors
see pages 154-161

Inhalable Samplers

2 L/min

IOM Sampler

A Gold Standard for Personal Inhalable PM Sampling

Choose the Original IOM for OPTIMAL PERFORMANCE!

APPLICATIONS

Special High Flow Use

Demand grows for higher flow inhalable sampling devices to evaluate very low levels of unique target compounds. Several studies identify alternative applications for the IOM Sampler at flows from 8.2 to 10.64 L/min while still meeting the ISO 7708/EN481 criteria. See the related Technical Note at skcinc.com/knowledgecenter.

SKC recommends the QuickTake 30 Sample Pump for these high flow applications. See pages 28-29.



Meets U.S. and international standards

- ISO 7708/EN481:1993
- ACGIH criteria for inhalable particulate
- ISO/CEN health-related fractions of bioaerosols
- Preferred sampler for HSE Method MDHS 14/4
- Complies with MDHS 6/3 - lead (with accessory head)
- Complies with MDHS 25/4 - organic isocyanates (stainless steel only)
- NIOSH Method 5700 - particulate formaldehyde
- Australian standard for inhalable particulate
- OSHA-equivalent method for PNOR[‡]

Small and lightweight – plastic weighs < 2 ounces (55 grams)

Maintains sample integrity

- Removable 25-mm cassette system eliminates filter handling
- Cassette with filter is weighed as a single unit to include all collected particles in analysis

Autoclavable stainless steel cassette for bioaerosol sampling and chemical analysis

Use with MultiDust Foam Discs for simultaneous inhalable and respirable dust

- Determine respirable dust only by weighing the filter only

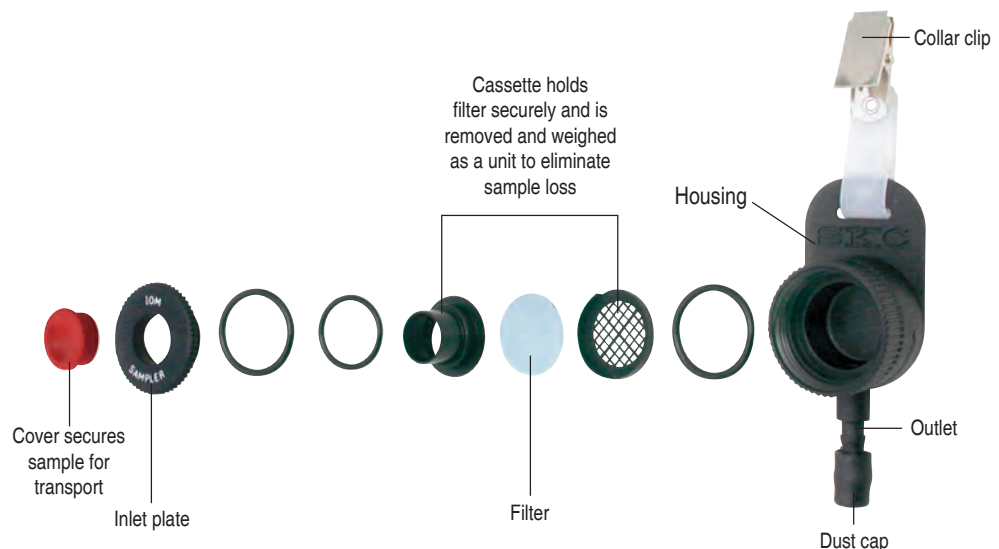
Only the authentic IOM Sampler developed by the Institute of Occupational Medicine (IOM) in Scotland has been tested by the Health and Safety Laboratory, Health and Safety Executive (HSE) in the UK and verified to meet the ISO/CEN convention (ISO 7708/EN481).* The IOM Sampler houses a reusable 25-mm filter cassette that holds a method-specified filter for collection of inhalable particles. Operated with a 2 L/min personal sample pump, IOM is clipped near a worker's breathing zone and effectively traps particles up to 100 µm in aerodynamic diameter. **This method closely simulates the inhalation of particles through the nose and mouth.** The plastic cassette with filter is weighed as a single unit before and after sampling for gravimetric analysis. A stainless steel IOM cassette can be used for chemical analyses and bioaerosol sampling. Some higher flow applications for the IOM have been studied; see above left.



Sample Time:	Varies
Sample Rate:	2 L/min; see Applications at left
Sample Pump:	Universal or AirChek Series
Sample Media:	25-mm filters; see list on p. 123
Tubing:	1/4-inch ID

[‡] Reference: OSHA letter November 8, 2011; contact SKC for a copy

* Kenny, L.C., et al., "A Collaborative European Study of Personal Inhalable Aerosol Sampler Performance," *Ann. Occup. Hyg.*, Vol. 4, No. 2, 1997, pp. 135-153, <https://doi.org/10.1093/annhyg/41.2.135>



IOM Sampler

Professionals Choose the Authentic IOM

The original IOM Sampler provides samples for the same measured dust concentration and aerodynamic size distribution as that inhaled by the worker, regardless of wind conditions and source of dust. IOM is widely accepted as one of the most effective inhalable particulate samplers available.

TECH TIPS

► For simultaneous respirable and inhalable sampling, use a plastic IOM, PVC filter, and MultiDust foam disc (see below left). The plastic IOM's low tare weight is ideal for gravimetric determinations.

► For bioaerosol sampling, use the autoclavable stainless steel IOM and cassette with a polycarbonate filter and MultiDust foam disc. MultiDust fractionates the sample and better maintains microorganism survivability. See left.

Description	Cat. No.	Qty.
IOM Sampler and cassette, [†] in conductive plastic, with transport clip and cover	225-70A	ea
IOM Sampler and cassette, [†] in stainless steel, with transport clip and cover	225-76A	ea
IOM Sampler, [†] in conductive plastic, with stainless steel cassette, transport clip, and cover	225-79A	ea

[†] A 25-mm filter is required for sampling with the IOM; see below.

25-mm Filters for IOM Sampler

The IOM Sampler requires a 25-mm filter for sampling. Select from the filters below to meet your application.

Description	Cat. No.	Qty.
PVC, 5.0 µm, 25 mm	225-5-25	100
Glass Fiber, 25 mm	225-702	500
MCE, 0.8 µm, 25 mm	225-1930	100
Polycarbonate, 0.8 µm, 25 mm	225-1601	100
Gelatin, sterilized, 25 mm	225-9551	50





MultiDust Foam Discs

MultiDust Foam Discs were developed by the UK Health and Safety Executive (HSE) to simultaneously collect inhalable and respirable particulate fractions and determine them by weighing the dust collected on the foam disc and final filter. For respirable dust only, weigh the filter only. A 25-mm filter is required for sampling with the IOM; see above.

Description	Cat. No.	Qty.
MultiDust Foam Discs with certificate of conformity to EN481:1993** respirable dust criteria	225-772	10
	225-772-50	50

** EN481:1993 and ISO/CEN 7708 both reference the respirable criteria

Accessories

Description	Cat. No.	Qty.
Cassette assembly, in conductive plastic, with transport clip and cover, ideal for gravimetric determinations	 225-71A	ea
Cassette assembly, in stainless steel, with transport clip and cover, ideal for chemical analysis and bioaerosol sampling	 225-75A	ea
Transport Clip and Cover	 225-72A	ea
IOM Calibration Adapter	 391-01	ea
Sampling Heads		
Seven Hole Head	225-50	ea
Asbestos Head, 25-mm cowl sampler designed for use with a gridded filter as per HSG (UK) 248 for asbestos fibers; suitable for other methods, see the HSE Sampling Guide on pages 175-186	Aluminum cowl	225-54A
	Plastic cowl	225-54



IOM Sampler with MultiDust Foam Disc inserted



IOM Sampler with Seven Hole Head

Inhalable Samplers

4 L/min

TECH TIPS

Sampling Bioaerosols with the Button Sampler

► For growth cultures, use the Button Sampler with a sterile gelatin filter to help maintain microorganism viability. See below right.



Recommended Pumps for Button Sampler

see pages 16-19



Filter Transport Case
Cat. No. 225-67

MORE INFORMATION

skcinc.com

V

Video

P

PowerPoint

W

Webinar

S

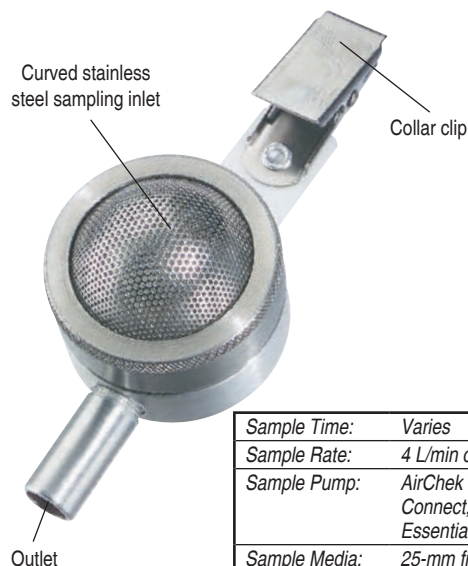
Sampling Solution

Visit skcinc.com/Training

Button Aerosol Sampler

Chemical or Biological Inhalable PM Sampling

- 4 L/min flow rate enhances sensitivity for low exposure limits
- Closely follows the ACGIH/ISO sampling criteria for inhalable particulate mass
- Inlet design reduces oversampling of very large particles and sensitivity to wind direction/velocity
- Suitable for area or personal sampling
- Stainless steel construction reduces electrostatic effects
- Suitable for collecting bioaerosols for viable or non-viable analysis
 - Autoclavable



Sample Time:	Varies
Sample Rate:	4 L/min optimum
Sample Pump:	AirChek TOUCH, Connect, or Essential
Sample Media:	25-mm filters
Tubing:	1/4-inch ID

The reusable SKC Button Aerosol Sampler features a porous curved-surface inlet designed to improve the collection characteristics of inhalable dust (< 100- μ m aerodynamic diameter), including bioaerosols for viable or non-viable analysis. The conductive stainless steel inlet contains evenly spaced holes that act as sampling orifices for multi-directional sampling and low sensitivity to wind direction and velocity. The proximity of the filter to the inlet minimizes transmission losses and provides for equal distribution of particle loading and low intersample variation. The Button Sampler follows closely the ACGIH/ISO sampling criteria for inhalable particulate mass at 4 L/min. A convenient conductive plastic transport case is available for shipping samples to a laboratory for analysis.

Description	Cat. No.	Qty.
Button Sampler , requires a 25-mm filter; see below	225-360	ea
Button Sampler Pump Kit includes Button Sampler, standard AirChek XR5000 Sample Pump, single charger, 3 feet of Tygon tubing, and calibration adapter, requires a 25-mm filter; see below	100-240 V 210-4121	ea
Accessories		
Button Sampler Calibration Adapter	225-361	ea
Filter Transport Case , for 25-mm filters, conductive plastic	225-67	ea

Recommended 25-mm Filters for Button Sampler

The Button Sampler requires a 25-mm filter for sampling. SKC recommends pore sizes greater than 1 micron to lower back pressure and enhance sample time with personal sample pumps. Select from the filters below to meet your application.

Description	Cat. No.	Qty.
PVC , 5.0 μ m, 25 mm	225-5-25	100
Glass Fiber , 25 mm	225-702	500
MCE , 1.2 μ m, 25 mm	225-1912	100
PTFE , [†] 3.0 μ m, 25 mm	225-1711	50
Gelatin , sterilized, 25 mm	225-9551	50

[†] Back pressure on PTFE filters can vary within the same lot.

SKC IFV Pro Sampler

Designed for ACGIH TLVs with IFV Designation

- True inhalable fraction and vapor sampling simultaneously
 - Collects aerosol phase on a 25-mm filter using IOM-style inlet
 - Collects vapor in an 8 x 110-mm sorbent tube
- Uses standard sorbent tubes following published methods for designated compounds
- Recommended 1 L/min flow rate allows for effective collection of both contaminant phases
- Meets European Standard 13936 by collecting the total of vapor and aerosol exposures

Sampling mixed-phase contaminants such as pesticides, polyaromatic hydrocarbons (PAHs), inorganic acids, and explosives is challenging because the vapor and aerosol phase distribution is constantly changing.

The IFV Pro Sampler features an IOM-style inlet for true inhalable sampling and collects vapor phase on a variety of method-specified sorbents.

IFV Pro Filter and Sorbent Tube Selection Guide

Compound	Recommended Filter*	Sorbent Tube†
Acrylamide	225-702	226-10-04
Alachlor	225-702	226-30-06
Aldrin	225-702	226-30-06
Azinphos-methyl	225-702	226-30-06
Butylated hydroxytoluene	225-702	226-211
Carbaryl	225-702	226-30-06
Carbofuran	225-702	226-30-06
Chlorpyrifos	225-702	226-30-06
Clopidol	225-702	226-30-06
Coumaphos	225-702	226-30-06
Cresol, all isomers	225-702	226-211
Demeton	225-702	226-30-06
Demeton S-methyl	225-702	226-30-06
Diazinon	225-702	226-30-06
Dibutyl phosphate	225-702	226-30-06
Dichlorvos	225-702	226-30-06
Dicrotophos	225-702	226-30-06
Dieldrin	225-702	226-30-06
Diesel fuel as total hydrocarbons	225-702	226-09
Diethanolamine	225-702	226-214
Dioxathion	225-702	226-30-06
Disulfoton	225-702	226-30-06
Endosulfan	225-702	226-30-06
2-Ethylhexanoic acid	225-702	226-10-04
Fenamiphos	225-702	226-30-06
Fensulfothion	225-702	226-30-06
Fenthion	225-702	226-30-06
Fonofos	225-702	226-30-06

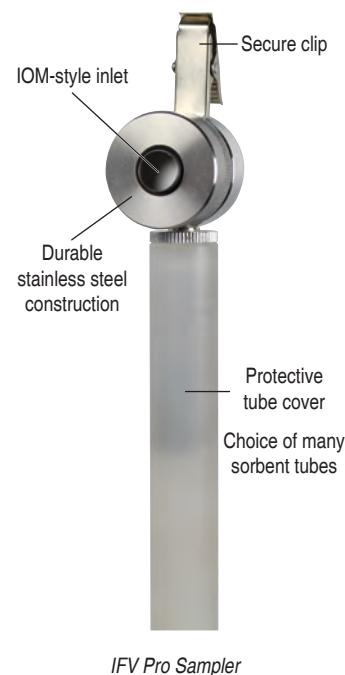
Compound	Recommended Filter*	Sorbent Tube†
Glyoxal	225-9036	226-119-7
Malathion	225-702	226-30-06
Maleic anhydride	225-9028	226-213
Methomyl	225-702	226-30-06
Methyl demeton	225-702	226-30-06
Methyl parathion	225-702	226-30-06
Mevinphos	225-702	226-30-06
Monochloroacetic acid	225-702	226-10-04
Monocrotophos	225-702	226-30-06
Naled	225-702	226-30-06
o-Phthalodinitrile	225-702	226-83
Parathion	225-702	226-30-06
Pentachlorophenol	225-702	226-211
Phorate	225-702	226-30-06
Propoxur	225-702	226-30-06
Ronnel	225-702	226-30-06
Sulfotepp	225-702	226-30-06
Sulprofos	225-702	226-30-06
Temephos	225-702	226-30-06
Terbufos	225-702	226-30-06
1,1,2,2-Tetrabromoethane	225-702	226-10-04
Tetraethylpyrophosphate (TEPP)	225-702	226-106A
Thiram	225-702	226-30-06
Toluene-2,4-diisocyanate	225-9035	—
Toluene-2,6-diisocyanate	225-9035	—
Xylidene isomers	225-702	226-10-04

* Filter details on pp. 110 and 112 † Sorbent tube details on pp. 48-52

ABOUT

ACGIH IFV Designation

ACGIH has assigned a TLV with Inhalable Fraction and Vapor (IFV) designation to over 50 compounds that exert sufficient vapor pressure such that the contaminant may be present in both particle and vapor phases, with each phase contributing a significant portion of the dose. See compounds in table at below left.



For Sample Pumps
see pages 16-19

Description	Cat. No.	Qty.
IFV Pro Sampler Kit includes sampling head (aerosol sampler body, cassette, and front plate), protective tube cover, calibration adapter, cassette cap, cassette transport container, 10 extra tube holders (rubber sleeves), and case; requires 25-mm filter and sorbent tube, see table above	225-49K	ea
Tube Holders (Rubber Sleeves), change after each sample	P3022A	25

Respirable Samplers

2.75 and 1.7 or 2 L/min

TECH TIPS

► Traditionally, respirable dust sampling with a cyclone has been performed using a clear styrene cassette. NIOSH now suggests that conductive black polypropylene cassettes are a better option for this application to minimize cassette wall losses (*Journal of Occ. and Env. Hygiene, 10:3, 2013, pp. D29-D33, https://doi.org/10.1093/oxfordjournals.ohj.a009333*). For conductive black polypropylene cassettes, see page 115.

GS Cyclones Accessories/ Replacement Parts

Replacement Cassette Adapters for GS-3 only

Cat. No. 225-102.....37 mm

Cat. No. 225-101.....25 mm

Filter Cassette/Cyclone Holder,

see p. 116 for details

Cat. No. 225-1

Standard-size Multi-purpose

Calibration Jar, see p. 118 for details

Cat. No. 225-111

Replacement Grit Pots

Cat. No. P225012.....Qty/25

MORE INFORMATION

GS Cyclone

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GS-3 Respirable Dust Cyclone

Meets ISO 7708/CEN Criteria

► Operates at 2.75 L/min to conform to the ISO 7708/CEN criteria

- Meets OSHA criteria
- Suitable for ACGIH respirable TLVs
- Higher flow rate increases sensitivity for lower concentrations

► Unique design overcomes disadvantages of 10-mm nylon cyclone

- Multiple inlets eliminate ambient wind speed and orientation effects

► Conductive plastic eliminates electrostatic effects

- Not a spark hazard for underground mine use



Sample Time:	Varies
Sample Rate:	2.75 L/min for 4-µm cut-point* (meets OSHA Silica Rule)
Sample Pump:	Universal or AirChek Series
Sample Media:	25 or 37-mm filters in 3-piece cassettes
Tubing:	1/4-inch ID

Use the lightweight 10-mm GS-3 Cyclone with a 25 or 37-mm three-piece filter cassette. See *Tech Tips* at above left.

Description		Cat. No.	Qty.
GS-3 Cyclone with bowl adapter, cassette adapter, and grit pot	37 mm	225-100	ea
	25 mm	225-103	ea

* Calibrated at UK Health and Safety Laboratory; visit <https://bit.ly/2WDPHZR> to view the collection efficiency curve

GS-1 Respirable Dust Cyclone

Equivalent to 10-mm Nylon Cyclone Without Static Concerns

► Use at 1.7 or 2 L/min with DPM Cassette for MSHA DPM compliance sampling

- Screens out large particles to prevent DPM Cassette impactor and filter overload

► Conductive plastic construction

- Eliminates electrostatic effects experienced with the 10-mm nylon cyclone
- Not a spark hazard for underground mine use



Sample Time:	Varies
Sample Rate:	1.7 or 2 L/min with DPM Cassette (MSHA DPM sampling)
Sample Pump:	Universal or AirChek Series
Sample Media:	DPM Cassette or 37-mm filters in 3-piece cassettes
Tubing:	1/4-inch ID

Use the lightweight 10-mm GS-1 Cyclone with a 37-mm three-piece filter cassette or the SKC DPM Cassette (see page 109).

Description		Cat. No.	Qty.
GS-1 Cyclone with bowl adapter, 37-mm cassette adapter, and grit pot		225-105	ea

Respirable Dust Aluminum Cyclone Listed in OSHA Silica Rule and NIOSH Methods

TECH TIPS

- ▶ **Operates at 2.5 L/min to conform to the ISO 7708/CEN criteria**
 - Meets requirements in the OSHA Silica Rule
 - Suitable for ACGIH respirable TLVs
- ▶ **Specified in NIOSH Method 7500 for silica and NIOSH 0600 for respirable particulates**
- ▶ **Eliminates adverse electrostatic effects**
- ▶ **Small and lightweight**
 - 2.6 x 1.5 inches (6.6 x 3.8 cm)
- ▶ **Used with an open-face three-piece cassette for more even particle deposition on the filter**
 - Available in 25 or 37 mm
 - Inserts into middle ring of cassette



Sample Time:	Varies
Sample Rate:	2.5 L/min for 4- μ m cut-point (meets OSHA Silica Rule)
Sample Pump:	Universal or AirChek Series
Sample Media:	25 or 37-mm filters in 3-piece cassettes
Tubing:	1/4-inch ID

- ▶ A cyclone will not sample optimally if it is influenced by electrostatic charge. SKC cyclones are constructed of conductive plastic or aluminum that eliminates the static problem associated with non-conductive nylon cyclones.
- ▶ Cleaning cyclones before sampling prevents deviation in the collection efficiency curve.
- ▶ The cyclone grit pot must be in place during sampling for size selection to occur. Do not remove the grit pot during calibration and sampling.
- ▶ When calibrating size-selective samplers such as cyclones, use the sampler's calibration adapter. If an adapter does not exist, use the multi-purpose calibration jar with the smallest volume. See page 118.

The SKC Aluminum Cyclone is a lightweight respirable dust sampler that is placed into the middle ring of a three-piece cassette loaded with the appropriate filter. When attached to a sample pump, respirable particles collect on the filter and larger particles fall into the grit pot to be discarded. Available in 25 or 37 mm, the SKC Aluminum Cyclone provides sharp size selection of the respirable fraction. The SKC Aluminum Cyclone eliminates the electrostatic problems associated with nylon (non-conductive) cyclones and allows the cyclone to sample particles more efficiently. See *Tech Tips at right*.

ACGIH, NIOSH, the European Standard Committee (CEN), and the OSHA Silica Rule specify a respirable collection efficiency curve with a median cut-point of 4 μ m. A leading aerosol research organization calibrated the SKC Aluminum Cyclone. Results showed that using the cyclone at a flow rate of 2.5 L/min provided the optimum match to the ISO 7708/CEN respirable criteria. *Publication available upon request*

Easy-to-use Calibration Adapter

The aluminum calibration adapter fits both the 25 and 37-mm Aluminum Cyclones and allows standard 1/4-inch ID Tygon tubing to be attached for simple calibration.



Cat. No. 225-01-03

Plastic Cyclone

The SKC Plastic Cyclone is designed to sample respirable dust as per MDHS 14/4 and to meet ISO 7708/EN481 criteria. The static-dissipating cyclone features a snap-together cassette system and is used at a 3.0 L/min flow rate with a 25 or 37-mm cyclone cassette. Cyclones include a grit pot. The Plastic Cyclone is also suitable for MDHS 101/2 and 91/2.



Description		Cat. No.	Qty.
Cyclone [‡] with grit pot	25 mm	225-01-01	ea
	37 mm	225-01-02	ea
Accessories			
Calibration Adapter, 25/37 mm		225-01-03	ea
Filter Cassette Holder, 25/37 mm		225-1	ea
Replacement Grit Pots		P225013	25
Replacement O-rings, for 37-mm cyclones		P22501	5

Plastic Cyclone with 25-mm plastic cassette	225-69
Plastic Cyclone with 37-mm plastic cassette	225-69-37
Filter Transport Cassette, for 25-mm filters	225-67
Cassette, 25 mm	225-62
Cassette, 37 mm	225-62-37

[‡] Three-piece cassettes are required for use with SKC Aluminum Cyclones; see filter cassettes on pages 102-112.

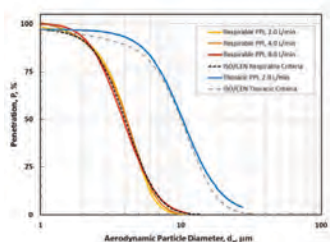
V Video	P PowerPoint	W Webinar	S Sampling Solution
Visit skcinc.com/Training			

Respirable and Thoracic Samplers

2, 4, or 8 L/min

PPI ADVANTAGES

- ▶ **Patented* PPI four-impactor design** provides a closer match to the entire ISO 7708/CEN curve. See more on PPI performance at skcinc.com/knowledgecenter.



- ▶ **Small, less obtrusive for worker**



- ▶ **Handy calibration adapter** — no calibration jar needed!



- ▶ **No tipping hazard!** Invert PPI without causing large particles to invalidate the filter sample.



Disposable Parallel Particle Impactors (PPIs) Listed in the OSHA Silica Rule

- ▶ **Collection efficiency precisely matches ISO 7708/CEN criteria adopted in the OSHA Final Silica Rule and NIOSH respirable dust methods**
- ▶ **Respirable models available in three flow rates for your applications**
 - 2 and 4 L/min models for TWA sampling
 - 8 L/min model for shorter-term sampling
- ▶ **Disposable anti-static plastic, designed for one-time use**
- ▶ **Disposable PPI® Sampler Options**
 - **Preloaded** with filter and pre-oiled impaction substrates by SKC
 - **Preloaded, preweighed** filter and pre-oiled impaction substrates by SKC
 - **Empty** except for pre-oiled impaction substrates, ready for lab or user to load filter
- ▶ **Performance published in Journal of Physics and referenced in the OSHA Final Silica Rule**
- ▶ **Thoracic model ideal for sampling hard metals with Co and tungsten carbide as Co**



Sample Time:	Select PPI model and contact lab for sample time to meet LOQ
Sample Rate:	2, 4, or 8 L/min
Sample Pump:	Universal or AirChek Series for 2 and 4 L/min; Leland Legacy for 8 L/min
Sample Media:	37-mm filter and support
Tubing:	1/4-inch ID

* U.S. Patent No. 7,073,402

SKC Silica Sampling Kits

Make compliance monitoring of airborne silica concentrations easy by choosing a basic or deluxe SKC Silica Sampling Kit as your complete silica sampling toolbox. Each kit includes preloaded Disposable PPI Respirable Dust Samplers, sample pump and charger, calibrator or rotameter, and calibration and sampling accessories, all in a convenient tool case.



Deluxe Kit Cat. No. 220-5000TC-K-S with AirChek TOUCH pump and chek-mate Calibrator shown; a Basic Kit with AirChek 52 pump is available as Cat. No. 224-52K-S.

See more at skcinc.com.

Disposable Parallel Particle Impactors (PPIs)

Convenient for Professionals and Labs

Preloaded Disposable Plastic PPI Samplers

Select the PPI for the desired convention.

Description	Cat. No.	Qty.
Preloaded Disposable PPI Samplers* contain four porous plastic disc impaction substrates, one 37-mm cellulose support, and one collection filter as noted		
Respirable PPI (red) , 8 L/min, plastic, with 5.0- μ m PVC filter	225-3841	ea
Respirable PPI (orange) , 4 L/min, plastic, with 5.0- μ m PVC filter	225-3871	ea
Respirable PPI (gold) , 2 L/min, plastic, with 5.0- μ m PVC filter	225-3851	ea
Respirable PPI (gold) , 2 L/min, plastic, with 1.0- μ m PTFE filter	225-3852	ea
Thoracic PPI (blue) , 2 L/min, plastic, with 0.8- μ m MCE filter	225-3861	ea
With Preweighed Filter		
Respirable PPI (red) , 8 L/min, plastic, 5.0- μ m PVC filter preweighed to 5 decimals; unit supplied in tamper-evident inner bag	225-3841-PW	ea
Respirable PPI (orange) , 4 L/min, plastic, 5.0- μ m PVC filter preweighed to 5 decimals; unit supplied in tamper-evident inner bag	225-3871-PW	ea
Respirable PPI (gold) , 2 L/min, plastic, 5.0- μ m PVC filter preweighed to 5 decimals; unit supplied in tamper-evident inner bag	225-3851-PW	ea





* Designed for one-time use



Partner SKC pumps with PPI Samplers see pages 12-25

User-loaded Disposable Plastic PPI Samplers

Select the PPI for the desired convention.

Description	Cat. No.	Qty.
User-loaded Disposable PPI Samplers* contain four porous plastic disc impaction substrates, require collection filter and support; see information below and select based on application		
Respirable PPI (red) , 8 L/min, plastic 	225-384	ea
Respirable PPI (orange) , 4 L/min, plastic 	225-387	ea
Respirable PPI (gold) , 2 L/min, plastic 	225-385 225-385A	ea 25
Thoracic PPI (blue) , 2 L/min, plastic 	225-386	ea
Filters for User-loaded PPI Samplers		
PVC Filters , 37 mm, 5.0- μ m pore size	225-5-37	100
MCE Filters , 37 mm, 0.8- μ m pore size	225-1939	100
Filter Supports for User-loaded PPI Samplers		
Support Pads , cellulose, 37 mm	225-27	100
Stainless Steel Screen , 37 mm, wide mesh	225-26	ea

* Designed for one-time use



For the SM-7204 Direct-reading Silica Monitor see page 155

Accessory	Cat. No.	Qty.
Calibration Adapter , for Disposable PPI Samplers only	225-389	ea

See Silica Sampling Solution video and more skcinc.com/knowledgecenter

For Reusable PPIs, see page 130.

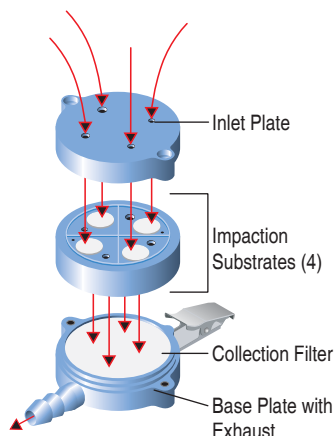


Respirable and Thoracic Samplers

2, 4, or 8 L/min

PPI ADVANTAGES

▶ **Patented* PPI four-impactor design** provides a closer match to the entire ISO 7708/CEN curve. For more on PPI performance, visit skcinc.com/knowledgecenter.



▶ **No tipping hazard!**
Invert PPI without causing large particles to invalidate the filter sample.

Reusable Parallel Particle Impactors (PPIs)

Listed in the OSHA Silica Rule

- ▶ **Collection efficiency precisely matches ISO 7708/CEN criteria adopted in the OSHA Final Silica Rule**
- ▶ **Respirable models available in three flow rates for your applications**
 - 2 and 4 L/min models for TWA sampling
 - 8 L/min model for shorter-term sampling
- ▶ **Reusable conductive aluminum — use with any suitable 37-mm filter**
- ▶ **Load with disposable pre-oiled impaction substrates**
 - Reduce particle bounce and buildup effects
- ▶ **Only 3.3 ounces (93.6 grams) — ideal for personal and area sampling**
- ▶ **Performance published in *Journal of Physics* and referenced in the OSHA Final Silica Rule**
- ▶ **Thoracic model ideal for sampling metalworking fluids (NIOSH Method 5524 and TLV), hard metals with Co, and tungsten carbide as Co**



Sample Time:	Select PPI model and contact lab for sample time to meet LOQ
Sample Rate:	2, 4, or 8 L/min
Sample Pump:	Universal or AirChek Series for 2 and 4 L/min; Leland Legacy for 8 L/min
Sample Media:	37-mm filter and support (and four impaction substrates)
Tubing:	1/4-inch ID

* U.S. Patent No. 7,073,402

Reusable Aluminum PPI Samplers

Select the PPI for the desired convention, choose application-appropriate filter and support, and order impaction substrates; see below.



Partner SKC pumps with PPI Samplers see pages 12-25

Description	Cat. No.	Qty.
Reusable PPI Samplers, require substrates, filters, and supports		
Respirable PPI (red), 8 L/min, aluminum	225-383	ea
Respirable PPI (orange), 4 L/min, aluminum	225-382	ea
Respirable PPI (gold), 2 L/min, aluminum	225-380	ea
Thoracic PPI (blue), 2 L/min, aluminum	225-381	ea

Collection Filters, required for sampling	Cat. No.	Qty.
PVC Filters, 37 mm, 5.0- μ m pore size	225-5-37	100
MCE Filters, 37 mm, 0.8- μ m pore size	225-1939	100
PTFE Filters, 37 mm, 2.0- μ m pore size, unlaminated, for MWF	225-37-07	50

Impaction Substrates, four required for each sample for Reusable Aluminum PPI models	Cat. No.	Qty.
Porous Plastic Discs, 3/8-inch diameter, pre-oiled, ready to use, disposable	225-388	200

Accessories	Cat. No.	Qty.
Multi-purpose Calibration Jar	225-111	ea
Forceps, stainless steel, with non-serrated flat tips	225-8371	ea
Filter-Keeper, for transport and storage of 37-mm filters	225-8303A	10

For Disposable PPIs and filter supports, see pages 128-129.

V Video	P PowerPoint	W Webinar	S Sampling Solution
Visit skcinc.com/Training			

IMPACT Sampler

Ambient PM10, PM2.5, or PM Coarse Sampling at 10 L/min

- Ideal for environmental PM sampling and indoor air studies
- Use with Leland Legacy or any pump at 10 L/min
- Compact design
- Higher flow rate provides increased sensitivity
- Convenient operation
 - Removable filter cassette for fast media changes
 - Disposable ready-to-use pre-oiled impaction discs reduce particle bounce — no cleaning or greasing
 - Included rain cover protects sampler during outdoor use
 - Optional quick-mount bracket secures sampler virtually anywhere



Leland Legacy Pump for IMPACT

While IMPACT can be used with any pump at 10 L/min, partnering IMPACT with the Leland Legacy sample pump provides a highly efficient sampling system for environmental monitoring or indoor air studies. See more information on the Leland Legacy Pump on pages 24-25 and the DPS System on pages 26-27.

The patented[‡] SKC IMPACT single-stage inertial impactor is designed for the efficient collection of PM10, PM2.5, or PM Coarse (10-2.5) in ambient air. IMPACT media changes are as easy as removing the filter cassette and replacing it with one already loaded. IMPACT's higher flow rate requirement provides increased sensitivity for low levels of PM. Go to skcinc.com/media/documents/Modular_Impactors_Poster.pdf for sampling efficiency data.

Sample Time:	Varies
Sample Rate:	10 L/min
Sample Pump:	Leland Legacy
Sample Media:	47-mm filter, requires impaction substrate
Tubing:	3/8-inch ID

ABOUT

Rule on Wildfire Smoke

Effective July 29, 2019, the California Code of Regulations, Title 8, Section 5141.1 (dir.ca.gov/title8/5141_1.html) requires employers to measure workplace PM2.5 concentration levels. If concentrations are $\geq 55.5 \mu\text{g}/\text{m}^3$ or 151 on the U.S. Air Quality Index (AQI), further requirements/controls are activated. Reference rule Appendix A, Section d to convert measured PM2.5 concentration to AQI. Since the California Rule of 2019, several other states have adopted a wildfire rule; check your state's website for more information. SKC IMPACT Samplers are ideal for sampling ambient PM2.5. See the PMI Samplers for personal PM2.5 on page 133.

IMPACT Sampler	Cat. No.	Qty.
IMPACT Sampler includes sampler inlet and body, filter cassette, calibration adapter, and rain cover for sampler; requires collection media and impaction substrate sold separately; see below		
PM2.5	225-392	ea
PM10	225-390	ea
PM Coarse includes 2 filter cassettes	225-3911	ea
Collection Filters for IMPACT Sampler (not supplied with IMPACT or DPS System) Select a filter based on your application; required for sampling		
Quartz Filters, 47 mm, Tissuquartz, 432 μm thick	225-1823	25
PTFE Filters, [§] 47 mm, 2.0- μm pore size, with PMP support ring	225-1747	50
Impaction Substrate, required for sampling; limited shelf-life		
Impaction Discs, 37 mm, pre-oiled, ready to use, disposable	225-395	25
	225-395A	50
Accessories		
IMPACT Sampler Inlet Only, interchangeable on IMPACT body	PM2.5 P54204 PM10 P54202	ea ea
Filter Cassette	225-396	ea
Filter Cassette Opener	225-397	ea
Mounting Bracket	225-399	ea
PM Coarse Ring includes filter cassette, adapts IMPACT PM10 to an IMPACT PM Coarse	225-3912	ea
Petri Dish Slide, for filter transport	225-2-01	100
Calibration Adapter	225-394	ea

[‡] U.S. Patent No. 7,334,453

[§] Back pressure on PTFE filters can vary within the same lot.

For a deployable particulate sampling system featuring the IMPACT Sampler, see the DPS System on pages 26-27.

V Video	P PowerPoint	W Webinar	S Sampling Solution
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PM2.5, PM10 Samplers

2, 4, or 10 L/min

Pumps for sampling with the PEM



• 2 or 4 L/min flow rates, see the AirChek Series on pages 14-21

• 10 L/min flow rate and 24-hour sampling, see the Leland Legacy on pages 24-25

APPLICATIONS

- Childhood asthma studies
- Green Building certification
- IAQ studies
- School zone investigations



► **LEED Green Buildings**
Indoor Air Maximum
Concentration: 15 µg/m³

Source: LEED for New Construction Rating System v4 (U.S. Green Building Council, usgbc.org)

V	P	W	S
Video	PowerPoint	Webinar	Sampling Solution
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Personal Environmental Monitor (PEM)

Choice of Flows for PM10 and PM2.5 in Indoor Air

- **Referenced in EPA Method IP-10A**
 - For particles in indoor air
- **Small and unobtrusive**
 - Connect to a personal sample pump and clip in a worker's breathing zone
 - Use with a 10 L/min pump for 24-hour area sampling
- **Suitable for LEED Green Building sampling**



The Personal Environmental Monitor is a small, lightweight impaction device used with a personal sample pump to provide effective sampling of PM10 and PM2.5 in indoor air. Personal exposure is determined through gravimetric analysis for particle mass and chemical analysis for specific compounds.

Sample Time:	Varies
Sample Rate:	2, 4, or 10 L/min
Sample Pump:	Universal, AirChek Series, or Leland Legacy
Sample Media:	37-mm PTFE filters*
Tubing:	3/16-inch ID

How the PEM Works

The PEM consists of three major parts: cap, impaction ring assembly, and base. A 37-mm after-filter is inserted in the base and the PEM assembled. When used with a personal sample pump at the required flow rate, aerosol is accelerated through a number of nozzles in the cap. Through inertia, particles larger than the 50% cut-point of the sampler impact onto a greased impaction ring and can be discarded after sampling. Particles smaller than the 50% cut-point pass through the impactor and collect on the 37-mm after-filter. Six models of PEM are available for the collection of PM10 or PM2.5 at three different flow rates.

Cut-point	Model	Flow Rate	Cat. No.	Qty.
2.5 µm		2 L/min	761-203	ea
		4 L/min	761-203A	ea
		10 L/min	761-203B	ea
10 µm		2 L/min	761-200	ea
		4 L/min	761-200A	ea
		10 L/min	761-200B	ea
Accessories				
PEM Calibration Adapter			761-202	ea
After-filter, 37-mm, 2.0-µm PTFE* with PMP support ring			225-1709	50

* Back pressure on PTFE filters can vary within the same lot.

Personal Modular Impactor (PMI)

Personal PM10, PM2.5, or PM Coarse Sampling at 3 L/min

- Closely follows PM2.5 or PM10 as defined by EPA (see far right)
- Use with any constant flow pump at 3 L/min
- Disposable, pre-oiled impaction discs
 - Reduce particle bounce for high collection efficiency
- Compact and lightweight — only 2.5 ounces (71 grams)!
 - Ideal for personal or micro-environmental sampling
- Convenient modular design for easy operation
 - Removable filter cassette for easy media changes
 - Convenient clip for mounting sampler in the breathing zone
- PMI PM10 model is easily converted with accessory ring to measure PM Coarse

No cleaning or greasing!



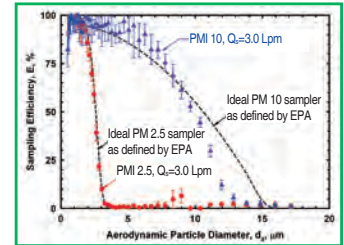
Sample Time:	Varies
Sample Rate:	3 L/min
Sample Pump:	Universal or AirChek Series
Sample Media:	37-mm filter, requires impaction substrate
Tubing:	1/4-inch ID

The patented* SKC single-stage Personal Modular Impactors are designed for the highly efficient collection of PM10, PM2.5, or PM Coarse (10-2.5). The samplers are easy to use with their removable filter cassette and pre-oiled impaction disc. The 25-mm pre-oiled impaction disc mounts directly on top of the filter cassette to reduce particle bounce for high collection efficiency. A 25-mm filter may be used as an alternative impaction substrate for chemical analysis of particles. The PMI Coarse model includes a second filter cassette to allow collection of particles < 10 µm but larger than 2.5 µm. See About at right.

ABOUT

PMI Performance

The graph below demonstrates the high sampling efficiency of the PMI PM2.5 and PM10 Samplers when compared to the EPA PM2.5 and PM10 criteria curves. For more information, visit skcinc.com/media/documents/Modular_Impactors_Poster.pdf.



ABOUT

PM Coarse Sampling with PMI

The PMI Coarse model includes a PM10 inlet, PM2.5 inlet (Coarse Ring), and two filter cassettes. **In Stage 1**, a 25-mm impaction substrate is placed in the top of the filter cassette beneath the PM10 inlet, but no collection filter is installed. **In Stage 2**, a 25-mm filter is placed in the impaction substrate position in the top of the second filter cassette beneath the PM2.5 (Coarse Ring) while a 37-mm collection filter is loaded into the cassette bottom. This allows for the collection of particles < 10 µm but > 2.5 µm.

PMI Sampler	Cat. No.	Qty.
Personal Modular Impactor includes impactor and filter cassette with support screen, requires collection filter and impaction substrate sold separately; see below		
PM2.5 (gold)	225-352	ea
PM10 (silver)	225-350	ea
PM Coarse includes 2 filter cassettes and filter retainer	225-351	ea
Recommended Collection Filters, required for sampling		
Quartz Filters, 37 mm, Tissuquartz, 432 µm thick	225-1822	25
PTFE Filters,† 37 mm, 2.0-µm pore size, with PMP support ring	225-1709	50
PTFE Filters,† 37 mm, 1.0-µm pore size	225-3705	150
Recommended Impaction Substrate, required for sampling; limited shelf-life		
Pre-oiled Porous Plastic Discs,‡ 25 mm, ready to use, disposable	225-355	25
	225-355A	50
Accessories		
PM Coarse Ring includes filter cassette, adapts a PMI 10 to a PMI Coarse	225-3512	ea
Replacement Filter Cassette	225-356	ea
PMI Cassette Opener	225-357	ea
Forceps, stainless steel, non-serrated flat tips, see p. 119	225-8371	ea
Filter-Keepers, 37 mm, for filter transport, see p. 119	225-8303	100
	225-8303A	10
PMI Calibration Adapter	225-358	ea
Filter Retainer, secures filter in impaction substrate position on top of cassette	225-354	ea

* U.S. Patent No. 7,334,453

† Back pressure on PTFE filters can vary within the same lot.

‡ A 25-mm filter may be used as an alternative impaction substrate for chemical analysis; see pages 102-110 for filters.



LEED Green Buildings

Indoor Air Maximum Concentration: 50 µg/m³

Health Care Facilities Maximum Concentration: 20 µg/m³

Source: LEED for New Construction Rating System v4 (usgbc.org)

Ultrafine/Fine/> PM2.5 Sampler

9 L/min

ADVANTAGES

Choose the Sioutas Personal Impactor for the highly efficient collection of airborne particles in five size ranges:

- > 2.5 µm
- 1.0 to 2.5 µm
- 0.50 to 1.0 µm
- 0.25 to 0.50 µm
- < 0.25 µm

Recent epidemiological studies show that ultrafine, fine, and > 2.5-µm particles may have greater pulmonary inflammatory potency than larger particles and associate increased morbidity and mortality with increased exposure to these particles. The Sioutas Impactor is the only personal impactor that precisely separates and collects ultrafine, fine, and > 2.5-µm particles simultaneously.

Certifications



MORE INFORMATION

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Sioutas Personal Cascade Impactor

Separates Ultrafine, Fine, and > 2.5-µm Particles Simultaneously

- **Precise particle separation**

 - Particle size cut-points: 2.5, 1.0, 0.50, and 0.25 µm
 - The only personal impactor that efficiently samples ultrafine, fine, and > 2.5-µm particles simultaneously
 - Maintains high collection efficiency even at high particle concentrations
- **Optimized at a 9 L/min flow rate with low pressure drop for 24-hour sampling**

 - Improves analytical sensitivity
 - Minimizes non-detectable samples
- **Preserves unstable compounds**

 - Chemically inert collection substrate
 - No impaction grease to contaminate sample
- **Minimal particle bounce and internal wall losses**
- **Suitable for sampling in outdoor** and indoor environments**
- **Size-fractionated samples can be analyzed gravimetrically, chemically, and microscopically**
- **Small and lightweight for personal or area sampling**



Sample Time:	Varies
Sample Rate:	9 L/min
Sample Pump:	Leland Legacy
Sample Media:	25 and 37-mm filters
Tubing:	3/8-inch ID



Leland Legacy Sample Pump

The compact, portable, and battery-operated Leland Legacy Sample Pump provides a 9 L/min flow rate for optimum Sioutas Impactor performance.

For more information, see pages 24-25.

The patented[†] Sioutas Personal Cascade Impactor* separates and collects airborne particles in five size ranges: > 2.5 µm, 1.0 to 2.5 µm, 0.50 to 1.0 µm, 0.25 to 0.50 µm, and < 0.25 µm. When used with PTFE filters, the Sioutas Impactor is highly efficient at collecting particles without using impaction grease or substrate coatings and at retaining unstable compounds for size-fractionated chemical analysis.

Use the Sioutas Impactor with the Leland Legacy Sample Pump at 9 L/min to ensure precise particle separation at the specified cut-points. Particles above each cut-point are collected on a 25-mm filter in the appropriate stage with particles less than 0.25 µm collecting on the 37-mm after-filter (optional). The small, lightweight Sioutas Impactor simply clips to a worker's collar or lapel for personal sampling and is also suitable for area sampling.

Description	Cat. No.	Qty.
Sioutas Personal Cascade Impactor	225-370	ea
Tubing, Tygon, 3/8-inch ID, fits Sioutas Impactor and Leland Legacy pump, 10 feet	225-1351	ea

Filters for Sioutas Impactor

Description	Cat. No.	Qty.
After-filter, PTFE, † 37 mm, 2.0 µm (optional)	225-1709	50
Collection Filter (filter for 4 stages), PTFE, ‡ 25 mm, 0.5 µm, required	225-3708	250

* Developed by Dr. Constantinos Sioutas of the University of Southern California in partnership with the Mickey Leland National Urban Air Toxics Research Center (NUATRC)

† U.S. Patent No. 6,786,105 (University of Southern California)








‡ Back pressure on PTFE filters can vary within the same lot.

** Requires special provisions; see product operating instructions

SKC Bioaerosol Samplers

SKC Bioaerosol Sampler Guide

Use the guide below to determine the sampler that meets your applications.

Sampler	Principle of Operation	Flow Rate (L/min)	Contaminants	Sampler Advantages	Page
BioStage Single-stage Impactor 	Impaction onto culture media	28.3	Fungi (viable) and bacteria	<ul style="list-style-type: none"> • SureLock positive seal • Organisms remain intact and viable • Cost-effective and reusable • Time-proven collection method • Meets NIOSH Methods 0800 and 0801 	136
BioSampler 	Collection into swirling liquid	12.5 (sonic flow)	Fungi (viable and non-viable), endotoxins, viruses, and bacteria	<ul style="list-style-type: none"> • Maintains constant collection efficiency over 8 hours • Reduces particle bounce and re-aerosolization; preserves viability • Many analysis options 	138
Sterile Swab Kit 	Wipe sample	N/A	Fungi (viable and non-viable) and bacteria	<ul style="list-style-type: none"> • Easy to use • Suitable for growth cultures • Non-destructive • Collects surface contaminants 	140
Carpet Sampling Cassette 	Filtration using porous membrane	10 (optimum)	Fungi (total) and fibers	<ul style="list-style-type: none"> • Easy to use • Suitable for high flows to enhance detection • Microvacuum nozzle for efficient sampling in carpeting 	140
Stick-to-it 	Lift tape surface sample	N/A	Fungi (total), pollen, and fibers	<ul style="list-style-type: none"> • Ensures consistent sample area • Serialized for sample identification • Includes transport case for mailing to lab 	140
Button Sampler 	Filtration using porous membrane	4 (optimum)	Fungi (viable and non-viable), endotoxins, and bacteria	<ul style="list-style-type: none"> • Superior collection uniformity • Low sensitivity to ambient conditions • Sample suitable for viable and non-viable analysis • Personal or area bioaerosol sampling 	141
VersaTrap Spore Trap Cassette 	Impaction onto sticky glass slide	15 (optimum)	Fungi (total), pollen, and fibers	<ul style="list-style-type: none"> • Reduces particle bounce • Prevents sample loss and blurring • Allows direct quantitative analysis • Enumeration of fungal spores with low culturability 	142

Bioaerosol Samplers

Agar Based

ABOUT

MRSA

Methicillin-resistant *Staphylococcus aureus* (MRSA) infections occur typically in hospitals, elder and child care facilities, gyms, schools, and jails. A 2008 IAQA presentation** recommends a viable cascade impactor (such as the SKC BioStage) with ChromAgar for sample times of 2 to 5 minutes for sampling MRSA in air and sterile swabs (see page 140) for sampling MRSA on surfaces where the superbug can live for weeks to months.



Single-stage impactor with spring clamps



Single-stage BioStage with SureLock seal

References

† Yao, M. and Mainelis, G., "Analysis of Portable Impactor Performance for Enumeration of Viable Bioaerosols," *Jnl. of Occup. and Env. Hyg.*, 4:7, 2007, pp. 514-524, <https://doi.org/10.1080/15459620701407388>

‡ Samimi, B. and Shufutinsky, A., "Comparison of the Thermo-Andersen N6, the Aerotech A6, the SKC BioStage, and the SKC Micro-media Viable Samplers in Collecting Airborne Fungal Spores," *AIHce 2005, San Diego, CA, Final Program*, p. 43

** Dobranic, J., "Superbugs in Our Communities - An Introduction for the IEQ Professional," *EMSL, IAQA Conference, 2008, Tampa, FL*

BioStage

Single-stage Viable Cascade Impactor

- ▶ **SureLock positive seal ensures sample integrity**
- ▶ **Easy setup and calibration**
- ▶ **Corrosion-resistant aluminum**
 - Autoclavable
- ▶ **Collected organisms remain intact and viable**
- ▶ **Proven viable sampling**
 - Meets ACGIH recommendations for bioaerosol sampling
 - Meets NIOSH Method 0800 and 0801 requirements
 - Studies show performance equivalent to Andersen N-6 and similar samplers[‡]
- ▶ **Uses standard-size agar plates**

The SKC BioStage[®] viable cascade impactor meets NIOSH requirements and ACGIH recommendations for sampling indoor and outdoor mold and bacteria. The BioStage comprises an inlet cone, precision-drilled 400-hole impactor stage, and a base that holds a standard-size agar plate. A high flow pump, such as the QuickTake 30 (see page 137), pulls microorganisms in air through the holes (jets) where they are collected on the agar surface. Testing demonstrates that BioStage provides performance equivalent to the industry-standard Andersen N-6.[‡] What sets BioStage apart from other samplers is its SureLock positive seal (instead of bulky spring clamps) that ensures sample integrity.

SureLock seal for sample integrity — only from SKC!



	BioStage
Jet Classification Stage	400 holes (0.25-mm diameter)
Sample Rate	28.3 L/min
Median Cut-point (D_{50})	0.6 μ m
Sample Media	90 to 100-mm agar plates*
Analysis	Colony culture [†]
Tubing	1/4-inch ID

Description	Cat. No.	Qty.
BioStage* single-stage cascade impactor; available in pump kit, see p. 137	225-9611	ea
Accessories		
Calibration Adapter for BioStage, allows tubing to connect to BioStage inlet	P33100	ea
Mounting Bracket for QuickTake 30, holds BioStage in place on pump during sampling	228-9531	ea

* Requires microbiological media supplied by analytical laboratories; for a lab list, go to skcinc.com/lab

V Video	P PowerPoint	W Webinar	S Sampling Solution
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BioStage Pump Kit Complete Viable Mold and Bacteria Sampling Kit

SKC combines the high-performance BioStage Viable Cascade Impactor with the power of the QuickTake 30 Sample Pump for a complete viable mold/bacteria sampling kit. With the BioStage Pump Kit and fresh agar plates from your laboratory, you are ready to sample!

The kit includes:

- BioStage Viable Cascade Impactor (see page 136)
- QuickTake 30 Sample Pump,^Δ 10 to 30 L/min constant flow (see pages 28-29)
- AC charger/adaptor
- Mounting bracket with inlet adapter designed to mount BioStage directly on the pump
- Calibration adapter
- Rotameter
- Tubing
- Deluxe carry case



Why Choose the QuickTake 30 Sample Pump?

- Provides constant 28.3 L/min flow rate
- Mounting bracket secures BioStage to pump for one-handed transport of pump and sampler
- No noisy, hot, and AC-powered vacuum pump
- QuickTake 30 is low noise and battery powered
- Powerful Li-Ion battery provides up to 4-hour run times at 28.3 L/min



In addition to being an ideal pump for the BioStage, the QuickTake 30 provides reliable constant flows for other higher flow applications including sampling with spore trap, asbestos, microvacuum, and other cassettes as well as any viable cascade impactor or other sampler within the pump's back pressure and flow range.

Description	Cat. No.	Qty.
BioStage Pump Kit includes BioStage, [*] QuickTake 30 sample pump, ^Δ AC charger/adaptor, mounting bracket with inlet adapter, calibration adapter, rotameter, tubing, and deluxe carry case	100-240 V	228-9530K ea

^Δ QuickTake 30 pump is **not** CE marked.

^{*} Requires microbiological media supplied by analytical laboratories; for a lab list, go to skcinc.com/lab

Learn more at skcinc.com!

Bioaerosol Samplers

Liquid Based

ADVANTAGES

- ✓ Three tangential nozzles eject particles at an angle to the inner wall, reducing particle bounce and preserving microorganism integrity.
- ✓ Swirling liquid collection method minimizes re-aerosolization and gently entrains bioaerosols to preserve viability.
- ✓ For highest efficiency, use with non-evaporating collection liquids that have a higher viscosity than water, such as ViaTrap® mineral oil.‡
- ✓ When used with ViaTrap, collection efficiency stays constant over an 8-hour sampling period.
- ✓ Complete glass construction allows easy cleaning, sterilizing, autoclaving, and reuse.
- ✓ Samples are suitable for five different analyses. *See above left.*

APPLICATIONS

- Indoor air quality investigations
- Hospitals and veterinary clinics
- Agricultural dust studies
- Research
- Public building investigations
- Food handling industry
- Pulp and paper mills and wastewater treatment plants



BioSampler

Collects Bioaerosols into Liquid for Maximum Viability

- Ideal for airborne bacteria, fungi, pollen, viruses, endotoxins, mycotoxins, and other fragments
- Constructed of quality glass — autoclavable
- Collection method ensures high rate of microorganism viability
- Extends sample time to over 8 hours with ViaTrap liquid
- Overcomes sampling problems with impinger samplers
- Inlet limits collection of particles to those that would pass through the human nose

The BioSampler® is a highly efficient glass collection device used with a high-volume sonic flow pump to trap airborne microorganisms for analysis. Externally, BioSampler resembles an All-Glass Impinger (AGI-30); internally, BioSampler is specially designed to reduce particle bounce and maintain maximum viability.

Sample Time:	Up to 8 hours
Sample Rate:	Sonic flow through BioSampler nozzles (12.5 L/min)
Sample Pump:	BioLite‡
Sample Media:	Non-evaporating liquids, ViaTrap‡ recommended
Tubing:	1/4-inch ID and 3/8-inch ID



Biosampler Analysis Options

- **Growth Culture** quantifies/characterizes airborne bacteria and fungi.
- **Microscopic** enumerates total airborne bacteria and fungi (provides limited identification).
- **Biochemical Assay** quantifies biological compounds based on reaction to a chemical.
- **Immunoassay** quantifies airborne allergens based on antibodies binding to a specific target antigen.
- **Polymerase Chain Reaction (PCR)** identifies bioaerosols by screening for a specific genus or species. May require sterile water as collection liquid; check with laboratory.

For a list of microbiological laboratories, visit skcinc.com/lab.

Description		Cat. No.	Qty.
BioSampler, three-piece glass including inlet section, outlet section, and collection vessel (bottom — does not include ground joint cap)	20 ml	225-9595	ea
	20 ml	225-9595K4	4
	Inlet and outlet sections are a matched set	5 ml	225-9593
BioSampler Collection Vessel (bottom) and ground joint cap, for transporting samples	20 ml	225-9596	ea
	5 ml	225-9596A	ea
BioSampler Mini Kit includes 1 BioSampler, two 20-ml collection vessels (bottoms) with caps, 1 BioSampler case with mounting rod, and 1 ViaTrap‡ (120 ml)		225-9597	ea
ViaTrap Collection Media,‡ special mineral oil for bioaerosol sampling	120 ml	225-9598A	ea
	500 ml	225-9598	ea
	950 ml	225-9599	ea
Glass Trap, to protect pump, for area sampling, can be used with or without sorbent, see p. 70 for sorbent Cat. No. 225-22-02		225-22	ea

‡ May not be suitable for PCR analysis; check with laboratory

Complete BioSampler System Efficient Collection of Bacteria, Fungi, and Viruses

- Includes all equipment and media for bioaerosol sampling
- Portable sonic flow pump
 - Maintains ≥ 15 inches mercury downstream pressure
 - No additional critical orifice needed when used with BioSampler
 - Includes protective housing with handle, vacuum gauge, and valve
- Mounting rod secures BioSampler to case

Sampling with the BioSampler

The BioSampler is operated with a sonic flow pump, such as the BioLite⁺, that can maintain ≥ 15 inches mercury or 0.5 of an atmosphere of downstream pressure in the system. The BioSampler's three nozzles act as critical (sonic) orifices, each permitting 4.2 L/min of ambient air to pass through for a total flow rate of approximately 12.5 L/min.



The Deluxe BioSampler System includes everything you need for liquid-based airborne microorganism sampling.

BioLite⁺ Sample Pump



The portable BioLite⁺ Sample Pump is ideal for use with the BioSampler. BioLite⁺ provides non-compensated airflow up to 62 L/min or sonic flow. The BioSampler acts as a critical orifice for sonic flow without additional orifices. BioLite⁺ features mounting points on either side, allowing two BioSamplers to be attached and operated concurrently at a total flow rate of 25 L/min at 15 inches Hg back pressure.

BioLite⁺ Sample Pump

Includes protective housing with handle, vacuum gauge, and valve, supplied without orifices or rotameter, AC operation only, weighs 16 pounds (7.25 kg)

Cat. No. 228-9615..... 115 V

Cat. No. 228-9620..... 230 V

Description	SKC Inc. Cat. No. 115 V	SKC Ltd. Cat. No. 230 V
Deluxe BioSampler System includes 1 BioSampler, 2 additional 20-ml collection vessels with caps, 1 case with mounting rod, 1 ViaTrap* (120 ml), 1 BioLite ⁺ pump, tubing/adapters, and rotameter	228-9615KD	228-9620KBD
Basic BioSampler System includes 1 BioSampler, 1 additional 20-ml collection vessel with cap, 1 mounting bracket, 1 BioLite ⁺ pump, tubing/adapters, and rotameter	228-9615K	228-9620KB

* May not be suitable for PCR analysis; check with the laboratory

For a list of microbiological laboratories, visit skcinc.com/lab.

MORE INFORMATION

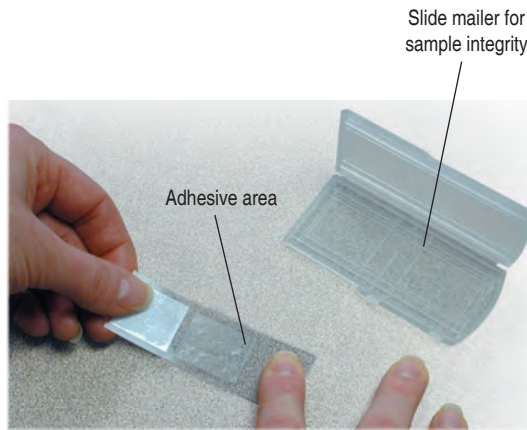
skcinc.com

Bioaerosol Samplers

Surface Based

Stick-to-it Lift Tape

Surface Sampling of Biological Contaminants



- ▶ Easy to use, inexpensive slides
- ▶ Consistent sample area for better data interpretation
- ▶ Flexible plastic for sampling irregular surfaces
- ▶ Individually serialized for sample identification

Stick-to-it flexible plastic microscope slides feature an adhesive area for easy sampling. Identify the sample area, press slide adhesive to the surface, place slide in provided mailer, and send it to a laboratory for analysis.

Description	Cat. No.	Qty.
Stick-to-it	225-9808	10
Stick-to-it	225-9809	50

Quantity discounts may be available! Contact your SKC distributor.

Carpet Sampling Cassettes

Collection of Fungal Spores for Microscopic Analysis

- ▶ Nozzle for easy sampling of irregular surfaces/carpeting
- ▶ Collect fungal spores in settled dust using a high flow pump

Sample Time:	Varies
Sample Rate:	10 L/min, recommended
Sample Pumps:	High-volume vacuum or QuickTake 30
Tubing:	1/4-inch ID and 3/8-inch ID

Designed for the collection of fungal spores from carpets and other dusty areas, the 37-mm Carpet Sampling Cassette contains a 0.4- μ m pore size polycarbonate filter with an attached microvacuum nozzle. A high flow pump, such as the QuickTake 30 (see pages 28-29), is used for sample collection at a recommended flow rate of 10 L/min. Samples are sent to an environmental microbial laboratory for analysis of fungal spores.

Description	Cat. No.	Qty.
Microvacuum Carpet Sampling Cassette , 37-mm, 0.4- μ m polycarbonate filter in banded styrene cassette with microvacuum nozzle	225-9542	ea
Carpet Sampling Cassette Kit includes 10 microvacuum carpet cassettes Cat. No. 225-9542, 10 x 10-cm disposable templates, Luer adapters, zip bags, and labels	225-9540	ea
Templates		
Disposable manila paper , 10 x 10 cm	225-2415 225-2415A	250 10

Sterile Surface Swab Kit

The Sterile Surface Swab Kit is ideal for determining the relative degree and type of biological contamination in an area. This non-destructive method can be used safely on most surfaces including irregular areas such as air return grills. The inert, non-toxic rayon tip permits good sample retrieval and adsorption. Each kit includes 10 sterile swabs in transport tubes and 10 templates (5 x 10 cm).



Description	Cat. No.	Qty.
Sterile Surface Swab Kit	225-2402	ea
Sterile Surface Swabs only	225-2400	50

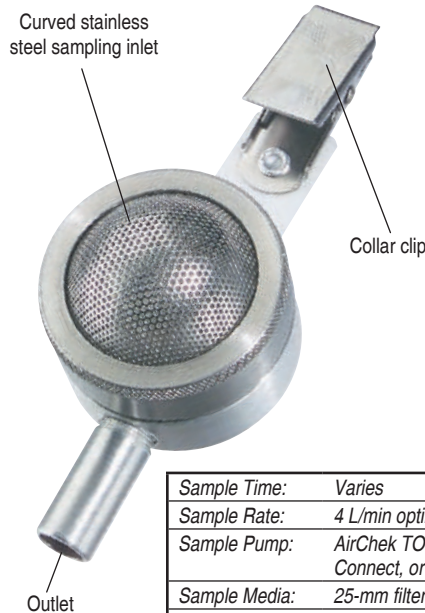
For Microvacuum Cassettes for asbestos, see page 173.



Button Aerosol Sampler

Personal Filter Sampler for Inhalable-size Bioaerosols

- ▶ Collects bioaerosols for viable or non-viable analysis
- ▶ Autoclavable
- ▶ 4 L/min flow rate enhances sensitivity
- ▶ Follows closely the ISO 7708/CEN sampling criteria for inhalable particulate mass
- ▶ Inlet design reduces oversampling of very large particles and sensitivity to wind direction/velocity
- ▶ Stainless steel construction reduces electrostatic effects
- ▶ Small, lightweight for personal sampling; ideal for area sampling



Sample Time:	Varies
Sample Rate:	4 L/min optimum
Sample Pump:	AirChek TOUCH, Connect, or Essential
Sample Media:	25-mm filters
Tubing:	1/4-inch ID

The Button Aerosol Sampler provides superior collection of inhalable particles, including bioaerosols such as bacteria and fungal spores for viable or non-viable analysis. Its high collection efficiency is due to its unique features:

- **Porous curved-surface inlet** improves collection characteristics of inhalable particles (< 100- μ m aerodynamic diameter).
- **Stainless steel inlet** reduces electrostatic effects and contains evenly spaced holes that act as sampling orifices for multi-directional sampling and low sensitivity to wind direction and velocity.
- **Sampler is autoclavable**
- **Filter proximity to the inlet** minimizes transmission losses and provides equal distribution of particles and low intersample variation.

The Button Sampler follows closely the ISO 7708/CEN sampling criteria for inhalable particulate mass when operated with a sample pump at 4 L/min.

Selecting a Filter for Bioaerosol Sampling

Use the Button Sampler with a 25-mm gelatin filter to maintain the survival of stress-sensitive microorganisms during short sampling periods for viable analysis (see *About above right*). For non-viable analysis, use a 25-mm MCE or PVC filter. Polycarbonate filters are ideal for sampling multiple bioaerosols. See Wang, C., et al. below right.

Description	Cat. No.	Qty.
Gelatin, sterilized	225-9551	50
MCE, 1.2 μ m	225-1912	100
Polycarbonate, 0.8 μ m	225-1601	100
PVC, 5.0 μ m	225-5-25	100

Description	Cat. No.	Qty.
Button Sampler , requires a 25-mm filter; see above	225-360	ea
Button Sampler Pump Kit includes Button Sampler, standard AirChek XR5000 Sample Pump, single charger, 3 feet (0.9 meter) of Tygon tubing, and calibration adapter, requires a 25-mm filter; see above	100-240 V 210-4121	ea
Accessories		
Button Sampler Calibration Adapter	225-361	ea
Filter Transport Case , for 25-mm filters, conductive plastic	225-67	ea

ABOUT

Using Gelatin Filters with the Button Sampler

For maximum microorganism survivability and superior collection of inhalable-size bioaerosols, use sterile gelatin filters with the SKC Button Sampler. The Button Sampler features a unique inlet and proximity of the filter to the inlet to minimize transmission losses and provides for equal distribution of particles and low intersample variation. The Button Sampler is autoclavable, making it ideal for applications requiring pre-sterilization. Combining the Button Sampler with the nurturing properties of gelatin filters creates a sampler that is most efficient at collecting inhalable bioaerosols for viable or non-viable analysis.



References

Clark Burton, N., et al., "Physical Collection Efficiency of Filter Materials for Bacteria and Viruses," *Annals of Occup. Hyg.*, Sept. 2006, pp. 1-9

Aizenberg, V., et al., "Performance of Air-O-Cell, Burkard, and Button Samplers for Total Enumeration of Airborne Spores," *AIHA Journal*, Vol. 61, Dec. 2000, pp. 855-864

Adshikari, A., et al., "Performance of the Button Sampler for Outdoor Bioaerosol Collection," abstract from American Assoc. of Aerosol Research Conf., 2002, NC

Wang, C., et al., <https://doi.org/17ckzs>

VersaTrap Spore Trap Cassette

Traps Smaller Mold Spores Using Higher Flows

- ▶ **High collection efficiency from 5 to 30 L/min**
 - Captures *Aspergillus* and *Penicillium* mold spores as small as 1.5 µm at 30 L/min (see table below)
- ▶ **A standard collection method for mold spore count and genus identification**
- ▶ **Easy analysis — ASTM Method D7391-20**
 - Positioning notches and flat edges provide for easy alignment on microscope stage
 - Uniform, well-defined rectangular deposition
- ▶ **Optimized slide adhesive**
 - Optically clear and tested for superior adhesion
- ▶ **SureSeal leak-free cassettes for sample integrity**
- ▶ **Unique serial number on each cassette for sample traceability**

QuickTake 30 Pump
Ideal for Spore Traps
see pages 28-29



VersaTrap Spore Trap Cassettes provide the sampling versatility you need to capture mold spores and other particles ranging from 1.5 to 3.9 µm. Sampling is as easy as selecting the flow rate that will target the desired particle size (see table), calibrating a pump to the flow rate, and collecting the sample.

High Flows + Low Cut-points + No Particle Bounce = High Collection Efficiency

Flow Rate (L/min)	VersaTrap 50% Cut-point (µm)
30	1.5
25	1.7
20	1.9
15	2.3
10	2.8
5	3.9

MORE INFORMATION

VersaTrap

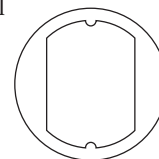
skcinc.com/knowledgecenter

VersaTrap Design

The narrow slit inlet focuses particles toward the clear glass slide coated with a sticky substrate that holds the sample securely. Targeted size particles are effectively held in a well-defined rectangular footprint. Each slide is encased in a SureSeal leak-free cassette to ensure sample integrity.

VersaTrap Makes Analysis Easy

- Designed for easy slide removal
- Positioning notches and flat edges for fast, easy alignment
- Well-defined rectangular footprint for accurate analysis using standard equipment
- Adhesive prevents blurring or wash off during staining
- Unique serial numbers for sample traceability



Description	Cat. No.	Qty.
VersaTrap Spore Trap Cassettes, 37 mm, limited shelf-life	225-9820	10
	225-9821	50

For a list of microbiological laboratories, go to skcinc.com/lab.

V Video	P PowerPoint	W Webinar	S Sampling Solution
Visit skcinc.com/Training			

Portable Instruments



SKC Noise – Unheard of Ease in Noise Monitoring

SKC noise measurement instruments provide ease of use, accuracy, and features designed specifically for the OEHS professional. Experience seamless workplace noise assessments and environmental monitoring. SKC Noise instruments also provide a direct line to the SKC team of Certified Occupational Hearing Conservationists and the quality and service you trust.

See what all the noise is about on pages 144 to 151.



Innovative Hand-Arm Vibration System

SKC is excited to partner with Feraru Dynamics to bring you a portable instrument system that helps protect workers from overexposure to hand-arm vibration. Expanding our science to serve you.

See more on this exciting new product on pages 152 to 153.



Deployable Precision Real-time Monitors

SKC is pleased to partner with Environmental Devices Corporation to offer the latest in deployable precision instruments for real-time personal, indoor air, and environmental monitoring of particulates, other contaminants, and parameters.

See pages 154 to 163 for more information on instruments for your applications.

NoiseCHEK

Personal Noise Dosimeter — Easiest to Use, Most Reliable Value

NEW!

SKC's team of COHCs designed the NoiseCHEK Personal Dosimeter specifically for industrial hygienists and other OEHS professionals. What that means for you is more ease of use, features, and data versatility than any Class 2 dosimeter available. Choose NoiseCHEK to experience seamless noise measurement and the high level of SKC quality, service, and expertise you trust.

Intrinsically safe models available!

- ▶ **Intuitive**
- ▶ **Measures 80 to 140 dB and peak level up to 143 dB**
 - A, C, and Z weighting; Peak C or Z weighted
 - Fast and slow response time
 - Selectable exchange rate – 3, 4, or 5 dB
- ▶ **Four programmable virtual dosimeters for simultaneous compliance monitoring**
- ▶ **Largest display screen on a cable-free dosimeter**
- ▶ **1/1 and 1/3 octave band filters standard on all models**
- ▶ **Reliable ½-inch microphone – no calibration adapter needed**
 - Automatic calibration with AcoustiCHEK Calibrator
- ▶ **Bluetooth® Low Energy (BLE) models feature connectivity to the SmartWave dB mobile app — see page 145**
- ▶ **All models feature voice note recording, threshold-triggered noise event recording, and field note creation**
- ▶ **Small and tough for easy worker acceptance**
- ▶ **Device lockout feature for security**
- ▶ **40+ hours run time**
- ▶ **Expert support from the SKC team of Certified Occupational Hearing Conservationists (COHC)—ask about our noise seminars!**
- ▶ **New intrinsically safe models available — see page 145**

Need non-BLE
NoiseCHEKs?

Contact SKC!

VIEW OUR DEMONSTRATION VIDEOS!
youtube.com/SKCInc1



1/1 and 1/3 Octave Band Filters
standard on **ALL MODELS!**



Connect with NoiseCHEK from Mobile and PC

SmartWave dB app for BLE Models Free for iOS and Android Tablets/Phones

- Start/pause/stop NoiseCHEK
- View setup and monitor readings for up to four virtual dosimeters
- View octave band and history
- Add and review field notes on history files
- Generate and email/text compliance reports

Visit the App Store or Google Play!

DataTrac dB Software Free Download to PC

- Set up four virtual dosimeters
- Schedule sampling
- Download data
- Enable/disable device lockout
- Listen to voice recordings
- Review notes
- Generate and share compliance reports

ORDERING

NoiseCHEK Dosimeters with BLE	Not Intrinsically Safe Cat. No.	Intrinsically Safe Cat. No.	Qty.
Dosimeter Only , requires charging dock; see below	701-001	701-001S	ea
Single Kit with Class 2 Calibrator includes dosimeter*, 1-unit charging dock with power supply, USB cable, and USB drive with manual, in a protective carry case	701-001K-C	701-001KS-C	ea
3-pack Kit with Class 2 Calibrator includes 3 each: dosimeters*, 1 each: 5-unit charging dock with power supply, replacement windscreen, USB cable, and USB drive with manual, in a protective charging carry case	701-001K3-C	701-001K3S-C	ea
5-pack Kit with Class 2 Calibrator includes 5 each: dosimeters*, 1 each: 5-unit charging dock with power supply, replacement windscreen, USB cable, and USB drive with manual, in a protective charging carry case	701-001K5-C	701-001K5S-C	ea

Requires calibration using AcoustiCHEK calibrator sold separately; see Accessories

* NoiseCHEK dosimeters contain Li-Ion batteries and are subject to special shipping regulations

Accessories	Cat. No.	Qty.
Charging Docks for charging and connection to PC, includes power supply (100-240V)		
1-unit	701-002	
5-unit	701-003	ea
AcoustiCHEK Calibrator , Class 2, see p. 150 for details	703-002	ea

For more on AcoustiCHEK Calibrators and noise instrument recalibration, see pages 150-151.

SoundCHEK Essential

SKC SoundCHEK Essential is exactly what you need to perform workplace noise assessments and environmental monitoring. Get easy setup, intuitive operation, and high versatility in a sound level meter — at a great value. SoundCHEK Essential by SKC gives you a direct line to the experts you trust for quality, service, and support.

Sound Level Meter — Ease, Versatility, and Value

NEW!

Cut through the noise and call SKC!

- ▶ **Highly intuitive operation**
- ▶ **Fast switching between applications**
- ▶ **Measures 25 to 140 dB**
 - Peak level from 40 to 143 dB
- ▶ **User-selectable measurement parameters**
 - Dual measurements
 - A, C, and Z weighting
 - Slow, Fast, and Impulse
 - OSHA and ACGIH settings
- ▶ **New OSHA setting**
 - Displays exposure parameters (LAVG, TWA, %Dose)
- ▶ **Timer and datalogging**
 - 6000 measurements stored (1 MB memory)
- ▶ **Large full-color display**
- ▶ **New polycarbonate anti-glare display window resists scratches**
- ▶ **12-hour continuous run time on alkaline batteries**
- ▶ **Easy accurate calibration with SKC AcustiCHEK Calibrator**
(see page 150)
- ▶ **Ergonomic and lightweight – only 10.6 ounces (300 grams)**
- ▶ **Free cloud-based app and PC-based software**
(software upgrade available)
- ▶ **Available in Class 1 and Class 2**
- ▶ **Multi-language**



Micro USB Type B connection (not shown)

Meets ANSI S1.4:2014 and IEC 61672-1:2013, Class 2



SoundCHEK sound level meters are supplied in a protective case with foam that accommodates the AcustiCHEK Calibrator. (Calibrator sold separately—see page 150.)

Easy, Accurate, and Versatile Sound Level Meter that
MAKES YOUR JOB EASIER!

SoundCHEK Essential — Data Storage/Management Options

CHEKbox

Cloud based via PC

- Free secure starter storage; upgrade to Pro is available
- Powerful employee and exposure database
- Calculators for dose and hearing protection
- Site plans with locations and more

Visit skcCHEKBox.com

DataCHEK^{dB} / DataCHEK^{dB} PRO

PC based

- Available as a free download
- Upgrade to Pro for expanded features and analysis
 - Graphical views
 - Analysis for hearing protection
 - Dose calculations

ORDERING

SoundCHEK	Cat. No.	Qty.
SoundCHEK Essential includes Class 1 meter , rubber boot, 4 AA batteries, USB cable, wrist strap, windscreen, and USB drive with manual, in a protective carry case ☑	702-001	ea
SoundCHEK Essential includes Class 2 meter , rubber boot, 4 AA batteries, USB cable, wrist strap, windscreen, and USB drive with manual, in a protective carry case ☑	702-002	ea

☑ Requires calibration using AcoustiCHEK calibrator sold separately; see Accessories

Accessories	Cat. No.	Qty.
Replacement Microphone, Class 1, ½-inch pre-polarized 25 mV/Pa electret capsule	702-020	ea
Replacement Microphone, Class 2, ½-inch pre-polarized 25 mV/Pa electret capsule	702-019	ea
Replacement Windscreen, 2.5-inch diameter for ½-inch microphones	702-016	ea
Pre-amp Assembly for SoundCHEK Essential	702-023	ea
AcoustiCHEK Calibrator, see p. 150 for details		
Class 1	703-001	ea
Class 2	703-002	ea

Learn more at skcinc.com/noise!



SKC brings wireless connectivity to sound measurement with **SoundCHEK Connect Sound Level Meters**. Perform measurements with one of the easiest-to-use instruments on the market while data stores in your secure cloud account, ready for reporting. SoundCHEK Connect works just as easily in non-wireless environments. SoundCHEK Connect by SKC gives you a direct line to the experts you trust for quality, service, and support.

Cloud-connected Multi-application Sound Level Meters **NEW!**

Choose SKC because your hearing conservation program matters!

- ▶ **Intuitive operation**
- ▶ **Measures 30 to 140 dB linear and 40 to 143 dB Peak (Class 2)**
- ▶ **Dual measurements and time histories**
 - A, C, and Z weighting
 - Slow, Fast, Impulse, and Peak
 - OSHA and ACGIH settings
- ▶ **Dual time histories as small as 10 ms**
- ▶ **Selectable parameters**
- ▶ **Wi-Fi connectivity**
 - Also operates easily in non-wireless environments with direct output to .csv format
- ▶ **Models available with modules for 1/1 octave band, statistics and event recording, and 1/1-1/3 octave band**
- ▶ **Built-in Hearing Protection Database**
 - New ANSI database
 - OSHA preset available in exposure and hearing protection databases
- ▶ **Large, full-color display**
- ▶ **Advanced timers and datalogging**
- ▶ **New ability to label measurements with virtual keyboard**
- ▶ **Audio files and measurements splittable to custom duration**
- ▶ **Voice memo standard on all models**
- ▶ **Easy accurate calibration with SKC AcustiCHEK Calibrator (see page 150)**
- ▶ **Free cloud data storage**
- ▶ **All models available in Class 1 and Class 2**
- ▶ **Multi-language**



Wireless Connectivity and Ease of Use in Truly Versatile Sound Level Meters

SoundCHEK Connect — Data Storage/Management



Cloud-based via Wireless

- Free secure starter storage; upgrade available
- Powerful employee and exposure database
- Calculators for dose and hearing protection
- Site plans with locations and more

Visit skcCHEKBox.com

ORDERING

SoundCHEK
Connect
Class 2

	Sound Level Meter	Sound Level Meter S0	Sound Level Meter SE	Sound Level Meter SE0
Cat. No.	702-009	702-010	702-011	702-012
Parameters: Lp, Leq, Lmax, Lmin, Peak, LE	●	●		
Parameters: Lp, Leq, Lmax, Lmin, Peak, LE, Ltm3, Ltm5, Lday, Levening, Lnight, Ldn, Lden, NA, 10 definable Ln values			●	●
1/1 Octave Module		●		
Statistics and Event Recording Module			●	●
1/1-1/3 Octave Modules				●
Hearing Protector Calculator	●	●	●	●
Meets ANSI S1.4 2014 and IEC 61672-1:2013 Class 2	●	●	●	●
Wi-Fi Connectivity: Also connects with PC via USB with direct .csv file output	●	●	●	●

All models include meter, rubber boot, 4 AA batteries, USB cable, wrist strap, windscreen, and USB drive with manual, in a protective carry case

Requires calibration using AcoustiCHEK calibrator sold separately; see Accessories

Accessories	Cat. No.	Qty.
Replacement Microphone, Class 1, 1/2-inch pre-polarized 50 mV/Pa electret capsule	702-021	ea
Replacement Microphone, Class 2, 1/2-inch pre-polarized 25 mV/Pa electret capsule	702-019	ea
Replacement Windscreen, 2.5-inch diameter for 1/2-inch microphones	702-016	ea
Pre-amp Assembly for SoundCHEK Connect	702-022	ea
AcoustiCHEK Calibrator, see p. 150 for details		
Class 1	703-001	ea
Class 2	703-002	ea

Need a Class 1 SoundCHEK Connect? Contact SKC today!

AcoustiCHEK

Acoustic Calibrators for SKC Noise Instruments

NEW!

The **SKC AcoustiCHEK Calibrator** is specifically designed for easy calibration of the SKC NoiseCHEK Dosimeter and SoundCHEK Essential/SoundCHEK Connect Sound Level Meters with 1/2-inch microphones. In the lab or in the field, AcoustiCHEK has you covered.

CALIBRATION MADE EASY!

- **Easy-to-use interface**
- **Class 1 and Class 2 models available**
 - Selectable outputs of 94 dB, 104 dB, and 114 dB at 1000 Hz
- **70 hours operation on AA alkaline batteries**
 - Auto-off feature
- **Designed for 1/2-inch microphones**
- **Accurate calibration for SKC sound and noise instruments**
- **Supplied with a Certificate of Manufacturer Calibration**
 - NIST-traceable certificate option available
- **IEC 60942:2017 compliant**



ORDERING

Description	Cat. No.	Qty.
AcoustiCHEK Calibrator includes AA batteries and Certificate of Manufacturer Calibration		
Class 1, with built-in barometer	703-001	ea
Class 2	703-002	ea

Need your SKC noise instrument factory calibrated? See page 151.

SKC Confidence in Calibration

SKC Noise Instrument Calibration Services

Noise exposure data is only as accurate and defensible as the measuring instrument and its calibration. The SKC Noise Calibration Laboratory offers fast, NIST-traceable calibration of SKC noise instruments. Testing is performed in conformance with ANSI S1.25 and IEC 61252 standards.

- ▶ **Class 1 calibration standards**
- ▶ **Confirmation of accuracy based on Class 1 and Class 2**
 - SoundCHEK sound level meters
 - NoiseCHEK noise dosimeters
 - SKC microphones
 - AcoustiCHEK calibrators
- ▶ **Service includes:**
 - Check of functional components
 - Recalibration
 - Test reports
 - NIST-traceable calibration certificate
- ▶ **Trained, dedicated technicians**
- ▶ **Fast turnaround time**
- ▶ **Competitive pricing**



CONTACT SKC FOR MORE INFORMATION!



HAV-SENTRY

NEW!

A Personal Hand-Arm Vibration Exposure Meter

- **Sleek and unobtrusive liner**
 - Use underneath protection gloves or without
 - Compatible with most protection gloves
 - Machine washable and easily replaced
- **Accelerometer and force sensor for a more comprehensive risk assessment**
- **IP64 protection – dustproof and water-resistant**
- **Rechargeable Li-Ion battery for 8 hours continuous operation**
- **Individually assigned BLE ID tag provides user authentication**
- **Convenient docking station for charging and data transfer**
- **Secure cloud-based dashboard**
- **Complies with ISO 5349 and ISO 8041**
- **Personalized and non-intrusive monitoring**
- **Live alerts based on real-time data**



Certifications

CE UK CA *Not intrinsically safe*

The Feraru Dynamics HAV-Sentry System is an innovative, non-intrusive wearable technology that provides personalized measurement of real-time hand-arm vibration exposure with live alerts. Proactively protect hand-held tool operators in construction, manufacturing, and other industries from developing lifelong Hand-arm Vibration Syndrome. Access to data visualization, analysis, and risk assessment reports are available in the secure cloud-based dashboard.

Going Beyond Compliance!

The HAV-Sentry System adopts the hand-held adaptor design detailed in the Annex D of BS EN ISO 5349-2:2001. In addition, it measures the gripping forces applied by the operator. No current guidance exists to evaluate this additional factor, but it is recognized as relevant and important to improving vibration risk assessment. The HAV-Sentry Dashboard hosts personalized profiles for each operator where data is stored and used to help inform decisions for worker safety and training.

HAV-SENTRY—The System



Liner Glove

Breathable, moisture wicking, replaceable, comfortable



Aegis HAV Sensing and Alert Unit

Measurement, alert, and control system

The “Traffic Light” alert system for Action Value (amber) and Exposure Limit Value (red); editable to comply with local regulation.



ID Tags

BLE-connected user authentication device

No need to carry the ID Tag once paired with the HAV Sensor!



Docking Station

Charging and data acquisition station

Wi-Fi connection available



Secure Dashboard

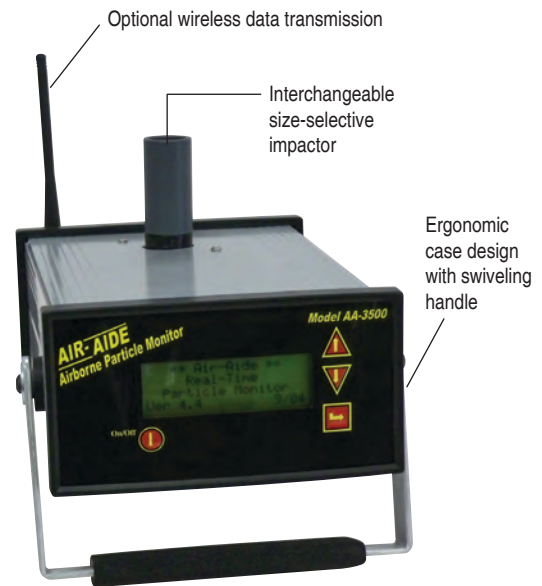
Cloud-based data visualization, analysis, and reporting tool

Description		Cat. No.	Qty.
Aegis HAV Sensing and Alert Unit in Liner Glove, Li-Ion battery	Large glove	720-001	ea
	Medium glove	720-002	ea
5-pack Aegis HAV Sensing and Alert Unit Kit, includes large liner gloves	Large gloves	720-001K	ea
Docking Station, for Aegis Sensing and Alert Unit, five port		720-003	ea
ID Tag, for use with Aegis Sensing and Alert Unit, Bluetooth		720-004	ea
Replacement Liner Glove, for Aegis Sensing and Alert Unit	Large	720-005	ea
	Medium	720-006	ea
HAV-Sentry Cloud-based Dashboard	1 user	720-010-1	ea
	5 users	720-010-5	ea
	10 users	720-010-10	ea
	50 users	720-010-50	ea



AIR-AIDE Airborne Particulate Indoor Air Monitor With Interchangeable PM Size Selectors

- ▶ High resolution and temperature stability
- ▶ Long-life air sample pump maintains accurate 2 L/min flow for particle separation
- ▶ Interchangeable size-selective impactors — choose PM10, PM2.5, PM1.0, or ISO respirable (4.0 µm)
- ▶ Built-in calibration factors for fine and coarse particulate matter
- ▶ NIST-traceable calibration
- ▶ Large data storage capacity
 - Run continuously for up to 15 months without downloading
- ▶ On-screen programming of sampling and data storage parameters
- ▶ PC-based software included for downloading and graphing stored data
- ▶ User-defined audible alarm
- ▶ Location codes for tagging data
- ▶ Optional wireless data transmission to PC
- ▶ Includes PC-based DustComm Pro Software for downloading, basic trend analysis, and comprehensive graphical reporting



APPLICATIONS

- Ventilation system analyzer
- "Green Buildings" certification
- Survey of workplace compliance
- Exposure monitoring of all dusts and aerosols
- IAQ for respirable particulates

Performance Profile

Sensing Range: 0.001 to 20 mg/m³ (0.01 to 200 mg/m³- optional)

Particle Size Range: 0.1 to 100 µm

Data Storage: 21,600 data points

Data Display: Concentration in mg/m³ and TWA, MAX, MIN, and STEL, date, and time

Run Time: ≥ 10 hrs on rechargeable NiMH battery; continuous on AC

Dimensions/Weight: 3 x 6 x 9 in (7.6 x 15.2 x 23 cm); 5 lbs (2.3 kg)

Description	Cat. No.	Qty.
AIR-AIDE Monitor Kit includes monitor (0.001 to 20 mg/m ³), NiMH battery, charger/adaptor (100-240 V), rotameter, impactor sleeve for TSP, DustComm Pro Software, cable, and instruction manual	770-600	ea
Accessories		
Impactor Grease	770-211	ea
Size-selective Impactors		
PM10	770-606	ea
PM2.5	770-605	ea
PM1.0	770-604	ea
Respirable (4 µm)	770-603	ea

Wireless data transfer radio modems and other accessories are available. Contact SKC.

SM-7204 Direct-reading Silica Monitor Complements Compliance Air Sampling

- ▶ Low sensing range down to 0.001 mg/m³
- ▶ High precision of ± 0.002 mg/m³
- ▶ Displays real-time graphing and measurements in µg/m³ or mg/m³
- ▶ Allows on-screen programming of libraries for aerosol profiles and data set naming
- ▶ Comes standard with GS-3 Cyclone that conforms to ISO 7708/CEN criteria
- ▶ Sensor and filter cassette clips directly in the breathing zone
- ▶ Easy-to-clean optical sensor
- ▶ Concurrent filter sampling option for lab analysis and/or cross-calibration of displayed results
 - Gravimetric filter cassette located directly behind the sensor for maximum particle deposition
 - Flow-compensated adjustable pump
- ▶ Infield PM calibration and verification
- ▶ Datalogging
 - DustComm Software for downloading, trend analysis, and graphical analysis/comprehensive reporting



The new SM-7204 is optimized for the measurement of silica levels specified in the OSHA Final Silica Rule and calibrated to a known amount of silica dust. Use direct readings for determination of peak silica concentrations for mitigation and lower TWAs. SM-7204 alerts users of approaching thresholds for immediate corrective action. Quickly implement controls and measure effectiveness to reduce further silica exposures. SM-7204 features a built-in compensating pump and gravimetric filter cassette directly behind the sensor to provide for concurrent gravimetric sampling for silica analysis and cross-calibration. Use the SM-7204 for:

- Monitoring of regulated areas with user-set alarms
- Evaluation of controls/worker activities
- Recording time history of dust levels
- Filter sampling for lab analysis
- Task monitoring
- Selecting PPE



Performance Profile

Sensor: Light scattering

Flow Rate: 1 to 5 L/min, user selectable

Sensing Range: 0.001 to 500 mg/m³ (1 to 500,000 µg/m³)

Measuring Range: Particle sizes from 0.1 to 100 µm


Precision: ± 0.002 mg/m³ or 2 µg/m³

Accuracy: ± 10% to filter gravimetric SAE fine test dust

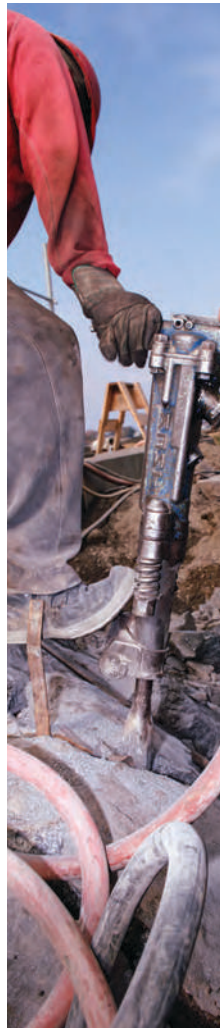
Calibration: ISO 12103-1 A2 fine test dust component with total silica, crystalline analysis of dust by X-ray diffraction - NIOSH 7500 and dust analyses gravimetric - NIOSH 7500.

Display: Concentration in mg/m³ or µg/m³, sampling size fraction of PM (OSHA TWA, AVG, MAX, MIN), start and stop time, elapsed run time, log rate, flow, real-time rolling graphs, personalized named data sets, unique aerosol profiles, language options, battery life, pump faults, infield calibration test, history of data sets

Gravimetric Filter Sampling Requirement: 37-mm PVC filter for supplied 37-mm in-line cassette (25-mm filter and cassette options are available)

Description	Cat. No.	Qty.
SM-7204 Silica Monitor Kit includes monitor, opaque filter cassette holder, open-faced sampling adapter, GS-3 respirable cyclone, detachable thoracic sampling inlet, micro USB download cable, cable, battery charger, zeroing filter, HAZ-DUST media USB with instruction manual and DustComm Pro Software, and carry case 	110-240 V 770-700A	ea
Accessories		
Infield Calibration Verification	770-710A	ea
Calibration Jar , for calibrating and setting pump flow when using a respirable cyclone	225-112	ea
Replacement Zeroing Filter	770-324A	ea
Replacement Battery Pack , Li-Ion	770-7205	ea

Environmental
Devices Corporation



NEW!

HAZ-DUST 7204

Personal Particulate Monitoring and Compliance Sampling

Environmental
Devices Corporation

The Environmental Devices Corporation personal HAZ-DUST® 7204 provides immediate identification of problem areas and tasks. Quickly implement controls to reduce exposures to hazardous particulate and then measure the effectiveness of controls moving forward. There's no further need for two co-located devices – one HAZ-DUST 7204 with built-in compensating pump and pre-weighed filter cassette simultaneously provides real-time particulate readout and gravimetric sampling. The HAZ-DUST 7204 alerts users of approaching thresholds for immediate corrective action. Designed carefully with you in mind, the HAZ-DUST 7204 provides cost-savings and the widest range, lowest detection, and best resolution of any personal dust monitor on the market.



Key Features

- Flow-compensated adjustable pump
- Accommodates any 25 or 37-mm preweighed filter cassette
- Displays real-time measurements in $\mu\text{g}/\text{m}^3$ or mg/m^3
- Easy-to-clean miniaturized optical sensor mounts in the OSHA-defined breathing zone
- Allows true size-selective sampling with interchangeable inlets
- Interchangeable impactors
- Allows on-screen programming of libraries for aerosol profiles and data set naming
- 22+ hours run time with Li-Ion battery
- Compact and easy to hold
- Optional wireless, BLE, cellular, and networking capabilities
- Large color touch display
- Real-time rolling graphs
- On-screen statistics
- In-the-field calibration verification
- Loud, bright alarms



A Solution for Each OSHA-defined Size-selective Region of the Lungs

With interchangeable sampling inlets, the HAZ-DUST 7204 covers all your personal dust monitoring needs. The miniaturized optical sensor/inlet-cassette mounts directly in the OSHA-defined breathing zone to effectively provide direct read-out and sampling of respirable, thoracic, or inhalable dust exposure. In addition, interchangeable impactors are available for PM2.5 or PM10.

- **Inhalable** - 2 L/min with IOM,* supplied with monitor
- **Thoracic** - 2 L/min with thoracic impactor, supplied with monitor
- **Respirable** - 2.75 L/min with GS-3 Cyclone*

*Meets ISO 7708/CEN criteria

HAZ-DUST 7204

Simultaneous Direct Readout and Gravimetric Sampling

Benefits

- Immediate display of airborne particulate concentration
- Early warning of approaching threshold limits
- Interchangeable sampling inlets to target compliance sampling in each OSHA-defined size-selective region of the lungs
- Simultaneous compliance sampling
- Gravimetric sample can be used to correct readings for local dust; build and store as an aerosol profile
- Use a single instrument or network multiple instruments with wireless options



Performance Profile

Sensor: Light scattering

Flow Rate: 1 to 5 L/min, user selectable

Sensing Range: 0.001 to 500 mg/m³ or 1 to 500,000 µg/m³

Measuring Range: Particle sizes from 0.1 to 100 µm

Precision: ± 0.002 mg/m³ or 2 µg/m³

Accuracy: ± 10% to filter gravimetric SAE fine test dust

Calibration: Gravimetric reference NIST-traceable SAE fine test dust (ISO 12103-1 A2 fine test dust)

Display: Concentration in mg/m³ or µg/m³, sampling size fraction of PM (OSHA TWA, AVG, MAX, MIN), date, time, aerosol profiles, data sets, alarm levels, log rate, flow, real-time rolling graph


Dimensions: 4.75 x 3.5 x 2.25 inches (12.1 x 8.9 x 5.7 cm)

Weight: 1.14 lbs (0.52 kg)

APPLICATIONS

Monitoring

- Silica
- Construction dust
- Welding fumes
- Concrete/cement
- Nuisance dusts
- Grinding dusts
- Soil remediations
- Tobacco smoke
- Construction dust
- Dry chemicals
- Diesel
- Lead
- Wildfires
- Pharmaceuticals
- Paint spray
- Grain
- Wood/paper
- Cadmium
- Chromate
- Oil mists

Description	Cat. No.	Qty.
HAZ-DUST 7204 Monitor Kit includes monitor with battery, 37-mm 2-piece opaque filter cassette, open-face sampling adapter, thoracic sampling inlet, IOM inhalable sampling head (<i>installed</i>), flow adapter, zero accessory, universal battery charger (100-240 V) with adapters, DustComm Pro Software, and manual on USB, and mini-USB download cable, in a hard carry case 	770-7204	ea
Size-selective Sampling Heads		
Respirable Sampling Head , GS-3 Cyclone, mounts on HAZ-DUST 7204 sensor, <i>requires adapter, see below</i>	225-103	ea
Adapter for Respirable Cyclone , <i>required when using GS-3 Cyclone</i>	770-313	ea
Impactors		
Impactor, interchangeable		ea
10 µm	770-7211	ea
2.5 µm	770-7213	ea
Impactor Sleeve , <i>required for use with impactors</i>	770-7210	ea
Recommended Filters		
Quartz Filter , 37 mm, for gravimetric analysis and elemental chemical analysis of carbon-based compounds	225-1822	25
PVC Filter , 37 mm, for economical general gravimetric analysis only	225-5-37	100
Accessories		
Infield Calibration Verification , for verifying span and optical sensor performance	770-327	ea
Calibration Jar , for calibrating and setting pump flow when using respirable sampling head	225-112	ea
Zeroing Accessory	770-7209	ea
Black Pouch	770-7208	ea

 Requires calibration with equipment sold separately; see Accessories

See the SM-7204 Silica Monitor on page 155!



SPLIT2 Real-time Dust Monitor

Direct Read-out with Filter Option Using Any 2 L/min Pump

- ▶ **Economical, flexible, and direct reading**
- ▶ **Highly accurate**
 - ± 10% to NIOSH Method 0600 using SAE fine test dust
- ▶ **Reliable light-scattering technology**
- ▶ **Provides concurrent gravimetric sampling for different dust fractions when used with any 2 L/min sample pump**
 - Respirable dust with GS-3 Cyclone
 - Inhalable dust with IOM Sampler
 - Use gravimetric results to program monitor for cross-calibration of displayed results
- ▶ **Compact and lightweight**
- ▶ **Programmable with easy-to-use 4-button keypad**
- ▶ **Easy-to-use software for flexible data management**
- ▶ **Alarms at hazardous concentrations**
- ▶ **DustComm Pro Software for downloading, basic trend analysis, and comprehensive graphical reporting**



Attach to a pump to monitor dust levels in real time while collecting a gravimetric sample. SKC recommends using the AirChek 52/Sidekick pump. See pages 12-13.

Performance Profile

- Sensing Range:** 0.01 to 200 mg/m³
- Particle Size Range:** 0.1 to 100 µm
- Data Storage:** 21,500 data points
- Data Display:** Concentration in mg/m³ and TWA, MAX, MIN, and STEL
- Run Time:** ≥ 8 hrs on rechargeable NiMH battery
- Dimensions/Weight:** 7.1 x 3.1 x 1.8 in (18 x 8 x 4.5 cm); 1.7 lbs (0.78 kg)

The SPLIT2[®] Real-time Dust Monitor offers high flexibility in personal or area dust monitoring. Combine SPLIT2 with any 2 L/min sample pump, a sampling head (GS-3 respirable cyclone or IOM inhalable sampler), and preweighed filter for direct read-out and real-time profile of dust concentration and concurrent gravimetric dust sampling.

Description	Cat. No.	Qty.
SPLIT2 Monitor with accessories includes monitor, lapel bracket, zeroing accessory, calibration standard, computer cable, DustComm Pro Software, NiMH battery pack, AC charger/adaptor, and carry case <i>For concurrent gravimetric sampling, see kits below</i>	110-240 V	770-300 ea
SPLIT2 Monitoring Kit with IOM (<i>pump not included</i>) includes all items in Cat. No. 770-300, IOM adapter, and IOM Sampler with cassette and transport clip Cat. No. 225-70A, <i>see p. 123 for filters for IOM Sampler, requires sample pump; see pp. 12-13</i>	110-240 V	770-300K1 ea
SPLIT2 Monitoring Kit with Cyclone (<i>pump not included</i>) includes all items in Cat. No. 770-300, GS-3 Cyclone adapter, and GS-3 Cyclone Cat. No. 225-103, <i>see pp. 102-110 for preloaded filters, requires sample pump; see pp. 12-13</i>	110-240 V	770-300K2 ea

*SPLIT2 Monitors and accessories are available separately.
Contact SKC for more information.*

EPAM-5000

Direct Readout Plus Filter Sample for EPA PM Criteria

- Fast, easy setup
- Interchangeable impactors
- Highly sensitive and accurate
 - Accuracy is $\pm 10\%$ filter gravimetric SAE fine dust test
- Internal 4 L/min sample pump*
- Unique aerodynamic particle-sizing real-time sensor
 - Optional EPA FRM-style 47-mm filter cassette for gravimetric reference
- High correlation to EPA PM10 methods and TEOM
 - Ideal for saturation sampling
- Wireless data transmission option transmits data up to 5 miles
- Ideal for ambient, environmental, and IAQ investigations and baseline surveys
- DustComm Pro data analysis/reporting software included
- Wireless network software option available for Windows
- Temperature controlled enclosure accessory available



Performance Profile

Sensing Range: 0.001 to 20 and/or 0.01 to 200 mg/m³
Particle Size Range: 0.1 to 100 μm
Data Storage: 21,600 data points
Data Display: Concentration in mg/m³ and TWA, MAX, MIN, STEL, date, and time
Run Time: ≥ 24 hours on rechargeable battery; continuous on AC
Dimensions/Weight: 14 x 6 x 10 in (35.6 x 15.2 x 25.4 cm); 10 lbs (4.5 kg)

Description	Cat. No.	Qty.
EPAM-5000 Monitor Kit with impactor (measures TSP without impactor), 110-240 V charger, DustComm Pro Software, computer cable, and manual, in a carry case	PM10	770-203
	PM2.5	770-202
	PM1.0	770-201
Accessories		
Infield Calibration Verification	770-207	ea
Filter Holder, 47 mm, for gravimetric sampling, requires filter sold separately, see below	770-215	ea
Impactors, interchangeable	10 μm	770-206
	2.5 μm	770-205
	1.0 μm	770-204
Filters for Gravimetric Analysis		
PTFE, [†] with PTFE support, 47 mm, 2.0- μm pore size	225-3748	150
Glass Fiber, 47 mm, 1.0- μm liquid nominal pore size, binder-free, A/E	225-7047	100
Quartz (Tissuquartz), 47-mm diameter, 432 μm thick	225-1823	25

Requires calibration with equipment sold separately; see Accessories † Back pressure on PTFE filters can vary within the same lot.
 * Pump has a variable flow rate designed for use at 4 L/min to achieve proper size selection.

Contact SKC for EPAM-5000 optional equipment and accessories, including solar panels.

Environmental
Devices Corporation



HAZ-DUST HD-1620

NEW!

Handheld Real-time Respiratory PM Monitor

- ▶ Ability to enter wildfire correction factor
- ▶ Easy workplace monitoring to meet your state's wildfire smoke regulations
 - U.S. AQI for PM2.5 is displayed and recorded
- ▶ Monitors multiple air quality parameters
 - PM mass concentration
 - U.S. AQI for PM2.5 (displayed and recorded)
 - Temperature
 - Relative Humidity
 - Barometric Pressure
 - GPS
 - Particle number count
- ▶ Wireless remote networking for centralized data collection
 - Optional Wi-Fi, Bluetooth, cellular, and networking capabilities
- ▶ Easy on-site user maintenance and routine servicing
- ▶ Internal Infield Calibration Verification
- ▶ Touch screen entry
- ▶ OSHA TWA, min, max, cumulative average, and STEL and Ceiling alarms
- ▶ Audible and visible alarms
- ▶ Interchangeable impactors for PM10, PM5.0, PM4.0, PM2.5, PM1.0, and TSP
- ▶ Real-time rolling graphical display
- ▶ Multiple language options



CE

The Environmental Devices Corporation HD-1620 is a multi-parameter real-time respiratory air monitor designed specifically for firefighters, first responders, and occupational hygienists. Identify health concerns in real-time and get the information you need to set up engineering controls for workers such as N95 masking, SCBA respiratory protection, ventilation controls, evacuation, and/or reentry plans to meet your state's wildfire smoke rule. The HD-1620 is versatile...use it held in your hand, strapped to your hand, clipped to your belt or turn-out gear, or mounted on a tripod. Even with gloves, the large one-button "Go/No Go" provides for easy and rapid deployment. The HD-1620 also complements the EPA PM2.5 and PM10 reference method for outdoor applications to help maintain compliance.



Easily Deployable, Flexible, and Intuitive

Only handheld monitor with built-in U.S. AQI for PM2.5!

APPLICATIONS

- Smoke and wildfires
- Silica
- Lead
- Pharmaceutical dust
- Paint spray
- Toxic soil remediation
- Chromate
- Dry chemicals
- Wood dust
- Nuisance dust
- Heavy metals
- Construction dusts
- Concrete/cement
- Urban AQI monitoring
- Office IAQ
- Ventilation efficiency



Environmental
Devices Corporation

Description	Cat. No.	Qty.
HD-1620 Multi-parameter Respiratory Monitor Kit includes monitor, PM2.5 impactor, universal battery charger (100-240 V) with plugs, micro USB cable, flow adapter, PM Air Intake, manual, Dust Comm Pro Software, and certificate of calibration	770-1620	ea
Accessories and Replacement Parts		
Impactors for HD-1620 , require Cat. No. 770-1630, included in Cat. No. 770-1620		
	PM10	770-1621 ea
	PM5.0	770-1623 ea
	PM4.0	770-1624 ea
	PM2.5	770-1622 ea
	PM1.0	770-1625 ea
	TSP	770-1626 ea
Impactor Kit for HD-1620 includes impactors for PM10, 5.0, 4.0, 1.0, and TSP and PM Air Intake, does <i>not</i> include PM2.5 impactor	770-1629	ea
Stationary Tripod , lightweight, telescopes to 66 inches	770-1627	ea
Table Mount Tripod with gorilla grip, flexible for wrapping around poles, extends 6 inches	770-1628	ea
Replacement PM Air Intake for HD-1620 , fits all HD-1620 impactors, required for use with impactors, included in Cat. No. 770-1620	770-1630	ea
Flow Adapter for HD-1620 , for connection to a flowmeter, requires Cat. No. 770-1630; does <i>not</i> require a zeroing accessory	770-1631	ea

HAZ-SCANNER EPAS Environmental Perimeter Air Station

- ▶ **Direct reading**
- ▶ **Portable — easily deployed**
- ▶ **Measures/documents trace-level (ppb) gas, particulates, and meteorological parameters in real time to U.S. and EU directives**
 - Configure with up to 14 interchangeable sensors and EPAS-specific meters
 - Can equip to monitor two PM sizes simultaneously
- ▶ **Two options to customize your multi-pollutant monitoring station**
 - **Basic Kit** measures 3 parameters; add up to 11 additional sensors/meters
 - **Build Your Own System Kit:** Add up to 14 sensors/meters
 - **Use the checklist on page 163** to configure your EPAS before contacting SKC
 - **Ask an SKC representative about wireless, network, and power options**
- ▶ **Wireless networking and datalogging capabilities**
 - Network up to 8 EPAS units to one central PC or Mac; wireless network software option available
- ▶ **Operate from battery, AC, or optional solar panel**
- ▶ **Easy-to-use graph and reporting software compatible with PC and Mac**
- ▶ **Temperature controlled enclosure accessory available**



The portable HAZ-SCANNER® EPAS environmental perimeter air station is easily deployed as a multi-pollutant ambient air quality monitor to scan, measure, and document critical EPA criteria pollutants including nitrogen dioxide, carbon monoxide, sulfur dioxide, ozone, carbon dioxide, particulates, VOCs, and more. The EPAS provides direct readings in real time with datalogging capabilities. The graph and reporting software is compatible with PC and Mac. **Contact SKC for more information.**

Ordering Information

The HAZ-SCANNER EPAS environmental perimeter air station is a custom item. Build your own system to your specific applications with unique configurations and custom sensor calibrations. **Use the checklist on page 163, and contact SKC today.**

HAZ-SCANNER EPAS

Customize to Monitor High-priority Pollutants

Create a HAZ-SCANNER EPAS to fit your applications. Use the convenient checklist below as a guide to building your EPAS *before* contacting an SKC representative.

Start with:

EPAS Basic Kit

- ✓ PM10 or TSP particulates
- ✓ Nitrogen dioxide
- ✓ Carbon monoxide

Cat. No. 770-500K1

Add up to 11 sensors/meters separately at additional cost.

or

EPAS Build Your Own System Foundation Kit

Cat. No. 770-500

Add up to 14 sensors/meters separately at additional cost.

Choose 1 additional particulate sensor for Basic Kit (optional). Choose up to 2 for Build Your Own.

- PM1.0
- PM2.5
- PM10

Choose up to 6 interchangeable gas sensors for Basic Kit (optional). Choose up to 8 for Build Your Own.*

- | | |
|---|--|
| <input type="checkbox"/> Ammonia (EC) | <input type="checkbox"/> Hydrogen sulfide (EC) |
| <input type="checkbox"/> Carbon dioxide (NDIR) | <input type="checkbox"/> Nitric oxide (EC) |
| <input type="checkbox"/> Carbon monoxide (EC) | <input type="checkbox"/> Nitrogen dioxide (EC) |
| <input type="checkbox"/> Chlorine (EC) | <input type="checkbox"/> Oxygen (EC) |
| <input type="checkbox"/> Ethylene oxide (EC) | <input type="checkbox"/> Ozone (metal oxide semiconductor) |
| <input type="checkbox"/> Hydrocarbon: methane-specific (NDIR) | <input type="checkbox"/> Phosphine (EC) |
| <input type="checkbox"/> Hydrocarbons: non-methane (NDIR) | <input type="checkbox"/> Sulfur dioxide (EC) |
| <input type="checkbox"/> Hydrogen chloride (EC) | <input type="checkbox"/> VOCs (PID) |
| <input type="checkbox"/> Hydrogen cyanide (EC) | |

Choose up to 4 EPAS-specific optional meters or meteorological sensors.*

- | | |
|--|---|
| <input type="checkbox"/> Temperature and Relative Humidity (NTC and CAP) | <input type="checkbox"/> Wind speed/direction (3-cup anemometer/vane) |
| <input type="checkbox"/> Rain gauge (tipping bucket) | <input type="checkbox"/> Dew point temperature (software calculation) |
| <input type="checkbox"/> Solar radiance (photodiode) | <input type="checkbox"/> Sound/Noise (Type 2 SLM) |
| <input type="checkbox"/> Barometric pressure (piezo resistive)* | <input type="checkbox"/> Atomic/Nuclear radiation (Geiger counter) |

Choose to add temperature controlled enclosure (-40 to 140 F [-40 to 60 C])

* Barometric pressure sensor applies to both the gas sensor count and the meter count.

Contact your SKC distributor today for a quote on your custom-configured station!





SKC Surface and Dermal Samplers

SKC is excited to expand its offering of surface and dermal solutions! Now there are even more products to identify chemical and biological exposures and to help assess PPE effectiveness. We are especially excited to introduce our decontamination cleansers that safely remove targeted chemicals from skin and surfaces. SKC surface and dermal products are ideal for your dermal exposure reduction programs and aid in take-home hazard prevention and public health investigations.



MethChek Immunoassay Wipe Kits

Sensitive Kits for ng-Level Detection

- ▶ **Fast, reliable on-site results**
- ▶ **Indicate meth residue at ≥ 50 nanograms**
 - Kits also available for indication at 100, 500, and 1500 nanograms
- ▶ **Detect presence of meth and provide indication of meth levels**
- ▶ **Save money with multiple-test kits**
- ▶ **No shipping or lab fees**
- ▶ **Lightweight, portable**
- ▶ **Developed by CDC-NIOSH**
- ▶ **Safe for use on many surfaces, including animal fur**



Make informed decisions in the field!

MethChek® Kits provide on-the-spot semi-quantitative assessments of meth residue at the lowest state cleanup guideline of 50 ng/100 cm² (100, 500, and 1500-ng sensitivities are also available). Simply wipe, extract, and read results. MethChek is an ideal post-assessment tool to determine the need for further cleaning before sending cleanup crews away.

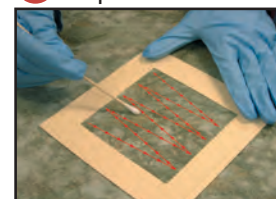
Complete MethChek Kits

MethChek Kits contain the following:

- Gauze pads or swabs
- Trays
- Templates
- Gloves
- Syringes (except MethChek 50)
- Pipettes
- Reagents
- Detection cartridges
- Bags
- Instructions

Description	$\mu\text{g}/100 \text{ cm}^2$	Lower Limit of ID ng	Cat. No.	Tests
MethChek 50	0.05	50	560-004	12
			560-004A	1
			560-004B	3
MethChek 100	0.1	100	560-003	12
			560-003A	1
			560-003B	3
MethChek 500	0.5	500	560-002	12
			560-002A	1
			560-002B	3
MethChek 1500	1.5	1500	560-005	12
			560-005B	3

1 Wipe



2 Extract



3 Read Results



Positive result with MethChek Kit

APPLICATIONS

- **Protect** first responders
- **Develop** health and safety plans for building/environment decontamination
- **Confirm** appropriate safe levels are met before building occupancy



Surface Testing

Multiple Contaminants

SURFACE SWYPE

ON-THE-SPOT CHEMICAL
SCREENING FOR AT-RISK AREAS

- Suitable for OSHA PPE Standard
- Fast, easy results
- Convenient and safe
 - Use on almost any surface – Skin SWYPEs are available on page 167
- Inexpensive – no instruments or analysis required
- Available for a variety of chemicals with ACGIH® skin notation
- Ideal for dermal exposure reduction programs



Spray surface and wipe with SWYPE.



Check color.

SKC Recommended CLI by SKC Sampling Products

Compound	Surface SWYPES pk/25, limited shelf-life Require Cleaning/ Developing Solution	Cleaning/Developing Solutions Available in 16 or 22-oz spray bottle or 1-gallon jug as noted	Surface Kits 25 Surface SWYPES and Developing Solution in spray bottle	Hazard Assessment Kits Surface & Skin SWYPES, PERMEA-TEC, Developing Solution, DECONtamination Solution, D-TAM Skin Cleanser <i>(solution/cleanser varies by hazard)</i>	NEED MORE INFO? skcinc.com
Aromatic Amines	769-1021	22 oz 769-1061 1 Gallon 769-1041	769-1021K	769-1001	
Aromatic Isocyanates	769-1022	16 oz 769-1062	769-1022K	769-1002	
Aliphatic Amines	769-1025	22 oz 769-1065	769-1025K	769-1005	
Aliphatic Isocyanates	768-1023	16 oz 769-1062	769-1023K	769-1003	
Acid/Base	769-1026	22 oz 769-1066	769-1026K	769-1006	
Phenols	769-1027	16 oz 769-1067	769-1027K	769-1007	
Nickel	769-1028	22 oz 769-1068 1 Gallon 769-1054	769-1028K	769-1008	
o-Phthalaldehyde	769-1029	22 oz 769-1069 1 Gallon 769-1055	769-1029K	769-1009	

DECON Kits for aromatic amines and isocyanates are available at skcinc.com.

SKIN SWYPE

CHEMICAL EXPOSURE INDICATORS

CLI by SKC Skin SWYPE indicators provide simple, fast, and visible proof of chemical exposure on skin that may have come into contact with contaminated surfaces. Skin SWYPES identify work practices that may result in exposure, educate workers about prevention, and reinforce safe work practices. Use in conjunction with Surface SWYPE indicators to identify at-risk areas for housekeeping.

- Fast, easy, on-the-spot results
- Convenient and safe
- Designed for use on skin – Surface SWYPES are available on page 166
- Inexpensive – no instruments or analysis required
- Available for a variety of chemicals with ACGIH skin notation
- Ideal for dermal exposure reduction programs



Wipe skin with SWYPE.



Develop SWYPE in solution.

SKC Recommended CLI by SKC Sampling Products

Compound	Skin SWYPES pk/20, limited shelf-life Include 20 plastic cups Require Cleaning/ Developing Solution	Cleaning/Developing Solutions Available in 16 or 22-oz spray bottle or 1-gallon jug as noted	Skin Kits 20 Skin SWYPES, 20 plastic cups, and Developing Solution in spray bottle	Hazard Assessment Kits Surface & Skin SWYPES, PERMEA-TEC, Developing Solution, DECONTamination Solution, D-TAM Skin Cleanser <i>(solution/cleanser varies by hazard)</i>	NEED MORE INFO? skcinc.com
Aromatic Amines	769-1031	22 oz 769-1061 1 Gallon 769-1041	769-1031K	769-1001	
Aromatic Isocyanates	769-1032	16 oz 769-1062	769-1032K	769-1002	
Aliphatic Amines	769-1035	22 oz 769-1065	769-1035K	769-1005	
Aliphatic Isocyanates	769-1033	16 oz 769-1062	769-1033K	769-1003	
Acid/Base	769-1036	22 oz 769-1066	769-1036K	769-1006	
Phenols	769-1037	16 oz 769-1067	769-1037K	769-1007	
Nickel	769-1038	22 oz 769-1068 1 Gallon 769-1054	769-1038K	769-1008	
o-Phthalaldehyde	769-1039	22 oz 769-1069 1 Gallon 769-1055	769-1039K	769-1009	

PPE Breakthrough Testing

Multiple Contaminants

PERMEA-TEC

BREAKTHROUGH DETECTION FOR GLOVES/PROTECTIVE CLOTHING

- Suitable for OSHA PPE Standard
- Test during field use, get on-the-spot results
- Convenient and safe
- Just like wearing a flexible adhesive bandage
- Inexpensive – No instruments or analysis required
- Available for a variety of chemicals with ACGIH sensitizer notations
- Ideal for dermal exposure reduction programs

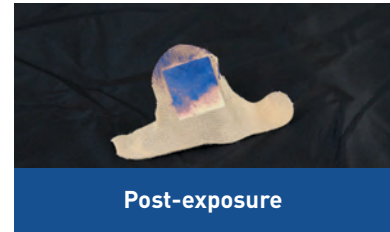
Toxic chemicals can permeate protective clothing, especially gloves that are subject to repeated flexing, stretching, pressure, and abrasion. In addition, variations in chemical resistance and work with chemical mixtures can make selecting protective equipment difficult. CLI by SKC PERMEA-TEC Sensors look like small adhesive bandages, but the pad (sensor) is on the outside and adheres easily to worker hands before gloving. The color change on PERMEA-TEC Sensors shows when and where breakthrough actually occurs and enables safety professionals to select the glove or other PPE best suited for protection, employee acceptance, and cost-effectiveness.



Pre-exposure



Adhered and ready for gloving



Post-exposure

Compound	PERMEA-TEC Sensors pk/20 Some models require Cleaning/Developing Solution	Cleaning/Developing Solutions Available in 16 or 22-oz spray bottle or 1-gallon jug as noted	Hazard Assessment Kits Surface & Skin SWYPES, PERMEA-TEC, Developing Solution, DECONtamination Solution, D-TAM Skin Cleanser <i>(solution/cleanser varies by hazard)</i>	<p>NEED MORE INFO?</p> <p>skcinc.com</p>
Aromatic Amines	769-3001	22 oz 769-1061 1 Gallon 769-1041	769-1001	
Aromatic Isocyanates	769-3002	-----	769-1002	
Aliphatic Amines	769-3005	-----	769-1005	
Aliphatic Isocyanates	769-3003	-----	769-1003	
Acid/Base	769-3006	-----	769-1006	
Phenols	769-3007	16 oz 769-1067	769-1007	
Nickel	769-3008	22 oz 769-1068 1 Gallon 769-1054	769-1008	
o-Phthalaldehyde	769-3009	22 oz 769-1069 1 Gallon 769-1055	769-1009	
Solvents	769-3050	In addition to color change for polar compounds, PERMEA-TEC for Solvents each contain a charcoal pad that can be desorbed and analyzed by GC to identify solvents.		

D-TAM

SKIN CLEANSERS

- No water, lanolin, aloe vera, alcohol, pumice, or harsh surfactants
- Do not enhance penetration of contaminants into skin
- Nonabrasive and skin-friendly, even with frequent use
- Remove aromatic amines (MDA, TDA, MOCA, aniline, o-toluidine, and more), isocyanates and urethanes, pesticides, phenols, epoxy resins, paints, and sealants

CLI by SKC D-TAM Skin Cleansers play an integral role in safety and health programs. Specially formulated with high molecular weight ingredients, D-TAM Skin Cleansers safely and effectively remove slightly water-soluble chemicals and lipophilic (water insoluble) chemicals used with solvents. Unlike other cleansers, D-TAM will not penetrate or degrade the skin's natural lipid barrier or cause dryness and irritation — things that make skin more susceptible to chemical permeation into the skin. SKC offers D-TAM Skin Cleansers for both semipolar and very nonpolar contaminant chemicals:

D-TAM: Removes many intermediate polarity chemicals such as phenol, dinitrotoluene, benzene, malathion, nitroaniline, toluene, captan, MDA, and more

D-TAM Gold: Removes many very nonpolar compounds such as pentachlorophenol, MDI, PCBs, and more



D-TAM Skin Cleansers

Qty.	D-TAM	D-TAM Gold
8-oz personal size	769-5011	769-5021
1-gallon jug with pump dispenser	769-5001	769-5002

DECONtamination

SURFACE SOLUTIONS

- Safely clean isocyanates and aromatic amines from most surfaces
- Ideal for use after detection with Surface SWYPE indicators, *see page 166*

CLI by SKC DECONtamination Solutions are an important follow-up element in housekeeping and dermal exposure reduction programs. Use Surface SWYPE Indicators (*see page 166*) to detect chemical contamination on surfaces that can be contacted by workers or are outside of regulated areas. Follow up with DECONtamination Solutions to remove contamination and ensure minimal dermal exposures.

DECONtamination Surface Solutions

Qty.	Aromatic Amines	Isocyanates
22-oz spray bottle	769-1071	769-1072
1-gallon jug	769-1051	769-1052



Spill DECON and Test Kits containing solutions are available at skcinc.com.

Surface Testing

Lead

LeadCheck Sampling Swabs Fast On-the-spot Lead Screening

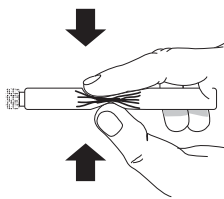
TECH TIPS

► CDC-NIOSH publication *Effects of Skin Contact with Chemicals: What a Worker Should Know* is a helpful technical resource on dermal exposures. Visit cdc.gov/niosh/docs/2011-199/ to download the pdf.

Lead Testing in 3 Easy Steps

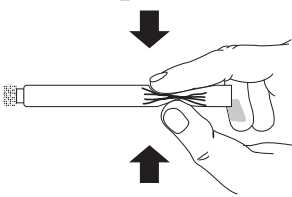
Step 1

Crush and shake



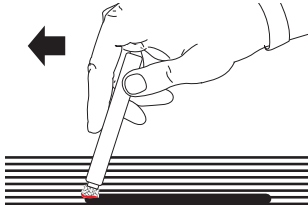
Step 2

Squeeze



Step 3

Rub



RED MEANS LEAD!

- **Fast and easy to use**
 - 3 easy steps
 - No instruments
 - Results in minutes
- **Convenient**
 - Use almost anywhere (*except skin*)
- **Inexpensive**
 - No instruments or analysis required
- **Easy to interpret**
 - Positive confirmation procedures in each kit
- **Sensitive lead kit**
 - Detects lead on 96.6% of surfaces tested
- **EPA-recognized instant lead detection test**



The LeadCheck Surface Sample Kit includes self-contained sampling swabs with all materials required for the rapid screening of lead on surfaces and in liquids. In April 2010, the EPA mandated testing for lead and use of lead-safe practices by contractors renovating, repairing, or painting structures built before 1978 (EPA RRP). The EPA has recognized the LeadCheck Kit as a tool to aid contractors in complying with this mandate. LeadCheck swabs are easy to use: crush, shake, swab, and read the result. RED MEANS LEAD®.



Simple, Inexpensive Test Kit Receives EPA Recognition

After rigorous testing, LeadCheck Swabs are recognized by the EPA for use on drywall and plaster as well as on painted wood and metal. LeadCheck Kits provide a quick and simple way for certified renovators to test for lead and take steps toward compliance under the Renovation, Repair, and Painting Rule (RRP). Visit youtube.com and search for “LeadCheck” for instructional videos on using LeadCheck Swabs on drywall, plaster, painted wood, and metal surfaces.

Hazard	Sensitivity		Interferences	Cat. No.	Qty.
	Solid Surface (µg)	Liquid (ppm)			
Lead (Pb)	< 1	2	No other metals react to give the same color response	225-2404 225-2404A	8 16

For safe lead detection on skin, see Full Disclosure on page 171.

FULL DISCLOSURE

Instant Detection of Lead on Skin and Surfaces

- **Completely safe surface and skin testing**
 - Reagents never touch the test surface
 - Testing skin allows direct evaluation of lead exposure
 - Suitable for testing both flat and irregular surfaces
- **Immediate color change — instant results**
 - Identifies lead contamination at $\geq 18 \mu\text{g}$
 - Wipes can be sent to a lab for quantitative results
- **Easy to use**
- **Developed and tested by CDC-NIOSH**
- **Meets NIOSH Method 9105 for Lead in Dust Wipes**



Full Disclosure® wipe sampling provides instant and safe detection of lead on skin and surfaces. Unlike other lead sampling methods, Full Disclosure is completely safe because no chemical touches the test site. Each kit contains everything needed to detect lead at or above $18 \mu\text{g}$ on skin and surfaces. Use Full Disclosure to modify worker cleaning behavior by spot-checking surfaces and check worker skin after surface and hand cleaning. If red, clean it again! Ensure your workers go home with no lead contamination.

Description	Cat. No.	Qty.
Full Disclosure Kit ^{†‡} includes 11 pairs nitrile gloves, 10 wipes, [‡] Disclosing Powder, extraction solution, deionized water, 10 sheets of waxed paper, and instructions	550-001	ea
Full Disclosure Kit [‡] for Quantitative Analysis [†] includes all items in above kit, 10 sample collection bottles with labels, and 10 disposable templates	550-002	ea

[†] Not designed for detecting lead in paint and paint chips, on painted surfaces, or embedded in material such as plastic; not suitable for lead chromate

[‡] Wipes conform to ASTM E1792.

Limited shelf-life

For more information, visit skcinc.com/knowledgecenter.

Three Easy Steps to Full Disclosure of Lead

Step 1

Prepare the Solution



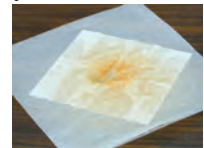
Step 2

Wipe to Sample



Step 3

Spray and Read Results



Yellow to Orange = lead <math> < /math>



Pink to Red = lead $\geq 18 \mu\text{g}$



V	P	W	S
Video	PowerPoint	Webinar	Sampling Solution
Visit skcinc.com/Training			

Surface Sampling

Lead and Other Metals

Data Interpretation Lead on Surfaces

- ▶ Lead in dust is considered a hazard at surface levels of:
 - $\geq 40 \mu\text{g}/\text{ft}^2$ on floors
 - $\geq 250 \mu\text{g}/\text{ft}^2$ on interior window sills

Source: TSCA Section 403 Residential Lead Standards (January 5, 2001 Federal Register)

Ghost Wipes Sample Metals on Surfaces

- ▶ Robust for wiping even rough surfaces
- ▶ Readily and completely digested in hot water or acid solution
- ▶ Meet specifications for sampling lead and beryllium
 - All ASTM E1792 specifications as required by U.S. EPA
 - AIHA policy on sampling materials for lead in surface dust
 - OSHA Method ID-125G, Addendum B
 - ASTM D7707 for beryllium
 - NIOSH 9102 Elements on Wipes, including nanomaterial
 - NIOSH 9100 Lead in Surface Wipe Samples



Robust Ghost Wipes hold together even when used on the roughest surfaces. In the lab, Ghost Wipes readily and completely dissolve during digestion for maximum recovery of target analyte(s). Ghost Wipes earn their name by dissolving so completely that there is no messy fibrous material to clog the sample uptake capillary or nebulizer. The Wipe Sample Test Kit below contains Ghost Wipes.

Description	Cat. No.	Qty.
Ghost Wipes, moistened with deionized water, individually sealed packets, require 10 x 10-cm template listed below	225-2414 225-2413	200 1000

See below for templates.



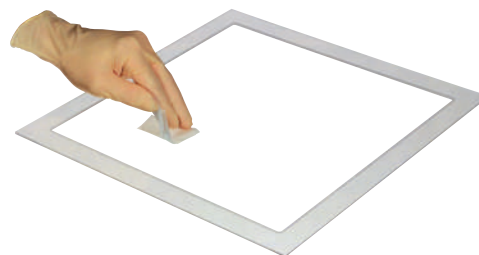
Smear Tabs

Low-ash, acid-hardened paper Smear Tabs are designed for collecting samples on surfaces where dust and chemicals have settled. SKC Smear Tabs are specified in OSHA ID-121, ID-125G, and ID-206 for wipe sampling of metals

Cat. No. 225-24..... Qty/100

Wipe Sample Test Kit Supplies for NIOSH 9100 and OSHA Wipe Tests

- ▶ Contains materials to sample surface metals, pesticides, amines, radionuclides, corrosives, and dust
- ▶ Assists in evaluating hazard control effectiveness and cleaning regimens
- ▶ All dry materials needed for OSHA wipe sample methods and NIOSH Method 9100 (solvents not included)



The Wipe Sample Test Kit provides the necessary supplies to sample surfaces for toxic materials that can gain entry into the body via ingestion or skin absorption. Each kit includes paper and glass fiber filters, sterile sample bags, latex gloves, cotton swabs, pH paper, cover slips, 25 Ghost Wipes for lead and other metals, 72 microslides, 20 sample containers, 3 dropper bottles, 25 paper templates (10 x 10 cm), marking pen, masking tape, clear tape, stainless steel forceps, and carry case. *Solvents are not included.*

Description	Cat. No.	Qty.
Wipe Sample Test Kit (as described above), solvents are not included	225-2401A	ea
Templates		
Disposable manila paper, 10 x 10 cm	225-2415 225-2415A	250 10
Disposable manila paper, 1 x 1 foot	225-2416 225-2416A	250 10

For metal in air determinations using NIOSH 7300, see page 103 for Solu-CAPs.

Visit skcinc.com/Training

Microvacuum Cassettes for Surface Sampling

Efficient Collection of Asbestos or Fungal Spores

- ▶ Nozzle for easy sampling on irregular surfaces/carpeting
- ▶ Collect contaminants in settled dust using a sample pump
 - 2 L/min for sampling asbestos
 - 10 L/min for sampling fungal spores

SKC Microvacuum Cassettes with microvacuum nozzle are ideal for collecting asbestos or fungal spores from carpets and other dusty surfaces. SKC Microvacuum Cassettes are available with MCE filter for sampling asbestos in settled dust on surfaces as specified in ASTM Method D5755 or with polycarbonate filter for sampling fungal spores from carpeting or other surfaces.



Sample Pumps
see pages 28-29, and 31



Stick-to-it Lift Tape

- Easy-to-use, inexpensive slides
- Consistent sample area for better data interpretation
- Flexible plastic for sampling irregular surfaces
- Individually serialized for sample identification
- Suitable for collecting pollen or fibers from surfaces, insulation, etc.

Microvacuum Cassettes for Asbestos or Fungal Spores				
Dia. (mm)	Filter Specifications	Cassette Description	Cat. No.	Qty.
25	0.45 µm MCE, BestChek, for TEM analysis, asbestos	Carbon-filled polypropylene with cowl and nozzle	225-322	ea
37	0.45 µm MCE, for TEM analysis, asbestos	Styrene (non-conductive) with nozzle	225-9543	ea
37	0.4 µm polycarbonate for fungal spores	Styrene (non-conductive) with nozzle	225-9542	ea
Templates	Disposable manila paper, 10 x 10 cm		225-2415	250
			225-2415A	10
	Disposable manila paper, 1 x 1 foot		225-2416	250
			225-2416A	10
Carpet Sampling Kit for Fungal Spores includes 10 microvacuum carpet cassettes				
Cat. No. 225-9542, 10 x 10-cm disposable templates, Luer adapters, zip bags, and labels			225-9540	ea

Sterile Surface Swab Kit

For Biological Sampling



The Surface Swab Kit is ideal for determining the relative degree and type of biological contamination in an area. This non-destructive method can be used safely on most surfaces including irregular areas such as air return grills. The inert, non-toxic rayon tip permits good sample retrieval and adsorption. Each kit includes 10 sterile swabs in transport tubes and 10 templates (5 x 10 cm).

Description	Cat. No.	Qty.
Surface Swab Kit*	225-2402	ea
Surface Swabs Only*	225-2400	50

* Limited shelf-life

Stick-to-it flexible plastic micro-scope slides feature an adhesive area for easy sampling. Identify the sample area, press slide adhesive to the surface, place slide in provided mailer, and send to a laboratory for analysis.

Cat. No. 225-9808..... Qty/10
Cat. No. 225-9809..... Qty/50

Quantity discounts may be available!
Contact your SKC distributor.

V Video	P PowerPoint	W Webinar	S Sampling Solution
Visit skcinc.com/Training			



SKC Air Sampling Guide

Welcome to the SKC Air Sampling Guide! Sampling information based on OSHA/NIOSH/ASTM/EPA and HSE methods for over 2500 compounds is at your fingertips.

- Easy to use - Locate the chemical hazard of interest in the alphabetical listings to view:
 - Agency reference method
 - Method sampling parameters (agency standard, volume, flow rate, time, and air volume)
 - Analytical method
 - Collecting equipment and page reference
- For **VOC** ✓ 575 Passive Samplers, see pages 85-91
- Available anywhere you are
 - Print: See pages 175-247 in this catalog
 - Online: Access searchable guides at skcinc.com or skcltd.com/hazard-search.

Introduction

This guide includes most hazardous substances, including their current Workplace Exposure Limits at the time of printing (where applicable). For the most up-to-date version of this guide, please visit our website at www.skcltd.com. For a full list of Workplace Exposure Limits, please consult EH40, available from HSE books or www.hse.gov.uk. This guide should not be used as an alternative to obtaining a copy of EH40 and reading the full supplementary data it contains.

The following statements are taken directly from EH40 Workplace Exposure Limits.

Workplace Exposure Limits (WELs)

WELs are British occupational exposure limits and are set in order to help protect the health of workers. WELs are concentrations of hazardous substances in the air, averaged over a specified period of time, referred to as a time-weighted average (TWA). Two time periods are used: long-term (8 hours) and short-term (15 minutes).

Short-term exposure limits (STELs) are set to help prevent effects such as eye irritation, which may occur following exposure for a few minutes.

WELs and the Control of Substances Hazardous to Health Regulations 2002 (COSHH)

Substances that have been assigned a WEL are subject to the requirements of COSHH. These regulations require employers to prevent or control exposure to hazardous substances. For further information, go to www.hse.gov.uk/coshh. Under COSHH, control is defined as adequate only if a) the

principles of good control practice are applied, b) any WEL is not exceeded, and c) exposure to asthmagens, carcinogens, and mutagens are reduced as low as is reasonably practicable.

The absence of a substance from the list of WELs does not indicate that it is safe. For these substances, exposure should be controlled to a level to which nearly all the working population could be exposed, day after day at work, without any adverse effects on health.

As part of the assessment required under regulation 6 of COSHH, employers should determine their own working practices and in-house standards for control of exposure. In some cases, there may be sufficient information available for employers to set an 'in-house' working standard, e.g., from manufacturers and suppliers of the substances, publications of industry associations, occupational medicine and hygiene journals, and other agencies such as NIOSH and OSHA.

Chemical Hazard	Agency Reference	SAMPLING								Analytical Method	SKC Collecting Equipment and Page No.			
		WEL		Vol. (liter)		Rate (ml/min)		Time						
		TWA (ppm)	STEL (ppm)	TWA	STEL	TWA	STEL	TWA (hr)	STEL (min)					
Acetaldehyde	MDHS 102	20 ppm (37 mg/m ³)	50 ppm (92 mg/m ³)	varies	varies	varies	varies	varies	varies	HPLC-PDA	ST 226-119 or ST 226-120 or CF/CST 225-9003 68			
Acetaldehyde	MDHS 102	20 ppm (37 mg/m ³)	50 ppm (92 mg/m ³)	diffusive	diffusive	diffusive	diffusive			HPLC-PDA	PS 500-100 92			
Acetic acid	MDHS 104 §	10 ppm (25 mg/m ³)	20 ppm (50 mg/m ³)	20-300	20	10-1000	10-1000	8	20	GC-FID	ST 226-01 48			
Acetone	MDHS 104	500 ppm (1210 mg/m ³)	1500 ppm (3620 mg/m ³)	1.5	1.5	50	100	30 min	15	TD, GC	ST 226-358 52			
Acetone	MDHS 104 §	500 ppm (1210 mg/m ³)	1500 ppm (3620 mg/m ³)	2	0.75	20	50	100 min	15	GC-FID	ST 226-01 48			
Acetone	MDHS 88	500 ppm (1210 mg/m ³)	1500 ppm (3620 mg/m ³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 82			
Acetonitrile	MDHS 104 §	40 ppm (68 mg/m ³)	60 ppm (102 mg/m ³)	1-25	1-25	10-200	10-200	2-8	15	GC-FID	ST 226-09 48			
Acetonitrile	MDHS 88	40 ppm (68 mg/m ³)	60 ppm (102 mg/m ³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 or PS 575-002 82			
o-Acetylsalicylic acid	MDHS 14/4	5 mg/m ³		960		2000		8		GR	IOM 225-70A 122 FLT 225-58F 110			
Acrylamide	MDHS 57/2	0.1 mg/m ³		48	15 (30)	100	1000 (2000)	8	15	HPLC-UV	IMP 225-36-1 70 IT 225-22 70			
Acrylonitrile	MDHS 104 §	2 ppm (4.4 mg/m ³)		10		20 (50)		8 (3.3)		GC-FID	ST 226-01 48			
Acrylonitrile	MDHS 88	2 ppm (4.4 mg/m ³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 82			
Allyl alcohol	MDHS 104 §	2 ppm (4.8 mg/m ³)	4 ppm (9.7 mg/m ³)	1-10	3	10-200	10-200	2-8	15	GC-FID	ST 226-01 48			
Allyl alcohol	MDHS 88	2 ppm (4.8 mg/m ³)	4 ppm (9.7 mg/m ³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 or PS 575-002 82			
Aluminium metal (inhalable dust)	MDHS 14/4	10 mg/m ³		960		2000		8		GR	IOM 225-70A 122 FLT 225-58F 110			
Aluminium metal (inhalable dust)	ISO 15202	10 mg/m ³		960		2000		8		ICP-AES	IOM 225-70A 122 FLT 225-1930 102			
Aluminium oxides (inhalable dust)	MDHS 14/4	10 mg/m ³		960		2000		8		GR	IOM 225-70A 122 FLT 225-58F 110			
Aluminium metal (respirable dust)	MDHS 14/4	4 mg/m ³		1440		3000		8		GR	CYC 225-69 127 FLT 225-58F 110			
Aluminium metal (respirable dust)	MDHS 14/4	4 mg/m ³		960		2000		8		GR	IOM 225-70A 122 FLT 225-58F 110 FOAM 225-772 123			
Aluminium metal (respirable dust)	ISO 15202	4 mg/m ³		960		2000		8		ICP-AES FOAM	IOM 225-70A 122 FLT 225-1930 102 225-772 123			
Aluminium oxides (respirable dust)	MDHS 14/4	4 mg/m ³		1440		3000		8		GR	CYC 225-69 127 FLT 225-58F 110			
Aluminium oxides (respirable dust)	MDHS 14/4	4 mg/m ³		960		2000		8		GR	IOM 225-70A 122 FLT 225-58F 110 FOAM 225-772 123			
2-Aminoethanol	MDHS 104 §	1 ppm (2.5 mg/m ³)	3 ppm (7.6 mg/m ³)	4-24	4-24	10-200	10-200	8	15	GC-FID	ST 226-10-04 48			
Ammonium chloride (fume)	MDHS 14/4	10 mg/m ³	20 mg/m ³	960	30	2000	2000	8	15	GR, IC-ECN	IOM 225-70A 122 FLT 225-1930 102			
Ammonium sulphamate	MDHS 14/4	10 mg/m ³	20 mg/m ³	960	30	2000	2000	8	15	GR	IOM 225-70A 122 FLT 225-1930 102			
Aniline	MDHS 104 §	1 ppm (4 mg/m ³)		24		50		8		GC-FID	ST 226-10 48			

See page 244 for abbreviations.

Chemical Hazard	Agency Reference	S A M P L I N G								Analytical Method	SKC Collecting Equipment and Page No.				
		WEL		Vol. (liter)		Rate (ml/min)		Time							
		TWA (ppm)	STEL (ppm)	TWA	STEL	TWA	STEL	TWA (hr)	STEL (min)						
Molybdenum compounds (soluble) (as Mo)	MDHS 15202	5 mg/m ³	10 mg/m ³	960	30	2000	2000	8	15	ICP-AES	IOM	225-70A	122 FLT	225-1930	102
Nickel (insoluble compounds except nickel tetracarbonyl) (as Ni)	ISO 15202	0.5 mg/m ³		960		2000		8		ICP-AES	IOM	225-70A	122 FLT	225-1930	102
Nickel (soluble compounds except nickel tetracarbonyl) (as Ni)	ISO 15202	0.1 mg/m ³		960		2000		8		ICP-AES	IOM	225-70A	122 FLT	225-1930	102
Nicotine	MDHS 104 §	0.5 mg/m ³	1.5 mg/m ³	48	3	100	200	8	15	GC-NPD	ST	226-93	50		
Nitrobenzene	MDHS 104	0.2 ppm (1 mg/m ³)		3-6		50		1-2		TD, GC	ST	226-357	52		
Nitrobenzene	MDHS 104 §	0.2 ppm (1 mg/m ³)		48		100		8		GC-FID	ST	226-10	48		
Nitromethane	MDHS 104 §	100 ppm (254 mg/m ³)	150 ppm (381 mg/m ³)	2.4		20		2		GC-NSD	ST	226-111A	50		
Nitroethane	MDHS 104 §	20 ppm (62 mg/m ³)	100 ppm (312 mg/m ³)	2.4	0.75	20	50	2	15	GC-FID	ST	226-3002A	48		
2-Nitropropane	MDHS 104 §	5 ppm (18 mg/m ³)		1.8		20		1.5		GC-FID	ST	226-110	50		
Oil mist	MDHS 84/2			960		2000		8		GR	IOM	225-70A	122 FLT	225-58F	110
Omethoate	MDHS 94/2			960	30	2000	2000	8	15	GC-MS	IOM ST	225-70A 226-35-01	122 FLT 48	225-58F	110
Paracetamol (inhalable dust)	MDHS 14/4	10 mg/m ³		960		2000		8		GR	IOM	225-70A	122 FLT	225-58F	110
Paraquat dichloride (ISO) (respirable dust)	MDHS 14/4	0.08 mg/m ³		1440		3000		8		GR	CYC	225-69	127 FLT	225-58F	110
Paraquat dichloride (ISO) (respirable dust)	MDHS 14/4	0.08 mg/m ³		960		2000		8		GR	IOM FOAM	225-70A 225-772	122 FLT 123	225-58F	110
Pentaerythritol (inhalable dust)	MDHS 14/4	10 mg/m ³	20 mg/m ³	960		2000		8		GR	IOM	225-70A	122 FLT	225-58F	110
Pentaerythritol (respirable dust)	MDHS 14/4	4 mg/m ³		1440		3000		8		GR	CYC	225-69	127 FLT	225-58F	110
Pentaerythritol (respirable dust)	MDHS 14/4	4 mg/m ³		960		2000		8		GR	IOM FOAM	225-70A 225-772	122 FLT 123	225-58F	110
Pentan-2-one (2-Pentanone; Methyl propyl ketone)	MDHS 88	200 ppm (716 mg/m ³)	250 ppm (895 mg/m ³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS	575-002	82		
Pentan-2-one (2-Pentanone; Methyl propyl ketone)	MDHS 104 §	200 ppm (716 mg/m ³)	250 ppm (895 mg/m ³)	10	3	20 (50)	200	8 (3.3)	15	GC-FID	ST	226-01	48		
Pentan-3-one (3-Pentanone; Diethyl ketone)	MDHS 104	200 ppm (716 mg/m ³)	250 ppm (895 mg/m ³)	1-10	1-3	50-200	50-200	2-8	15	GC-FID	ST	226-01	48		
Pentan-3-one (3-Pentanone; Diethyl ketone)	MDHS 88	200 ppm (716 mg/m ³)	250 ppm (895 mg/m ³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS	575-001	or PS	575-002	82
Pentane	MDHS 104	600 ppm (1800 mg/m ³)		1.5		50		30 min		TD, GC	ST	226-358	52		
Pentane	MDHS 88	600 ppm (1800 mg/m ³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS	575-001	82		
1-Pentene	MDHS 88			diffusive	diffusive	diffusive	diffusive			GC-FID	PS	575-001	82		
Pentyl acetates (all isomers) (Amyl acetates)	MDHS 88	50 ppm (270 mg/m ³)	100 ppm (541 mg/m ³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS	575-001	82		
Pentyl acetates (all isomers) (Amyl acetates)	MDHS 104 §	50 ppm (270 mg/m ³)	100 ppm (541 mg/m ³)	24		100		4		GC-FID	ST	226-01	48		
Permethrin	MDHS 94/2			960	30	2000	2000	8	15	GC-MS	IOM ST	225-70A 226-35-01	122 FLT 48	225-58F	110
Peroxodisulphate salts	MDHS 79/2			960	30	2000	2000	8	15	IC	IOM	225-70A	122 FLT	225-1911	102
Phenol	MDHS 104	2 ppm (7.8 mg/m ³)	4 ppm (16 mg/m ³)	3	0.75	50	50	1	15	TD, GC	ST	226-357	52		
Phenol	MDHS 104 §	2 ppm (7.8 mg/m ³)	4 ppm (16 mg/m ³)	24	3	100	200	4	15	GC-FID	ST	226-95	50		
2-Phenylpropene (alpha-Methyl styrene)	MDHS 104 §	50 ppm (246 mg/m ³)	100 ppm (491 mg/m ³)	1-30	1-30	50-200	50-200	2-8	15	GC-FID	ST	226-01	48		
2-Phenylpropene (alpha-Methyl styrene)	MDHS 104	50 ppm (246 mg/m ³)	100 ppm (491 mg/m ³)	3	0.75	50	50	1	15	TD, GC	ST	226-357	52		
2-Phenylpropene (alpha-Methyl styrene)	MDHS 88	50 ppm (246 mg/m ³)	100 ppm (491 mg/m ³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS	575-002	82		
Phosalone	MDHS 94/2			960	30	2000	2000	8	15	GC-MS	IOM ST	225-70A 226-35-01	122 FLT 48	225-58F	110
Phthalic anhydride	MDHS 62/2	4 mg/m ³	12 mg/m ³	960	30	2000	2000	8	15	HPLC-UV	IOM ST	225-70A 226-35-01	122 FLT 48	225-58F	110
alpha-Pinene	MDHS 88			diffusive	diffusive	diffusive	diffusive			GC-FID	PS	575-002	82		
Pirimiphos-Methyl	MDHS 94/2			960	30	2000	2000	8	15	GC-MS	IOM ST	225-70A 226-35-01	122 FLT 48	225-58F	110
Piperazine dihydrochloride - Further GC- FID analysis required	MDHS 14/4	0.1 mg/m ³	0.3 mg/m ³	120		1000		8		GR, GC- FID	IOM	225-70A	122 FLT	225-58F	110
Plaster of Paris (inhalable dust)	MDHS 14/4	10 mg/m ³		960		2000		8		GR	IOM	225-70A	122 FLT	225-58F	110
Plaster of Paris (respirable dust)	MDHS 14/4	4 mg/m ³		1440		3000		8		GR	CYC	225-69	127 FLT	225-58F	110
Plaster of Paris (respirable dust)	MDHS 14/4	4 mg/m ³		960		2000		8		GR	IOM FOAM	225-70A 225-772	122 FLT 123	225-58F	110
Polyvinylchloride (inhalable dust)	MDHS 14/4	10 mg/m ³		960		2000		8		GR	IOM	225-70A	122 FLT	225-58F	110
Polyvinylchloride (respirable dust)	MDHS 14/4	4 mg/m ³		1440		3000		8		GR	CYC	225-69	127 FLT	225-58F	110
Polyvinylchloride (respirable dust)	MDHS 14/4	4 mg/m ³		960		2000		8		GR	IOM FOAM	225-70A 225-772	122 FLT 123	225-58F	110
Portland cement (inhalable dust)	MDHS 14/4	10 mg/m ³		960		2000		8		GR	IOM	225-70A	122 FLT	225-58F	110

See page 244 for abbreviations.

Chemical Hazard	Agency Reference	S A M P L I N G								Analytical Method	SKC Collecting Equipment and Page No.
		WEL		Vol. (liter)		Rate (ml/min)		Time			
		TWA (ppm)	STEL (ppm)	TWA	STEL	TWA	STEL	TWA (hr)	STEL (min)		
Softwood dust	MDHS 14/4	5 mg/m³		960		2000		8		GR	IOM 225-70A 122 FLT 225-58F 110
Starch (respirable)	MDHS 14/4	4 mg/m³		1440		3000		8		GR	CYC 225-69 127 FLT 225-58F 110
Starch (respirable)	MDHS 14/4	4 mg/m³		960		2000		8		GR	IOM 225-70A 122 FLT 225-58F 110 FOAM 225-772 123
Starch (total inhalable)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 122 FLT 225-58F 110
Styrene	MDHS 104	100 ppm (430 mg/m³)	250 ppm (1080 mg/m³)	3	0.75	50	50	1	15	TD, GC	ST 226-357 52
Styrene	MDHS 88	100 ppm (430 mg/m³)	250 ppm (1080 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 or PS 575-006 82
Styrene	MDHS 104 §	100 ppm (430 mg/m³)	250 ppm (1080 mg/m³)	10	3	20 (50)	200	8 (3.3)	15	GC-FID	ST 226-01 48
Sucrose	MDHS 14/4	10 mg/m³	20 mg/m³	960		2000		8		GR	IOM 225-70A 122 FLT 225-58F 110
Talc (respirable dust)	MDHS 14/4	1 mg/m³		1440		3000		8		GR	CYC 225-69 127 FLT 225-58F 110
Talc (respirable dust)	MDHS 14/4	1 mg/m³		960		2000		8		GR	IOM 225-70A 122 FLT 225-58F 110 FOAM 225-772 123
Tantalum	ISO 15202	5 mg/m³	10 mg/m³	960	30	2000	2000	8	15	ICP-AES	IOM 225-70A 122 FLT 225-1930 102
Tellurium & compounds (except hydrogen telluride) as Te	ISO 15202	0.1 mg/m³		960		2000		8		ICP-AES	IOM 225-70A 122 FLT 225-1930 102
1,1,2,2-Tetrachloroethane	MDHS 88			diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 82
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)	MDHS 104	20 ppm (138 mg/m³)	40 ppm (275 mg/m³)	3	0.75	50	50	1	15	TD, GC	ST 226-357 52
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)	MDHS 88	20 ppm (138 mg/m³)	40 ppm (275 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 or PS 575-002 82
Tetrachloroethylene	MDHS 104 §	20 ppm (138 mg/m³)	40 ppm (275 mg/m³)	12	0.75	50	50	4	5	GC-FID	ST 226-01 48
Tetrachlorophthalic anhydride (TCPA)	MDHS 62/2			960	30	2000	2000	8	15	HPLC-UV	IOM 225-70A 122 FLT 225-58F 110 ST 226-35-01 48
Tetradifon	MDHS 94/2			960	30	2000	2000	8	15	GC-MS	IOM 225-70A 122 FLT 225-58F 110 ST 226-35-01 48
Tetrahydrofuran	MDHS 88	50 ppm (150 mg/m³)	100 ppm (300 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-002 82
Tetrahydrofuran	MDHS 104 §	50 ppm (150 mg/m³)	100 ppm (300 mg/m³)	9	1.5	20 (50)	100	7 (3)	15	GC-FID	ST 226-01 48
Thallium (soluble compounds) (as Tl)	ISO 15202	0.1 mg/m³		960		2000		8		ICP-AES	IOM 225-70A 122 FLT 225-1930 102
Tin compounds (inorganic except SnH ₄) (as Sn)	MDHS 91/2	2 mg/m³	4 mg/m³	960	30	2000	2000	8	15	XRFS	IOM 225-70A 122 FLT 225-1930 102
Tin compounds (inorganic except SnH ₄) (as Sn)	ISO 15202	2 mg/m³	4 mg/m³	960	30	2000	2000	8	15	ICP-AES	IOM 225-70A 122 FLT 225-1930 102
Titanium dioxide - respirable	MDHS 14/4	4 mg/m³		1440		3000		8		GR	CYC 225-69 127 FLT 225-58F 110
Titanium dioxide - respirable	MDHS 14/4	4 mg/m³		960		2000		8		GR	IOM 225-70A 122 FLT 225-58F 110 FOAM 225-772 123
Titanium dioxide (inhalable)	MDHS 14/4	10 mg/m³		960		2000		8		GR	IOM 225-70A 122 FLT 225-58F 110
Toluene	MDHS 104	50 ppm (191 mg/m³)	100 ppm (384 mg/m³)	3	0.75	50	50	1	15	TD, GC	ST 226-357 or ST 226-358 52
Toluene	MDHS 88	50 ppm (191 mg/m³)	100 ppm (384 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 or PS 575-002 82
Toluene	MDHS 104 §	50 ppm (191 mg/m³)	100 ppm (384 mg/m³)	12	0.5	50	50	4	10	GC-FID	ST 226-01 48 ST 226-81A 49
o-Toluidine (2-methylaniline)	MDHS 75/2	0.1 ppm (0.5 mg/m³)		200		2000		100 min		HPLC-UV	IOM 225-70A 122 FLT 225-58F 110 ST 226-35 48
o-Toluidine (2-methylaniline)	MDHS 104 §	0.1 ppm (0.5 mg/m³)		48		100		8		GC-FID	ST 226-10 48
Tolyfluandit	MDHS 94/2			960	30	2000	2000	8	15	GC-MS	IOM 225-70A 122 FLT 225-58F 110 ST 226-35-01 48
Triazophos	MDHS 94/2			960	30	2000	2000	8	15	GC-MS	IOM 225-70A 122 FLT 225-58F 110 ST 226-35-01 48
1,1,1-Trichloroethane	MDHS 104	100 ppm (555 mg/m³)	200 ppm (1110 mg/m³)	3	0.75	50	50	1	15	TD, GC	ST 226-358 52
1,1,1-Trichloroethane	MDHS 104 §	100 ppm (555 mg/m³)	200 ppm (1110 mg/m³)	10	3	200	200	1	15	GC-FID	ST 226-01 48
1,1,2-Trichloroethane	MDHS 88			diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 82
Trichloroethylene	MDHS 104 §	100 ppm (550 mg/m³)	150 ppm (820 mg/m³)	12	0.75	50	50	4	5	GC-FID	ST 226-01 48
Trichloroethylene (Trichloroethene)	MDHS 104	100 ppm (550 mg/m³)	150 ppm (820 mg/m³)	1.5	0.75	50	50	30 min	15	TD, GC	ST 226-357 or ST 226-358 52
Trichloroethylene (Trichloroethene)	MDHS 88	100 ppm (550 mg/m³)	150 ppm (820 mg/m³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 or PS 575-002 82
Triglycidyl isocyanurate (TGIC)	MDHS 85/2	0.1 mg/m³		200	30	2000	2000	100 min	15	HPLC-UV	IOM 225-70A 122 FLT 225-58F 110
Trimellitic anhydride (TMA; 1,2,4-Benzenetricarboxylic anhydride)	MDHS 62/2	0.04 mg/m³	0.12 mg/m³	960	30	2000	2000	8	15	HPLC-UV	IOM 225-70A 122 FLT 225-58F 110 ST 226-35-01 48
Trimethylbenzenes (all isomers or mixtures)	MDHS 104	25 ppm (125 mg/m³)		3		50		1		TD, GC	ST 226-357 or ST 226-358 52
Trimethylbenzenes (all isomers or mixtures)	MDHS 104 §	25 ppm (125 mg/m³)		12		50		4		GC-FID	ST 226-01 48
Trimethylbenzene (all isomers or mixtures)	MDHS 88	25 ppm (125 mg/m³)		diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001 82
3,5,5-Trimethylcyclohex-2-enone	MDHS 104		5 ppm (29 mg/m³)		0.75		50		15	TD, GC	ST 226-357 52
3,5,5-Trimethylcyclohex-2-enone	MDHS 104		5 ppm (29 mg/m³)		1-3		50-200		15	GC-FID	ST 226-01 48
Tungsten & insoluble compounds (as W) & others	ISO 15202	5 mg/m³	10 mg/m³	960	30	2000	2000	8	15	XRFS	IOM 225-70A 122 FLT 225-1930 102

See page 244 for abbreviations.

Sampling Guide — UK (HSE)

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Chemical Hazard	Agency Reference	S A M P L I N G								Analytical Method	SKC Collecting Equipment and Page No.			
		WEL		Vol. (liter)		Rate (ml/min)		Time						
		TWA (ppm)	STEL (ppm)	TWA	STEL	TWA	STEL	TWA (hr)	STEL (min)					
Tungsten & soluble compounds (as W)	ISO 15202	1 mg/m ³	3 mg/m ³	960	30	2000	2000	8	15	XRFS	IOM 225-70A	122 FLT	225-1930	102
Vanadium	ISO 15202			960	30	2000	2000	8	15	ICP-AES	IOM 225-70A	122 FLT	225-1930	102
Vanadium pentoxide	ISO 15202	0.05 mg/m ³		960		2000		8		ICP-AES	IOM 225-70A	122 FLT	225-1930	102
Vinyl chloride	MDHS 104 §	1 ppm (2.6 mg/m ³)		5		50		1.6		GC-FID	ST 226-01	48		
Vinylidene chloride (1,1-dichloroethene)	MDHS 88	2 ppm (8 mg/m ³)	5 ppm (20 mg/m ³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001	82		
Vinylidene chloride (1,1-dichloroethene)	MDHS 104 §	2 ppm (8 mg/m ³)	5 ppm (20 mg/m ³)	5		20		4		GC-FID	ST 226-01	48		
Welding fume	ISO 10882	See specific fumes eg. Chromium				750				GR	H/SET 225-6200 CAL 225-6202	119 MINI 119 FLT	225-6201 225-8050	119 102
Wood dust (inhalable)	MDHS 14/4	See hardwood/soft wood		960		2000		8		GR	IOM 225-70A	122 FLT	225-58F	110
Wood dust (respirable)	MDHS 14/4	See hardwood/soft wood		1440		3000		8		GR	CYC 225-69	127 FLT	225-58F	110
Wood dust (respirable)	MDHS 14/4	See hardwood/soft wood		960		2000		8		GR	IOM 225-70A FOAM 225-772	122 FLT 123	225-58F	110
Wool process dust	MDHS 14/4	10 mg/m ³		960		2000		8		GR	IOM 225-70A	122 FLT	225-58F	110
Xylene (o-, m-, p-, or mixed isomers)	MDHS 104	50 ppm (220 mg/m ³)	100 ppm (441 mg/m ³)	1.5	0.75	50	50	30 min	15	TD, GC	ST 226-357	or ST	226-358	52
Xylene (o-, m-, p-, or mixed isomers)	MDHS 88	50 ppm (220 mg/m ³)	100 ppm (441 mg/m ³)	diffusive	diffusive	diffusive	diffusive			GC-FID	PS 575-001	or PS	575-002	82
Xylene (o-, m-, p-, or mixed isomers)	MDHS 104 §	50 ppm (220 mg/m ³)	100 ppm (441 mg/m ³)	2-23	2-23	50-200	50-200	2-8	15	GC-FID	ST 226-01	48		
Yttrium	ISO 15202	1 mg/m ³	3 mg/m ³	960	30	2000	2000	8	15	ICP-AES	IOM 225-70A	122 FLT	225-1930	102
Zinc chloride (fume)	ISO 15202	1 mg/m ³	2 mg/m ³	960	30	2000	2000	8	15	ICP-AES	IOM 225-70A	122 FLT	225-1930	102
Zinc distearate (inhalable dust)	ISO 15202	10 mg/m ³	20 mg/m ³	960	30	2000	2000	8	15	ICP-AES	IOM 225-70A	122 FLT	225-1930	102
Zinc distearate (respirable dust)	ISO 15202	4 mg/m ³		1440		3000		8		ICP-AES	CYC 225-69	127 FLT	225-1930	102
Zinc distearate (respirable dust)	ISO 15202	4 mg/m ³		960		2000		8		ICP-AES	IOM 225-70A 225-772	122 FLT 123	225-1930	102
Zinc oxide	MDHS 14/4			960		2000		8		GR	IOM 225-70A	122 FLT	225-58F	110
Zirconium compounds (as Zr)	ISO 15202	5 mg/m ³	10 mg/m ³	960	30	2000	2000	8	15	ICP-AES	IOM 225-70A	122 FLT	225-1930	102

√ This application requires two tubes.
§ Method 3 - sampling flow rates, sampling times, and analysis for specific analytes available from the U.S. regulatory authorities



Europe

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See page 244 for abbreviations.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Acenaphthene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF	226-131	55	FLT	225-1808	109
Acenaphthene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515			480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108	ST	226-30-04	48
Acenaphthene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506			480		2000		4		HPLC-UV	F/CST C/HLD	225-1713 225-1	108	ST	226-30-04	48
Acenaphthylene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515			480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108	ST	226-30-04	48
Acenaphthylene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF	226-131	55	FLT	225-1808	109
Acenaphthylene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506			480		2000		4		HPLC-UV	F/CST C/HLD	225-1713 225-1	108	ST	226-30-04	48
Acetaldehyde	ASTM D 5197			varies		500-1200		5 min-24 hrs		HPLC-UV	ST	226-120 °	or	ST	226-119	50
Acetaldehyde	NIOSH 2538	LFC		10		20		8		GC-FID	ST	226-27			48	
Acetaldehyde	NIOSH 3507	LFC		60		125		8		HPLC	IMP	225-36-2	70	IT	225-22	70
Acetaldehyde	OSHA 68	200		3	0.75	50	50	1	15	GC-NPD	ST	226-27			48	
Acetaldehyde (Aldehydes, Screening)	NIOSH 2539	LFC		5		10		8		GC-FID & GC-MS	ST	226-118			50	
Acetamide	OSHA PV2084			10		20(50)		8(3.3)		GC-NPD	ST	226-10			48	
Acetates (screening)	NIOSH 2549			5		20		4		GC-MS	ST	226-330			52	
Acetic acid	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52	TH	224-26-02	37
Acetic acid	NIOSH 1603	10	15	24		50		8		GC-FID	ST	226-01			48	
Acetic acid	OSHA PV2119			48		200		4		IC or GC- FID	ST	226-01			48	
Acetic anhydride	NIOSH 3506		5	90		1000		1.5		VAS	IMP	225-36-2	70	IT	225-22	70
Acetic anhydride	OSHA 102	5		7.5	7.5	50	500	2.5	15	GC-NPD	CF/CST	225-9010	68	C/HLD	225-1	116
Acetoin	NIOSH 2558			1-10		10-200		varies		GC-FID	ST	226-183			51	
Acetoin (acetyl methyl carbinol)	OSHA 1012	0.05		9	3	50	200	3	15	GC-FID	ST	226-183			51	
Acetone	ASTM D 5197			varies		500-1200		5 min-24 hrs		HPLC-UV	ST	226-120 °	or	ST	226-119	50
Acetone	Internal					15.2 ml/min		8-24 hrs		SE, GC	PS	690-105			96	
Acetone	OSHA 69	1000		3		50		1		GC-FID	ST	NA SKC				
Acetone (Ketones I)	NIOSH 1300	250		2	0.75	20	50	100 min	15	GC-FID	ST	226-01			48	
Acetone (Ketones I)	NIOSH 2555			0.5 - 3		10-200		varies		GC-FID	ST	NA SKC				
Acetonitrile	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52	TH	224-26-02	37
Acetonitrile	NIOSH 1606	20		10		20(50)		8(3.3)		GC-FID	ST	226-09			48	
Acetophenone	OSHA PV2003			12		100		2		GC-FID	ST	226-35			48	
Acetyl methyl carbinol (acetoin)	NIOSH 2558			1-10		10-200		varies		GC-FID	ST	NA SKC				
Acetylene tetrabromide (1,1,2,2-tetrabromoethane)	NIOSH 2003			96		200		8		GC-FID	ST	226-10			48	
Acid blue 9	OSHA PV2129			100		1000		100 min		HPLC-UV	F/CST	225-706	110	C/HLD	225-1	116
Acridine	OSHA 58	0.2 mg/m ³		960		2000		8		GR & HPLC- FD, or GR & HPLC-UV	FLT C/HLD	225-7 225-1	110	CST	225-2LF	115
Acrolein	NIOSH 2501	0.1	0.3	24	3	50	200	8	15	GC-NPD	ST	226-118			50	
Acrolein	OSHA 52	0.1		48	3	100	200	8	15	GC-NPD	ST	226-117			50	
Acrolein (Aldehydes, Screening)	NIOSH 2539	0.1	0.3	5		10		8		GC-FID & GC-MS	ST	226-118			50	
Acrylamide	OSHA PV2004	0.3 mg/m ³		120		1000		2		HPLC-UV	ST	226-57			49	
Acrylic acid	NON 10			48		100		8		GC	ST	226-70A			49	
Acrylic acid	NON 60			24		100		4		HPLC-UV	ST	226-30-08			48	
Acrylic acid	OSHA PV2005	2		20		100		4		LC-UV	ST	226-30-08			48	

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Sampling Guide

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number			
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time						
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)					
Acrylonitrile	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 TH 37	224-26-02	37
Acrylonitrile	Internal					20.4 ml/min		8-24 hrs		TD, GC	PS 690-101	96		
Acrylonitrile	Internal					20.4 ml/min		8-24 hrs		SE, GC	PS 690-105	96		
Acrylonitrile	NIOSH 1604	1	10 (15 min)	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01	48		
Acrylonitrile	OSHA 37	2	10	20	6	200	400	100 min	15	GC-NPD	ST 226-01	48		
Actinomyces, thermophilic	NIOSH 0800			varies		28,300		varies		varies	BI 225-9611	136		
Aerobic bacteria (by GC-FAME)	NIOSH 0801			50-300		28300		varies		GC-FID	BI 225-9611	136		
Alcohols (screening)	NIOSH 2549			5		20		4		GC-MS	ST 226-330	52		
Alcohols combined	NIOSH 1405	varies	varies	varies	varies	10-200	10-200	varies	varies	GC-FID	ST 226-01	48		
Alcohols I (see specific compounds)	NIOSH 1400	varies		varies		varies		varies		GC-FID	ST 226-01	48		
Alcohols II (see specific compounds)	NIOSH 1401	varies		varies		varies		8		GC-FID	ST 226-01	48		
Alcohols III (see specific compounds)	NIOSH 1402	varies		varies		varies		8		GC-FID	ST 226-01	48		
Alcohols IV (see specific alcohol)	NIOSH 1403	varies		varies		varies		varies		GC-FID	ST 226-01	48		
Aldehydes	EPA TO-5			< 80 L		100-1000 ml/min				HPLC-UV	IMP 225-36-1	70 IT	225-22	70
Aldehydes (screening)	NIOSH 2539	varies		5		20		4		GC-FID & GC-MS	ST 226-118	50		
Aldehydes (screening)	NIOSH 2549			5		20		4		GC-MS	ST 226-330	52		
Aldicarb (Organonitrogen Pesticides)	NIOSH 5601			240		1000		4		HPLC-UV	ST 226-58	or ST	226-30-16	48
Aldicarb (Temik)	OSHA 74			480		1000		8		GC-NPD	ST 226-30-16	48		
Aldrin	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF 226-92	54		
Aldrin	NIOSH 5502	0.25 mg/m ³		240		500		8		GC-ECN	F/CST 225-709 IT 225-22	110 IMP 70 C/HLD	225-36-2 225-1	70 116
Aliphatic hydrocarbons (screening)	NIOSH 2549			5		20		4		GC-MS	ST 226-330	52		
Alkaline dusts	NIOSH 7401			30		2000		15		TITRA	F/CST 225-1715	108 C/HLD	225-1	116
Allethrin	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92	54		
Allyl alcohol	OSHA PV2140	2 (skin)		10		50		200 min		GC-FID	ST 226-01	48		
Allyl alcohol (Alcohols Combined)	NIOSH 1405	2	4 (skin)	1-10	1-10	10-200	10-200	varies	varies	GC-FID	ST 226-01	48		
Allyl alcohol (Alcohols III)	NIOSH 1402	2		10	3	200	200			GC-FID	ST 226-01	48		
Allyl chloride	NIOSH 1000	1	2	15		1000		15		GC-FID	ST 226-01	48		
Allyl glycidyl ether	NIOSH 2545	5	10	6	3	50	200	2	15	GC-FID	ST 226-35-03	48		
Allyl propyl disulfide	OSHA PV2086	2		10		20(50)		8(3.3)		GC-FPD	ST 226-110	50		
Alumina (aluminum & compounds [total dust as Al])	NIOSH 7013	10 mg/m ³		360		1000		6		AA-F	F/CST 225-3-01	102 C/HLD	225-1	116
Alumina (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR CYC F/CST	225-01-02 225-803	127 C/HLD	225-1	116
Alumina (particulates, total)	NIOSH 0500			120		2000		1		GR FLT CST	225-5-37-P 225-2LF	107 C/HLD	225-1	116
alpha-Alumina (respirable fraction)	OSHA PV2121	5 mg/m ³		varies		varies		varies		GR CYC C/HLD	225-105 225-1	126 F/CST	225-803	107
alpha-Alumina (total dust)	OSHA PV2121	15 mg/m ³		960		2000		4-8		GR FCST CST	225-802 225-2LF	107 C/HLD	225-1	116
Aluminum (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	10 mg/m ³ (total dust)	5 mg/m ³ (respirable)	1-330		1000-4000		varies		ICP-AES	SC 225-8517	103 C/HLD	225-1	116
Aluminum & compounds (total dust as Al)	NIOSH 7013	10 mg/m ³		360		1000		6		AA-F	F/CST 225-3-01	102 C/HLD	225-1	116
Aluminum (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	10 mg/m ³ (total dust)		5-100		1000-4000		varies		ICP-AES	F/CST 225-3-01 C/HLD 225-1	or F/CST	225-803	107
Aluminum (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	10 mg/m ³ (total dust)	5 mg/m ³ (respirable fume)	2-10,000		1000-4000		varies		ICP-AES	F/CST 225-3-01	102 C/HLD	225-1	116
Aluminum (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	10 mg/m ³ (total dust)	5 mg/m ³ (respirable dust)	5-100		1000-4000		varies		ICP-AES	F/CST 225-3-01	102 C/HLD	225-1	116
Aluminum (respirable fraction)	OSHA PV2121	5 mg/m ³		varies		varies		varies		GR F/CST C/HLD	225-803 225-1	107 CYC	225-105	126

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Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Aluminum (total dust)	OSHA PV2121	15 mg/m ³		480-960		2000		4-8		GR	F/CST CST	225-802 225-2LF	107 115	C/HLD	225-1	116
Aluminum soluble salts	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Amines	NIOSH 2002	varies		20		40		8		GC-FID or GC-NSD	ST	226-10	48			
Amines, aliphatic	NIOSH 2010	varies		24		50		8		GC-FID	ST	226-10	48			
2-Amino-2-methyl-1-propanol	OSHA PV2145			10		100		100 min		HPLC-UV	ST	226-30-16	48			
4-Aminobiphenyl	OSHA 93			100		1000		100 min		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
2-Aminoethanol	NIOSH 2007	3	6	10		20		8		GC-FID	ST	226-10-04	48			
2-Aminoethanol	NIOSH 3509	3	6	240		1000		4		IC	IMP	225-36-1	70	IT	225-22	70
2-Aminoethanol	OSHA PV2111	3		10	1.5	100	100	100 min	15	HPLC-UV	ST	226-30-18	48			
Aminoethanol compounds I (see specific compounds)	NIOSH 2007	varies		varies		varies		8		GC-FID	ST	226-10-04	48			
Aminoethanol compounds II (see specific compounds)	NIOSH 3509	varies		240		1000		4		IC	IMP	225-36-1	70	IT	225-22	70
Aminoethylethanolamine	OSHA PV2116			10		100				HPLC-UV	ST	226-30-18	48			
p-Aminophenylarsonic acid (arsenic, organo-)	NIOSH 5022			960		2000		8		IC-AA	FLT C/HLD	225-17-01 225-1	108 116	CST	225-3LF	115
2-Aminopyridine	OSHA PV2143	0.5		240		1000		4		GC-NPD	CF/CST	225-9004	68	C/HLD	225-1	116
3-Aminopyridine	OSHA PV2143			240		1000		4		GC-NPD	CF/CST	225-9004	68	C/HLD	225-1	116
4-Aminopyridine	OSHA PV2143			240		1000		4		GC-NPD	CF/CST	225-9004	68	C/HLD	225-1	116
Amitrole	OSHA PV2006			60		1000		1		HPLC-UV	IMP	225-36-1	70	IT	225-22	70
Ammonia	NIOSH 6015	25	35	72	3	150	200	8	15	VAS	ST	226-10-06	48	F/CST	225-3-01	102
Ammonia	NON 41			18	5	75	500	4	10	CLR	ST	226-61	49			
Ammonia	OSHA ID 188	50		24	7.5	100	500	4	15	IC-CD	ST	226-29	48			
Ammonia (by IC)	NIOSH 6016	25	35	48	3	100	200	8	15	IC	ST	226-10-06	48	F/CST	225-3-01**	102
Ammonium chloride (fume)	OSHA ID 188			960	30	2000	2000	8	15	IC-CD	F/CST	225-3-01	102	C/HLD	225-1	116
Ammonium hydroxide (see ammonia)																
Ammonium metavanadate (see vanadium oxides)	NIOSH 7504															
sec-Amyl acetate (2-pentyl acetate)	NIOSH 1450	125		10		200		50 (min)		GC-FID	ST	226-01	48			
n-Amyl acetate (Esters I)	NIOSH 1450	100		1-10		10-200		varies		GC-FID	ST	226-01	48			
t-Amyl methyl ether (methyl tert-amyl ether)	Internal					13.1 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	96
t-Amyl methyl ether (methyl tert-amyl ether)	Internal					13.1 ml/min		8-24 hrs		SE, GC	PS	690-105	96			
Aniline	NIOSH 2017	LFC		24		200		2		GC-FID	CF/CST	225-9004	68	ST	226-15	48
Aniline	OSHA PV2079	5		24		50		8		GC-FID	ST	226-98	50			
Aniline (Amines, Aromatic)	NIOSH 2002	LFC		24		50		8		GC-FID or GC-NSD	ST	226-10	48			
Anisidine	NIOSH 2514	0.5 mg/m ³		240		1000		4		HPLC-UV	ST	226-30-05	48			
Anthophyllite fibers (see asbestos fibers)	NIOSH 7400															
Anthracene	OSHA 58	0.2 mg/m ³		960		2000		8		GR & HPLC-FD, or GR & HPLC-UV	FLT C/HLD	225-7 225-1	110 116	CST	225-2LF	115
Anthracene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF	226-131	55	FLT	225-1808	109
Anthracene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515			480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Anthracene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506			480		2000		4		HPLC-UV	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Antimony & compounds (as Sb)	OSHA ID 121	0.5 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Antimony & compounds (as Sb)	OSHA ID 125G	0.5 mg/m ³		480		2000		4		ICP-AES	F/CST C/HLD	225-3-01 225-803 225-1	or 116	F/CST F/CST	225-3100 225-8215	or 107

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Antimony (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	0.05 mg/m ³		1-2000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Antimony (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	0.5 mg/m ³		50-2000		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or	F/CST	225-803	107
Antimony (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	0.5 mg/m ³		3-100,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Antimony (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	0.5 mg/m ³		50-2000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Antimony (ICP Analysis of Metal/metalloid Particulates from Solder Operations)	OSHA ID 206	0.5 mg/m ³		480		2000		4		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Apron	OSHA PV2102			60		1000		1		HPLC-UV	F/CST	225-709	110	C/HLD	225-1	116
Aroclor	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54			
Aroclor	NIOSH 5602			480		1000		8		GC-ECD	ST	226-58	49			
Aroclor 1242	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54			
Aroclor 1242 (42% Cl) (see polychlorobiphenyls)	NIOSH 5503															
Aroclor 1254	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54			
Aroclor 1254 (54% Cl) (see polychlorobiphenyls)	NIOSH 5503															
Aroclor 1260	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54			
Aromatic hydrocarbons (screening)	NIOSH 2549			5		20		4		GC-MS	ST	226-330	52			
Arsenic (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	0.002 mg/m ³		32-2000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Arsenic & compounds (as As)	NIOSH 7900	2 µg/m ³ (15 min)		30		2000		15		AA-F	F/CST	225-3-01	102	C/HLD	225-1	116
Arsenic (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	0.002 mg/m ³		5-2000		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or	F/CST	225-803	107
Arsenic (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	0.002 mg/m ³		8-5,000,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Arsenic (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	0.002 mg/m ³ (C)		5-2000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Arsenic (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W	225-2414	172	TMP	225-2415	172
Arsenic (inorganic compounds as As)	OSHA 1006	0.01 mg/m ³		480		2000		4		ICP-MS	F/CST	225-3-01	102	C/HLD	225-1	116
Arsenic trioxide as AS	NIOSH 7901	2 mg/m ³ (15 min)		30		2000		15		AAS-GF	FLT C/HLD	225-5 † 225-1	102	CST	225-2LF	115
Arsenic, inorganic (volatile compounds as As)	OSHA 1006	0.01 mg/m ³		480		2000		4		ICP-MS	CF/CST	225-9001	68	C/HLD	225-1	116
Arsenic, organo	NIOSH 5022			960		2000		8		IC-AA	FLT C/HLD	225-17-01 225-1	108	CST	225-2LF	115
Arsine	NIOSH 6001	2 µg/m ³ (15 min)		10	3	20	200	8	15	AAS-GF	ST	226-01	48			
Arylam (see carbaryl)																
Asbestos	OSHA ID 160	0.1 fbr/cc	1 fbr/cc EL	25-1200	25-1200	500-2500	500-2500	varies	varies	PCM	FLT/CL FLT/CL	225-321 225-321A	or	FLT/CL FLT/CL	225-326 225-327	or 104
Asbestos ([bulk] by PLM)	NIOSH 9002	1% (bulk)		bulk						PLM						
Asbestos (by TEM)	NIOSH 7402	0.1 fbr/cc/400L		960		2000		8		TEM	FLT/CL	225-327	104			
Asbestos (chrysotile)	NIOSH 9000			bulk						XRD						
Asbestos (structure number concentrations)	ASTM D 5755			varies		2000		2 min (minimum)		TEM	MVC	225-322	173			
Asbestos fibers	NIOSH 7400	0.1 fbr/cc/400L		varies		varies		varies		PCM	FLT/CL FLT/CL	225-321 225-321A	or	FLT/CL FLT/CL	225-326 225-327	or 104
Aspartame	NIOSH 5031			480		1000		8		HPLC-UV	FLT C/HLD	225-17-01 225-1	108	CST	225-2LF	115
Asphalt fume (benzene-soluble & total particulate)	NIOSH 5042	5 mg/m ³ (15 min) (C)		360	60	1000	4000	6	15	GR	FLT CST	225-37-07 225-2LF	108	SP	225-27	117
Asphalt fume particulate	ASTM D 6494			960		2000		8		GR	F/CST	225-1713	108	C/HLD	225-1	116
Asphalt fumes (petroleum)	OSHA 58			960		2000		8		GR & HPLC-FD, or GR & HPLC-UV	FLT C/HLD	225-7 225-1	110	CST	225-2LF	115
Atrazine	ASTM D 4861			240-7200		1000-5000		4-24		GC-NPD	PUF	226-92	54			
Atrazine	NIOSH 5602	5		480		1000		8		GC-ECD	ST	226-58	49			

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Azelaic acid	NIOSH 5019			960		2000		8		GC-FID	F/CST	225-803	107	C/HLD	225-1	116
Azinphos-methyl	OSHA PV2087	0.2 mg/m ³		480		1000		8		GC-FPD	ST	226-30-16		48		
Azinphos-methyl (Organophosphorus Pesticides)	NIOSH 5600	0.2 mg/m ³		240		1000		4		GC-FPD	ST	226-58		49		
Bacteria	NIOSH 0800			varies		28,300		varies		varies	BI	225-9611		136		
Bacteria (by GC-FAME)	NIOSH 0801			50-300		28300		varies		GC-FID	BI	225-9611		136		
Bacteria (in air)	NON 48			62.5-375		12,500 +		5-30		varies	BS	225-9595	138	VT	225-9598A	138
Barium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306			3-2000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Barium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	0.5 mg/m ³		50-2000		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or	F/CST	225-803	107
Barium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303			1-100,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Barium (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W TMP	225-2414 225-2415	172		172	
Barium (insoluble compounds)	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Barium (soluble compounds)	NIOSH 7056	0.5 mg/m ³		960		2000		8		AA	F/CST	225-3-01	102	C/HLD	225-1	116
Barium (soluble compounds)	OSHA ID 121	0.5 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Barium chloride (barium, soluble compounds)	NIOSH 7056	0.5 mg/m ³		960		2000		8		AA	F/CST	225-3-01	102	C/HLD	225-1	116
Barium sulfate (total dust)	OSHA ID 121	15 mg/m ³		960		2000		8		AA or AES	F/CST	225-802	107	C/HLD	225-1	116
Baygon (propoxur)	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF	226-92		54		
Baygon (propoxur)	OSHA PV2007			48		100		8		HPLC-UV	ST	226-30-16		48		
Bendiocarb	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF	226-92		54		
Bendiocarb (Ficam)	OSHA PV2008			240		1000		4		HPLC-UV	ST	226-30-16		48		
Benomyl (Organonitrogen Pesticides)	NIOSH 5601			240		1000		4		HPLC-UV	ST	226-58	or	ST	226-30-16	48
Benomyl (respirable dust)	OSHA PV2107	5 mg/m ³		varies		varies		varies		HPLC-UV	ST	226-30-16	48	CYC	225-105	126
Benomyl (total dust)	OSHA PV2107	15 mg/m ³		60		1000		1		HPLC-UV	ST	226-30-16		48		
Bentonite (see <i>Particulates Not Otherwise Regulated, total and respirable</i>)																
Benz(a)anthracene	OSHA In House File			960		2000				HPLC-UV	F/CST	225-709	110	C/HLD	225-1	116
Benz(a)anthracene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF	226-131	55	FLT	225-1808	109
Benz(a)anthracene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515			480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108	ST	226-30-04	48
Benz(a)anthracene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506			480		2000		4		HPLC-FD	F/CST C/HLD	225-1713 225-1	108	ST	226-30-04	48
Benzaldehyde	ASTM D 5197			varies		500-1200		5 min-24 hrs		HPLC-UV	ST	226-120 °	or	ST	226-119	50
Benzene	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series	
Benzene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52	TH	224-26-02	37
Benzene	Internal					16.0 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	96
Benzene	Internal					0.78 ml/min		24 hrs to 7 days		TD, GC	PS RR	690-101 690-300	or	PS	690-103	with
Benzene	Internal					16.0 ml/min		8 hrs-30 days		SE, GC	PS	690-105		96		
Benzene	OSHA 1005	1	5					8	15	GC-FID	PS	575-002		82		
Benzene	OSHA 1005	1	5	12	0.75	50	50	4	15	GC-FID	ST	226-01		48		
Benzene	OSHA 1005	1	5	12	0.5	50	50	240 min	10	GC-FID	ST	226-01		48		
Benzene (by portable GC)	NIOSH 3700	0.1	1 (15 min)	varies		20-5000		varies		P GC-PID	SB	232 Series		61		
Benzene (Hydrocarbons, Aromatic)	NIOSH 1501	0.1	1	5-30	5-30	10-200	10-200	varies	varies	GC-FID	ST	226-01		48		
alpha-Benzene hexachloride	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92		54		
beta-Benzene hexachloride	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92		54		
gamma-Benzene hexachloride	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92		54		

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Sampling Guide

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Benzene-soluble & total particulate (asphalt fume)	NIOSH 5042	5 mg/m ³ (15 min) (C)		360	60	1000	4000	6	15	GR	FLT CST	Contact SKC 225-2LF	108 115	SP 225-27	117	
Benzene-soluble particulate matter	ASTM D 4600			960		2000		8		GR	FLT CST	225-7 225-2LF	110 115	SP C/HLD	225-27 225-1	117 116
Benzidine	NIOSH 5509	LFC		96		200		8		HPLC-UV	FLT	225-16	110	CST	225-32	116
Benzidine	OSHA 65			100		1000		100 min		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
Benzidine dyes (dyes, benzidine)	NIOSH 5013	LFC		480		1000		8		HPLC	FLT C/HLD	225-17P 225-1	108 116	CST	225-3LF	115
Benzidine-based dyes	OSHA 65			100	15	1000	1000	100 min		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
Benzo(a)pyrene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515	0.1 mg/m ³		480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Benzo(a)pyrene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF PEM	226-131 761-200B	55 132	FLT FLT	225-1808 225-1709	109 108
Benzo(a)pyrene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506			480		2000		4		HPLC-FD	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Benzo(b)fluoranthene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF PEM	226-131 761-200B	55 132	FLT FLT	225-1808 225-1709	109 108
Benzo(b)fluoranthene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515			480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Benzo(b)fluoranthene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506			480		2000		4		HPLC-FD	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Benzo(e)pyrene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515			480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Benzo(e)pyrene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF	226-131	55	FLT	225-1808	109
Benzo(e)pyrene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506			480		2000		4		HPLC-FD	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Benzo(g,h,i)perylene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF	226-131	55	FLT	225-1808	109
Benzo(g,h,i)perylene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515			480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Benzo(g,h,i)perylene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506			480		2000		4		HPLC-FD	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Benzo(k)fluoranthene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515			480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Benzo(k)fluoranthene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506			480		2000		4		HPLC-FD	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Benzoaphapyrene	OSHA 58	0.2 mg/m ³		960		2000		8		GR & HPLC- FD, or GR & HPLC-UV	FLT C/HLD	225-7 225-1	110 116	CST	225-2LF	115
Benzophenone	NON 39			480		1000		8		GC-FID	ST	226-56	49			
Benzophenone	OSHA PV2130	0.5 mg/m ³		48		200		4		GC-FID	ST	226-110	50			
Benzothiazole in asphalt fume	NIOSH 2550			480		1000		8		GC-SCD	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Benzoyl peroxide	NIOSH 5009	5 mg/m ³		90		1500		1		HPLC-UV	F/CST	225-3-01	102	C/HLD	225-1	116
Benzyl acetate	OSHA PV2124			10		100		100 min		GC-FID	ST	226-73	49			
Benzyl alcohol	OSHA PV2009			24		100		4		GC-FID	ST	226-95	50			
Benzyl chloride	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series	
Benzyl chloride (hydrocarbons, halogenated)	NIOSH 1003	1		10		10-200		varies		GC-FID	ST	226-01	48			
Beryllium & compounds	OSHA ID 125G	0.2 µg/m ³	2.0 µg/m ³	480	60	2000	2000	4	15	ICP-AES	F/CST F/CST C/HLD	225-3-01 225-803 225-1	or or 116	F/CST F/CST	225-3100 225-8215	or 107
Beryllium & compounds (as Be)	NIOSH 7102	0.5 µg/m ³		960		2000		8		AA-GF	F/CST	225-3-01	102	C/HLD	225-1	116
Beryllium & compounds (as Be)	OSHA 1023	0.2 µg/m ³	2.0 µg/m ³	480	30	2000	2000	4	15	ICP-AES	FLT SM TB	225-5 225-24	102 172	CST	225-2LF	115
Beryllium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	0.0005 mg/m ³	0.005 mg/m ³	10-2000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116

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Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number			
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time						
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)					
Beryllium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	0.0005 mg/m ³		1250-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 C/HLD 225-1	or 116	F/CST 225-803	107
Beryllium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303			35-25,000,000		1000-4000		varies		ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116
Beryllium (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	0.0005 mg/m ³		1250-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116
Beryllium (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W 225-2414	172	TMP 225-2415	172
Beryllium (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206	0.2 µg/m ³	2.0 µg/m ³	480	10	2000	2000	4	5	ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116
Beryllium (in air by portable fluorometry)	NIOSH 7704	2 mg/m ³	5 mg/m ³ (C)	240-2000		1000-4000				P FLUOR UV/VIS	F/CST 225-3-01 C/HLD 225-1	or 116	F/CST 225-3100	102
BHC (alpha-, beta-, gamma-)	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF 226-92	54		
Bioaerosol sampling	NIOSH 0800			varies		28,300		varies		varies	BI 225-9611	136		
Bioaerosols				15-150		15000		1-10 min		varies	STC 225-9820	114		
Bioaerosols	NON 48			62.5-375		12,500 +		5-30		varies	BS 225-9595	138	VT 225-9598A	138
Biphenyl (diphenyl)	NIOSH 2530	0.2		10		20(50)		8(3,3)		GC-FID	ST 226-35-01	48		
4,4'-Bipyridine (vapor & aerosol)	NON 26			96	2	200	200	8	10	HPLC	ST 226-30-05 C/HLD 225-1	48	F/CST 225-706	110
Bismuth	OSHA ID 121			480-960		2000		4-8		AAS/AES	F/CST 225-3-01	102	C/HLD 225-1	116
Bismuth (Elements by ICP HNO ₃ Digestion)	NIOSH 7303			1-10,000		1000-4000		varies		ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116
Bismuth telluride, Se-doped	OSHA ID 121	5 mg/m ³		960		2000		8		AA or AES	FLT 225-5-37-P CST 225-2LF	107	C/HLD 225-1	116
Bismuth telluride, undoped (respirable dust)	OSHA ID 121	5 mg/m ³		varies		varies		varies		GR & AA or GR & AES	CYC 225-105 F/CST 225-803	126	C/HLD 225-1	116
Bisphenol A	OSHA 1018			240		1000		240 (min)		HPLC-UV/PDA	F/CST 225-709	110	C/HLD 225-1	116
Borates tetrasodium salts (anhydrous, decahydrate & pentahydrate)	OSHA ID 125G			480		2000		4		ICP-AES	F/CST 225-3-01 C/HLD 225-1	or 116	F/CST 225-3100 or 225-8215	or 107
Boron (Elements by ICP HNO ₃ Digestion)	NIOSH 7303			1-3,300		1000-4000		varies		ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116
Boron carbide	NIOSH 7506			600		2500		4		XRD	F/CST 225-803 CYC 225-01-02	107	C/HLD 225-1	116
Boron oxide (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT 225-5-37-P CYC 225-01-02	107	C/HLD 225-1	116
Boron oxide (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT 225-5-37-P CST 225-2LF	107	C/HLD 225-1	116
Bromine	NIOSH 6011	0.1	0.3	240	15	1000	1000	4	15	IC	CF/CST 225-9006	68	C/HLD 225-1	116
Bromine	OSHA ID 108	0.1		120	7.5	500	500	4	15	IC	IMP 225-36-2	70	IT 225-22	70
Bromoethane (ethyl bromide)	NIOSH 1011			4		20(50)		3.3(1.3)		GC-FID	ST 226-01	48		
Bromoform (hydrocarbons, halogenated)	NIOSH 1003	0.5 (skin)		10		10-200		varies		GC-FID	ST 226-01	48		
1-Bromopropane	Internal					14.4 ml/min		8-24 hrs		TD, GC	PS 690-101	or PS 690-103	96	
1-Bromopropane	Internal					14.4 ml/min		8-24 hrs		SE, GC	PS 690-105	96		
1-Bromopropane	NIOSH 1025			0.1-12		10-200		varies		GC-FID	ST 226-01	48		
1-Bromopropane	OSHA 1017			12		50		240 (min)		GC-FID	ST 226-01	48		
1-Bromopropane	OSHA PV2061			12		100		2		GC-FID	ST 226-01	48		
2-Bromopropane	NIOSH 1025			0.1-12		10-200		varies		GC-FID	ST 226-01	48		
2-Bromopropane	OSHA 1017			12		50		240 (min)		GC-FID	ST 226-01	48		
2-Bromopropane	OSHA PV2062			12		100		2		GC-FID	ST 226-01	48		
Bromotrifluoromethane (trifluorobromomethane)	NIOSH 1017	1000		0.3		20		15 min		GC-FID	ST 226-09	48	ST 226-01	48
Bromoxynil	NIOSH 5010			240		1000		4		HPLC-UV	F/CST 225-1713	108	C/HLD 225-1	116
Bromoxynil octanoate	NIOSH 5010			240		1000		4		HPLC-UV	F/CST 225-1713	108	C/HLD 225-1	116
BTEX (hydrocarbons, aromatic. See benzene, toluene, ethylbenzene, and xylene)	NIOSH 1501	varies		varies		varies		varies		GC-FID	ST 226-01	48		
1,3-Butadiene	NIOSH 1024	LFC		10		20		8		GC-FID	ST 226-37	49		

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		Agency Standard		Vol. (liter)		Rate (ml/min)		Time							
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)						
1,3-Butadiene	OSHA 56	1	5	3		50		1		GC-FID	ST	226-73	49		
Butane	OSHA PV2010			3		50		1		GC-FID	ST	NA SKC			
1-Butanethiol (butyl mercaptan)	NIOSH 2525		0.5	1		50		15		GC-FPD	ST	226-109	50		
n-Butanol (alcohols combined)	NIOSH 1405	50 (skin)		2-10		10-200		varies		GC-FID	ST	226-01	48		
2-Butanone	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series CPC	52 37	TH	224-26-02 37
2-Butanone	Internal					16.9 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103 96
2-Butanone	Internal					16.9 ml/min		8-24 hrs		SE, GC	PS	690-105	96		
2-Butanone	OSHA 1004	200		12		50		4		GC-FID	ST	575-002	82		
2-Butanone (methyl ethyl ketone)	NIOSH 2500	200	300	10	3	20(50) 200		8(3.3) 15		GC-FID	ST	226-81A	49		
2-Butanone (methyl ethyl ketone)	OSHA 1004	200				16.88		8		GC-FID	PS	575-002	82		
2-Butoxyethanol (alcohols IV)	NIOSH 1403	5 (skin)		2-10		10-50		varies		GC-FID	ST	226-01	48		
2-Butoxyethanol (butyl cellosolve solvent)	OSHA 83	50		48		100		8		GC-FID	ST	226-01	48		
2-Butoxyethanol acetate	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series CPC	52 37	TH	224-26-02 37
2-Butoxyethanol acetate (butyl cellosolve acetate)	OSHA 83			48		100		8		GC-FID	ST	226-01	48		
n-Butyl acetate	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series CPC	52 37	TH	224-26-02 37
n-Butyl acetate	Internal					12.3 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103 96
n-Butyl acetate	Internal					12.3 ml/min		8-24 hrs		SE, GC	PS	690-105	96		
n-Butyl acetate	OSHA 1009	150				13.07 13.07		8 15		GC-FID	PS	575-002	82		
n-Butyl acetate	OSHA 1009	150		12	0.75	50 50		4 15		GC-FID	ST	226-01	48		
sec-Butyl acetate	OSHA 1009	200				12.74 12.74		8 15		GC-FID	PS	575-002	82		
sec-Butyl acetate	OSHA 1009	200		12	0.75	50 50		4 15		GC-FID	ST	226-01	48		
t-Butyl acetate	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series CPC	52 37	TH	224-26-02 37
t-Butyl acetate	OSHA 1009	200				13.09 13.09		8 15		GC-FID	PS	575-002	82		
t-Butyl acetate	OSHA 1009	200		12	0.75	50 50		4 15		GC-FID	ST	226-01	48		
n-Butyl acetate (Esters I)	NIOSH 1450	150	200	1-10	1-10	10-200 10-200		varies varies		GC-FID	ST	226-01	48		
sec-Butyl acetate (Esters I)	NIOSH 1450	200		1-10		10-200		varies		GC-FID	ST	226-01	48		
t-Butyl acetate (Esters I)	NIOSH 1450	200		1-10		10-200		varies		GC-FID	ST	226-01	48		
Butyl acrylate	Internal					11.7 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103 96
Butyl acrylate	Internal					11.7 ml/min		8-24 hrs		SE, GC	PS	690-105	96		
Butyl acrylate	OSHA PV2011			12		50		4		GC-FID	ST	226-73	49		
n-Butyl acrylate	NON 54	5	15	10	3	20 200		8 15		GC-FID	ST	226-81A	49		
n-Butyl alcohol	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series CPC	52 37	TH	224-26-02 37
n-Butyl alcohol	OSHA 5001	200		12		4				GC-FID	ST	226-82	50		
sec-Butyl alcohol	OSHA 5001	200		12		4				GC-FID	ST	226-82	50		
n-Butyl alcohol (alcohols combined)	NIOSH 1405	50 (skin)		2-10		10-200		varies		GC-FID	ST	226-01	48		
sec-Butyl alcohol (alcohols combined)	NIOSH 1405	100	150	2-10	2-10	10-200 10-200		varies varies		GC-FID	ST	226-01	48		
t-Butyl alcohol (Alcohols I)	NIOSH 1400	100	150	10		20(50)		8(3.3)		GC-FID	ST	226-01	48		
n-Butyl alcohol (alcohols II)	NIOSH 1401		50	10	3	20(50) 200		8(3.3) 15		GC-FID	ST	226-01	48		
sec-Butyl alcohol (alcohols II)	NIOSH 1401	100	150	10	3	20(50) 200		8(3.3) 15		GC-FID	ST	226-01	48		
Butyl butyrate	OSHA PV2090			10		200		50 min		GC-FID	ST	226-01	48		
Butyl carbitol (diethylene glycol monobutyl ether)	OSHA PV2095			10		200		50 min		GC-FID	ST	226-01	48		
Butyl carbitol acetate	OSHA PV2095			10		200		50 min		GC-FID	ST	226-01	48		
Butyl CELLOSOLVE acetate (see 2-butoxyethanol acetate)	OSHA 83														

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number								
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time											
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)										
Butyl CELLOSOLVE solvent (see 2-butoxyethanol)	OSHA 83																		
t-Butyl chromate (as CrO ₃)	OSHA ID 215 (V2)	0.005 mg/m ³		960		2000			15		IC-UV	F/CST	225-802	107	C/HLD	225-1	116		
t-Butyl ethyl ether (ethyl tert-butyl ether)	Internal					13.1 ml/min		8-24 hrs		TD, GC	PS PS	690-101 690-104	or	PS	690-103	96			
t-Butyl ethyl ether (ethyl tert-butyl ether)	Internal					13.1 ml/min		8-24 hrs		SE, GC	PS	690-105			96				
n-Butyl glycidyl ether	NIOSH 1616	5.6 (15 min)		3		200		15		GC-FID	ST	226-01			48				
n-Butyl lactate	OSHA PV2080			10		200		50 min		GC-FID	ST	226-01			48				
n-Butyl mercaptan	NIOSH 2525	0.5		1		50		15		GC-FPD	ST	226-109			50				
n-Butyl mercaptan (mercaptans)	NIOSH 2542	0.5 (15 min)		48	12	100	200	8	60	GC-FPD	CF/CST	225-9007	68	C/HLD	225-1	116			
t-Butyl methyl ether (MTBE)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52	TH	224-26-02	37			
t-Butyl methyl ether (MTBE)	Internal					13.6 ml/min		8 hrs-30 days		SE, GC	PS	690-105			96				
Butyl ziram	OSHA PV2065			180		1000		3		HPLC-UV	ST	226-30-16			48				
n-Butylamine	NIOSH 2012	5		15		1000		15		GC-FID	ST	226-53			49				
Butylated hydroxytoluene	OSHA PV2108			100		1000		100 min		GC-FID	ST	226-57			49				
1,3-Butylene glycol (glycols)	NIOSH 5523			60		1000		1		GC-FID	ST	226-57			49				
o-sec-Butylphenol	OSHA PV2128			20		200		1.6		HPLC-UV	ST	226-95			50				
p-tert-Butylphenol	OSHA PV2085			20		200		100 min		GC-FID	ST	226-95			50				
Butyltin trichloride	OSHA ID 217SG			240		1000		4		AA-GF	ST	226-30-16			48				
p-tert-Butyltoluene	Internal					10.4 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	96			
p-tert-Butyltoluene	Internal					10.4 ml/min		8-24 hrs		SE, GC	PS	690-105			96				
p-tert-Butyltoluene (Hydrocarbons, Aromatic)	NIOSH 1501	10	20	1-29	1-29	10-200	10-200	varies	varies	GC-FID	ST	226-01			48				
Butyraldehyde	ASTM D 5197			varies		500-1200		5 min-24 hrs		HPLC-UV	ST	226-120 °	or	ST	226-119	50			
Butyraldehyde (Aldehydes, Screening)	NIOSH 2539			5		20		4		GC-FID & GC-MS	ST	226-118			50				
Cadmium & compounds (as Cd)	NIOSH 7048	LFC		480	30	1000	2000	8	15	AA-F	F/CST	225-3-01	102	C/HLD	225-1	116			
Cadmium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	LFC		3-2000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116			
Cadmium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	LFC		13-2000		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or	F/CST	225-803 ¥	107			
Cadmium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303			3-500,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Cadmium (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	LFC		13-2000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Cadmium (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W	225-2414	172	TMP	225-2415	172			
Cadmium dust (as Cd)	OSHA ID 121	0.2 mg/m ³	0.5 mg/m ³	960	30	2000	2000	8	15	AA	F/CST	225-3-01	102	C/HLD	225-1	116			
Cadmium	OSHA 1006	0.2 mg/m ³	0.5 mg/m ³	480		2000		4		ICP-MS	F/CST	225-3-01	102	C/HLD	225-1	116			
Cadmium	OSHA 5003	0.2 mg/m ³	0.5 mg/m ³	480		2000		4		ICP-MS	F/CST	225-3-01	102	C/HLD	225-1	116			
Cadmium	OSHA ID125G	0.1 mg/m ³ (fume)	0.3 mg/m ³ (fume)	480	30	2000	2000	4	15	ICP	F/CST	225-3-01	102	C/HLD	225-1	116			
		0.2 mg/m ³ (dust)	0.6 mg/m ³ (dust)																
Cadmium dust (as Cd)	OSHA ID 206	0.2 mg/m ³	0.5 mg/m ³	960	30	2000	2000	8	15	ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Cadmium fume (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206	0.1 mg/m ³	0.3 mg/m ³ (C)	480		2000		4		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Calcium & compounds (as Ca)	NIOSH 7020	varies		240		1000		4		AA-F	F/CST	225-3-01	102	C/HLD	225-1	116			
Calcium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306			Varies		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116			
Calcium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	varies		5-200		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or	F/CST	225-803 ¥	107			
Calcium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303			2-10,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Calcium (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	varies		5-200		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116			

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		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Calcium (see specific compounds)	NIOSH 7020	varies		varies		varies		varies		AA-F	F/CST	225-3-01	102	C/HLD	225-1	116
Calcium carbonate	OSHA ID 121	15 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Calcium carbonate (calcium)	NIOSH 7020	2 mg/m ³		240		1000		4		AA-F	F/CST	225-3-01	102	C/HLD	225-1	116
Calcium carbonate (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115
Calcium carbonate (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116
Calcium carbonate (see Particulates Not Otherwise Regulated, total and respirable)																
Calcium cyanamide	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Calcium hydroxide	OSHA ID 121	5 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Calcium hydroxide (calcium)	NIOSH 7020	2 mg/m ³		240		1000		4		AA-F	F/CST	225-3-01	102	C/HLD	225-1	116
Calcium hydroxide (see Particulates Not Otherwise Regulated, total and respirable)																
Calcium oxide	OSHA ID 121	5 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Calcium oxide (calcium)	NIOSH 7020	2 mg/m ³		240		1000		4		AA-F	F/CST	225-3-01	102	C/HLD	225-1	116
Calcium oxide (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	2 mg/m ³		3-10,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Calcium silicate (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115
Calcium silicate (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116
Calcium sulfate (Particulates Not Otherwise Regulated, total and respirable)																
Camphor (Ketones II)	NIOSH 2553	2		1-25		10-200		varies		GC-FID	ST	NA SKC				
Camphor (Ketones II)	NIOSH 1301	2		10		20(50)		8(3.3)		GC-FID	ST	226-01	48			
Caprolactam	OSHA PV2012			100		1000		100 min		HPLC-UV	ST	226-57	49			
Capsaicin	NIOSH 5041			480 15		1000 1000		8 15		HPLC-FD	FLT	225-16	110	CST	225-32	116
Captan	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54			
Captan	OSHA PV2093			60		1000		1		HPLC-UV	ST	226-30-16	48			
Captan (Organonitrogen Pesticides)	NIOSH 5601	5 mg/m ³		240		1000		4		HPLC-UV	ST	226-58	or	ST	226-30-16	48
Carbaryl	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF	226-92	54			
Carbaryl (Organonitrogen Pesticides)	NIOSH 5601	5 mg/m ³		240		1000		4		HPLC-UV	ST	226-58	or	ST	226-30-16	48
Carbaryl (Sevin)	NIOSH 5006	5 mg/m ³		240		1000		4		VAS	F/CST	225-706	110	C/HLD	225-1	116
Carbaryl (Sevin)	OSHA 63	5 mg/m ³		60		1000		1		HPLC-UV	ST	226-30-16	48			
Carbendazim (Organonitrogen Pesticides)	NIOSH 5601			240		1000		4		HPLC-UV	ST	226-58	or	ST	226-30-16	48
Carbitol	OSHA PV2013			10		200		50 min		GC-FID	ST	226-01	48			
Carbitol acetate	OSHA PV2013			10		200		50 min		GC-FID	ST	226-01	48			
Carbofuran	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF	226-92	54			
Carbofuran (Organonitrogen Pesticides)	NIOSH 5601	0.1 mg/m ³		240		1000		4		HPLC-UV	ST	226-58	or	ST	226-30-16	48
Carbon black	NIOSH 5000	3.5 mg/m ³		360		1500		4		GR	FLT SCN	225-5-37-P 225-26	107 117	CST C/HLD	225-3LF 225-1	115 116
Carbon black	OSHA ID 196	3.5 mg/m ³		960		2000		8		GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116
Carbon dioxide	OSHA ID 172	5000 30000		2-5 2-5		10-50 300		4-8 15		GC-TCD	SB	253 Series	or	SB	263 Series	62
Carbon dioxide (by portable GC)	NIOSH 6603	5000 30000		varies varies		20-100 20-100		varies varies		P GC-TCD	SB	232 Series	61			
Carbon disulfide	NIOSH 1600	1 10		10 3		20(50) 200		8(3.3) 15		GC-FPD	ST	226-01	48	DRT	226-44	49
Carbon monoxide	OSHA ID 210	50		2-5 2-5		10-50 1000		varies varies		GC-DID	SB SB	252 Series 262 Series	or or	SB SB	253 Series 263 Series	or 62
Carbon tetrachloride	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK	228 Series		
Carbon tetrachloride	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Carbon tetrachloride	Internal					0.59 ml/min		8-24 hrs		TD, GC	PS RR	690-101 690-300	or	PS	690-103	with

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number						
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time									
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)								
Carbon tetrachloride	Internal					14.1 ml/min		8 hrs-7 days		SE, GC	PS	690-105	96				
Carbon tetrachloride (hydrocarbons, halogenated)	NIOSH 1003		2 (1 hrs)		15			10-200		varies	GC-FID	ST	226-01	48			
Carbon, activated (Particulates Not Otherwise Regulated, total)																	
3-Carene (terpenes)	NIOSH 1552			24		50		8			GC-FID	ST	226-01	48			
Catechol (pyrocatechol)	OSHA PV2014			100		1000		100 min			HPLC-UV	ST	226-57	49			
Cell fragments (bioaerosols)					15-150			15000		1-10 min	varies	STC	225-9820	114			
CELLOSOLVE acetate (see 2-ethoxyethyl acetate)																	
CELLOSOLVE solvent (see 2-ethoxyethanol) (alcohols IV)	NIOSH 1403																
Cellulose (paper fiber) (particulates, respirable)	NIOSH 0600				375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115
Cellulose (paper fiber) (particulates, total)	NIOSH 0500				120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116
Cellulose (see Particulates Not Otherwise Regulated, total and respirable)																	
Cellulose insulation	NIOSH 7404				varies		1000		varies		SEM	FLT/CL	225-1604	105			
Cerium	OSHA ID 121				960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Chlordane	NIOSH 5510	0.5 mg/m ³			150		1000		2.5		GC-ECD	ST CST C/HLD	226-107 225-2LF 225-1	50 115 116	FLT SCN	225-5 225-26	102 117
Chlordane	OSHA 67	0.5 mg/m ³			480		1000		8		GC-ECD	ST	226-30-16	48			
Chlordane (non-occupational exposure)	ASTM D 4947				240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54			
Chlordane (technical)	ASTM D 4861				240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54			
Chlorinated & organonitrogen herbicides	NIOSH 5602				480		1000		8		GC-ECD	ST	226-58	49			
Chlorinated & organonitrogen herbicides (hand wash)	NIOSH 9200										GC-ECD	NA SKC					
Chlorinated camphene (toxaphene)	NIOSH 5039	LFC			30	15	1000	1000	0.5	15	GC-ECD	F/CST	225-3-01	102	C/HLD	225-1	116
Chlorinated diphenyl ether (chlorinated diphenyl oxide)	NIOSH 5025	0.5 mg/m ³			180		1000		3		GC-ECD	F/CST	225-3-01	102	C/HLD	225-1	116
Chlorinated diphenyl oxide	NIOSH 5025	0.5 mg/m ³			90		1000		1.5		GC-ECD	F/CST	225-3-01	102	C/HLD	225-1	116
Chlorinated hydrocarbons (screening)	NIOSH 2549				5		20		4		GC-MS	ST	226-330	52			
Chlorinated terphenyl (60% chlorine)	NIOSH 5014				720		1500		8		GC-ECD	F/CST	225-706	110	C/HLD	225-1	116
Chlorine	NIOSH 6011	0.5	1		90	15	1000	1000	1.5	15	IC	CF/CST	225-9006	68	C/HLD	225-1	116
Chlorine	OSHA ID 101		1 (C)		240	15	1000	1000	4	15	ISE	IMP	225-36-2	70	IT	225-22	70
Chlorine (prefiltered)	OSHA ID 101		1 (C)		240	15	1000	1000	4	15	ISE	IMP CST FLT	225-36-2 225-3-23 225-3708	70 115 108	IT SP	225-22 225-2901	70 117
Chlorine dioxide	OSHA ID 202	0.1			120	7.5	500	500	4	15	IC-CD	IMP	225-36-2	70	IT	225-22	70
1-Chloro-1-nitropropane	NIOSH S211	20			12		200				GC-FID	ST	NA SKC				
5-Chloro-2-methyl-4-isothiazolin-3-one (Kathon 886)	NON 55	0.75 mg/m ³	0.23 mg/m ³		50	7.5	200	500	4	15	HPLC-UV	ST	226-99	50			
1-Chloro-4-(trifluoromethyl)benzene	NIOSH 1026				0.1-10.0		10-200		8		GC-FID	ST	226-01	48			
Chloroacetaldehyde	NIOSH 2015		1			3		200		15	GC-ECD	ST	226-15GWS	48			
Chloroacetaldehyde	OSHA 76		1 (C)			2.5		500		5	GC-ECD	ST	226-15GWS	48			
Chloroacetic acid	NIOSH 2008				48		100		8		IC-CD	ST	226-47-01	49			
p-Chloroaniline	OSHA PV2109				6		100		1		HPLC-UV	ST	226-10	48			
Chlorobenzene	EPA TO-17				1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Chlorobenzene	Internal						14.4 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-104	96
Chlorobenzene	Internal						14.4 ml/min		8-24 hrs		SE, GC	PS	690-105	96			
Chlorobenzene (monochlorobenzene)	ASTM D 5466				6		varies		varies		GC-MS	CAN	228 Series	PK	228 Series		

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skcinc.com for updates

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		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Chlorobenzene (monochlorobenzene) (hydrocarbons, halogenated)	NIOSH 1003			10		10-200		varies		GC-FID	ST	226-01	48			
4-Chlorobenzotrifluoride	NIOSH 1026			0.1-10.0		10-200		varies		GC-FID	ST	226-01	48			
p-Chlorobenzotrifluoride	NIOSH 1026			0.1-10.0		10-200		varies		GC-FID	ST	226-01	48			
Chlorobiphenyl	NIOSH 5503	0.001 mg/m ³ (10 hrs)		48		100(200)		8(4)		GC-ECD	FLT	225-16	110	CST	225-32	116
										ST	226-39	49				
Chlorobromomethane (hydrocarbons, halogenated)	NIOSH 1003	200		60		10-200		8		GC-FID	ST	226-01	48			
Chlorodiphenyl (42% Cl)	OSHA PV2089	1		60		1000		1		GC-ECD	ST	226-30-16	48			
Chlorodiphenyl (42% Cl) (see polychlorinated biphenyls)	NIOSH 5503															
Chlorodiphenyl (54% Cl)	OSHA PV2088	0.5		60		1000		1		GC-ECD	ST	226-30-16	48			
Chlorodiphenyl (54% Cl) (see polychlorinated biphenyls)	NIOSH 5503															
Chloroethane (ethyl chloride)	NIOSH 2519			3		50		1		GC-FID	ST	226-09	48			
2-Chloroethanol (ethylene chlorohydrin)	NIOSH 2513	1		10		20(50)		8(3.3)		GC-FID	ST	226-81A	49			
Chloroform	Internal					13.0 ml/min		8 hrs-7 days		SE, GC	PS	690-105	96			
Chloroform (trichloromethane)	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK	228 Series		
Chloroform (trichloromethane)	OSHA 05	50 (C)		10		200		50 min		GC-FID	ST	226-01	48			
Chloroform (trichloromethane) (hydrocarbons, halogenated)	NIOSH 1003	2		15		10-200		varies		GC-FID	ST	226-01	48			
bis-Chloromethyl ether	OSHA 10			50		500		100 min		GC-ECD	IMP	225-36-2	70	IT	225-22	70
Chloromethyl methyl ether	NON 29			2.4	0.3	10	20	4	15	GC-ECD	ST	NA SKC				
Chloromethyl methyl ether	OSHA 10			50		500		100 min		GC-ECD	IMP	225-36-2	70	IT	225-22	70
4-Chloronitrobenzene (nitrobenzenes)	NIOSH 2005	0.1 ppm		96		200		8		GC-FID	ST	226-10	48			
p-Chlorophenol	NIOSH 2014			24		50		8		HPLC-UV	ST	226-10	48			
Chloropicrin	NON 51	0.1		144		100		24		GC-MSD	ST	226-175	51			
Chloropicrin	OSHA PV2103	0.1		3		200		15 min		GC-ECD	ST	226-93	50			
beta-Chloroprene	NIOSH 1002		1 (15 min)		1.5		100		15	GC-FID	ST	226-01	48			
beta-Chloroprene	OSHA 112	25		6		50		2		GC-ECD	ST	226-111A	50			
Chloroethalonil	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54			
Chlorotoluron	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF	226-92	54			
Chlorpropham (Organonitrogen Pesticides)	NIOSH 5601			240		1000		4		HPLC-UV	ST	226-58	or ST	226-30-16	48	
Chlorpyrifos (Dursban)	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54			
Chlorpyrifos (Dursban)	OSHA 62			480		1000		8		GC-FPD	ST	226-30-16	48			
Chlorpyrifos (Organophosphorus Pesticides)	NIOSH 5600	0.2 mg/m ³		240		1000		4		GC-FPD	ST	226-58	49			
Chromic acid & chromates (as CrO ₃)	OSHA ID 215 (V2)	0.005 mg/m ³		960		2000		8	15	IC-UV	F/CST	225-802 Ω	107	C/HLD	225-1	116
Chromic acid & chromates (chromium hexavalent)	NIOSH 7600	1 µg/m ³ (10 hrs)		240		1000		4		VAS	F/CST	225-803	107	C/HLD	225-1	116
Chromic acid & chromates (chromium hexavalent)	NIOSH 7604	1 µg/m ³ (10 hrs)		960		2000		8		IC-CD	F/CST	225-803	107	C/HLD	225-1	116
Chromium & compounds (as Cr)	NIOSH 7024	0.5 mg/m ³		10 - 1000		1000-3000		varies		AA-F	F/CST	225-3-01	102			
										C/HLD	225-1	116				
Chromium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	0.5 mg/m ³		1-2000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Chromium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	0.5 mg/m ³		5-1000		1000-4000		varies		ICP-AES	F/CST	225-3-01	or	F/CST	225-803	107
										C/HLD	225-1	116				
Chromium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	0.5 mg/m ³		8-500,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Chromium (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	0.5 mg/m ³		5-1000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Chromium (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W	225-2414	172	TMP	225-2415	172
Chromium acetate	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Chromium carbonate	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Chromium metal & insoluble compounds	OSHA ID 121	1 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Chromium metal & insoluble compounds	OSHA ID 125G	1 mg/m ³		480		2000		4		ICP-AES	F/CST F/CST C/HLD	225-3-01 225-803 225-1	or or	F/CST F/CST	225-3100 225-8215	or 107
Chromium phosphate	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Chromium soluble salts (except hexavalent)	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Chromium trioxide (CR(VI))	OSHA ID 215 (V2)	0.005 mg/m ³		960		2000		8		IC-UV	F/CST	225-802	107	C/HLD	225-1	116
Chromium, hexavalent	ASTM D 6832			varies		1000-5000		varies		IC	F/CST F/CST	225-802 225-709	or or	F/CST F/CST	225-1713 225-401	or 109
Chromium, hexavalent	NIOSH 7600	1 µg/m ³ (10 hrs)		240		1000		4		VAS	F/CST	225-802	107	C/HLD	225-1	116
Chromium, hexavalent	NIOSH 7604	1 µg/m ³ (10 hrs)		240		1000		4		IC-CD	F/CST	225-802	107	C/HLD	225-1	116
Chromium, hexavalent	NIOSH 7605	0.001 mg/m ³ (10 hrs)		1-400		1000-4000		varies		IC-PCD-UV	F/CST	225-802	107	C/HLD	225-1	116
Chromium, hexavalent	NIOSH 7703	0.001 mg/m ³ (10 hrs)		10-1200		1000-4000		varies		P VAS	F/CST	225-802	107	C/HLD	225-1	116
Chromium, hexavalent	OSHA ID 103	0.005 mg/m ³ (C)		960	30	2000	2000	8	15	DPP	F/CST	225-802	107	C/HLD	225-1	116
Chromium, hexavalent	OSHA W4001	0.005 mg/m ³ (C)								IC-UV	FLT	225-5-37	or	FLT	225-1822	109
Chromium, hexavalent (CR(VI))	OSHA ID 215 (V2)	0.005 mg/m ³		960		2000		8		IC-UV	F/CST	225-802 Ω	107	C/HLD	225-1	116
Chromium, hexavalent (in settled dust)	NIOSH 9101			bulk	bulk					CLR or VAS or IC						
Chrysene	OSHA 58	0.2 mg/m ³		960		2000		8		GR & HPLC- FD, or GR & HPLC-UV	FLT C/HLD	225-7 225-1	110	CST	225-2LF	115
Chrysene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF	226-131	55	FLT	225-1808	109
Chrysene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515	LFC		480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108	ST	226-30-04	48
Chrysene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506	LFC		480		2000		4		HPLC-UV	F/CST C/HLD	225-1713 225-1	108	ST	226-30-04	48
Chrysotile (see asbestos fibers)	NIOSH 9000			bulk						XRD						
Chrysotile fibers (see asbestos fibers)	NIOSH 7400															
Coal dust (> 5% SiO ₂) (see silica, respirable crystalline)	OSHA ID 142 (v4)															
Coal tar naphtha (naphthas)	NIOSH 1550	100		3		20		2.5		GC-FID	ST	226-01	48			
Coal tar pitch volatiles	OSHA 58	0.2 mg/m ³		960		2000		8		GR & HPLC- FD, or GR & HPLC-UV	FLT C/HLD	225-7 225-1	110	CST	225-2LF	115
Cobalt	OSHA ID 213	0.1 mg/m ³		480		2000		6		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Cobalt & compounds (as Co)	NIOSH 7027	0.05 mg/m ³		960		2000		8		AA-F	F/CST	225-3-01	102	C/HLD	225-1	116
Cobalt (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	0.05 mg/ m ³ (dust, fume)		1-2000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Cobalt (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	0.5 mg/ m ³ (dust, fume)		25-2000		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or 116	F/CST	225-803	107
Cobalt (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	0.5 mg/ m ³ (dust, fume)		3-500,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Cobalt (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	0.05 mg/ m ³ (dust, fume)		25-2000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Cobalt (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W	225-2414	172	TMP	225-2415	172

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Sampling Guide

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number			
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time						
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)					
Cobalt acetate	OSHA ID 125G			480		2000		4		ICP-AES	F/CST 225-3-01 F/CST 225-803 C/HLD 225-1	or or 116	F/CST 225-3100 F/CST 225-8215	or 107
Cobalt carbonyl	OSHA ID 121			960		2000		8		AA or AES	F/CST 225-3-01	102	C/HLD 225-1	116
Cobalt hydrocarbonyl	OSHA ID 121	0.1 mg/m ³ (as Co)		960		2000		8		AA or AES	F/CST 225-3-01	102	C/HLD 225-1	116
Cobalt metal, dust & fume	OSHA ID 125G	0.1 mg/m ³		480		2000		4		ICP-AES	F/CST 225-3-01 F/CST 225-803 C/HLD 225-1	or or 116	F/CST 225-3100 F/CST 225-8215	or 107
Cobalt metal, dust & fume (as Co)	OSHA ID 121	0.1 mg/m ³		960		2000		8		AA or AES	F/CST 225-3-01	102	C/HLD 225-1	116
Coke oven emissions	OSHA 58	0.15 mg/m ³		960		2000		8		GR & HPLC-FD, or GR & HPLC-UV	FLT 225-7 C/HLD 225-1	110	CST 225-2LF 116	115
Command (dimethazone)	OSHA PV2066			60		1000		1		GC-ECD	ST 226-30-16	48		
Copper (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	1 mg/m ³ (dust) 0.1 mg/m ³ (fume)		5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 C/HLD 225-1	or 116	F/CST 225-803	107
Copper (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	1 mg/m ³ (dust) 0.1 mg/m ³ (fume)		15-500,000		1000-4000		varies		ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116
Copper (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	1 mg/m ³ (dust) 0.1 mg/m ³ (fume)		5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116
Copper (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W 225-2414	172	TMP 225-2415	172
Copper dust	NIOSH 7029	1 mg/m ³		480		1000		8		AA-F	F/CST 225-3-01	102	C/HLD 225-1	116
Copper dusts & mists	OSHA ID 125G	1 mg/m ³		480		2000		4		ICP-AES	F/CST 225-3-01 F/CST 225-803 C/HLD 225-1	or or 116	F/CST 225-3100 F/CST 225-8215	or 107
Copper dusts & mists (as Cu)	OSHA ID 121	1 mg/m ³		960		2000		8		AA or AES	F/CST 225-3-01	102	C/HLD 225-1	116
Copper fume	NIOSH 7029	0.1 mg/m ³		480		1000		8		AA-F	F/CST 225-3-01	102	C/HLD 225-1	116
Copper fume	OSHA ID 121	0.1 mg/m ³		960		2000		8		AA or AES	F/CST 225-3-01	102	C/HLD 225-1	116
Copper fume	OSHA ID 125G	0.1 mg/m ³		480		2000		4		ICP-AES	F/CST 225-3-01 F/CST 225-803 C/HLD 225-1	or or 116	F/CST 225-3100 F/CST 225-8215	or 107
Copper fume (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206	0.1 mg/m ³		480		2000		4		ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116
Co-Ral (coumaphos)	OSHA PV2134			480		1000		8		GC-FPD	ST 226-30-16	48		
Corn starch (Particulates Not Otherwise Regulated, respirable)														
Corundum (Al ₂ O ₃) (see alpha-alumina [total dust])														
Corundum (emery) (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT 225-5-37-P CYC 225-01-02	107 127	C/HLD 225-1 CST 225-3LF	116 115
Corundum (emery) (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT 225-5-37-P CST 225-2LF	107 115	C/HLD 225-1	116
di-tert-butyl-p-Cresol	OSHA PV2108			100		1000		100 min		GC-FID	ST 226-57	49		
Cresol (all isomers)	NIOSH 2546	10 mg/m ³		24		100		4		GC-FID	ST 226-95	50		
Cresol (all isomers)	OSHA 32	5		24		100		4		HPLC-UV	ST 226-95	50		
Cresols	EPA TO-8			< 80 L		100-1000 ml/min				HPLC-UV	IMP 225-36-1	70	IT 225-22	70
Cristobalite (see silica, respirable crystalline)	OSHA ID 142 (v4)													
Cristobalite (silica, crystalline [respirable] by XRD)	NIOSH 7500	0.05 mg/m ³		400-1000		2500		varies		XRD	F/CST 225-803 C/HLD 225-1	107 116	CYC 225-01-02	127
Cristobalite (silica, crystalline by IR)	NIOSH 7602	0.05 mg/m ³		1000		2000-4000		varies		IR	F/CST 225-803 CYC 225-01-02	107 127	C/HLD 225-1	116
Crocidolite fibers (see asbestos fibers)	NIOSH 7400													

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Crotonaldehyde	ASTM D 5197			varies		500-1200		5 min-24 hrs		HPLC-UV	ST	226-120	or	ST	226-119	50
Crotonaldehyde	NIOSH 3516	2		48		200		4		DPP	IMP	225-36-2	70	IT	225-22	70
Crotonaldehyde	OSHA 81	2		6		100		1		HPLC-UV	CF/CST	225-9019	68	C/HLD	225-1	116
Crotonaldehyde (Aldehydes, Screening)	NIOSH 2539	2		5		20		4		GC-FID & GC-MS	ST	226-118	50			
Cruformate	OSHA PV2015			60		1000		1		GC-FPD	ST	226-30-16	48			
Cryolite (fluorides)	NIOSH 7902	2.5 mg/m ³		480		1000		8		ISE	CF/CST	225-9001	68	C/HLD	225-1	116
Cumene (isopropyl benzene)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Cumene (isopropyl benzene)	Internal					12.8 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-104	96
Cumene (isopropyl benzene)	Internal					12.8 ml/min		8-24 hrs		SE, GC	PS	690-105	96			
Cumene (isopropyl benzene)	OSHA PV2137	50		24		200		2		GC-FID	ST	226-01	48			
Cumene (isopropyl benzene) (Hydrocarbons, Aromatic)	NIOSH 1501	50 (skin)		1-30		10-200		8(3.3)		GC-FID	ST	226-01	48			
Cupric carbonate as Cu (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300			960		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Cyanazine	NIOSH 5602			480		1000		8		GC-ECD	ST	226-58	49			
Cyanide (as Cn)	OSHA ID 120	5 mg/m ³		120		1000		2		ISE	F/CST IT	225-3-01 225-22	102 70	IMP	225-36-2	70
Cyanides, aerosol & gas	NIOSH 7904	5 mg/m ³ (10 min)		120		500		4		ISE	FLT IMP C/HLD	225-3705 Δ 225-36-2 225-1	108 70 116	CST IT	225-2LF 225-22	115 70
Cyanogen	OSHA PV2104			12		200		1		GC-NPD	ST	226-117	50			
Cyanuric acid	NIOSH 5030			480		1000		8		HPLC-UV	F/CST	225-802	107	C/HLD	225-1	116
Cyclohexane	Internal					15.6 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	96
Cyclohexane	Internal					15.6 ml/min		8-24 hrs		SE, GC	PS	690-105	96			
Cyclohexane (hydrocarbons, BP 36 to 216 C)	NIOSH 1500	300		2.5-5		10-200		varies		GC-FID	ST	226-01	48			
Cyclohexanol (alcohols combined)	NIOSH 1405	50 (skin)		1-10		10-200		varies		GC-FID	ST	226-01	48			
Cyclohexanol (alcohols III)	NIOSH 1402	50		10		20(50)		8(3.3)		GC-FID	ST	226-01	48			
Cyclohexanone	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Cyclohexanone	Internal					15.6 ml/min		8-24 hrs		TD, GC	PS PS	690-101 690-104	or	PS	690-103	or
Cyclohexanone	Internal					15.6 ml/min		8-24 hrs		SE, GC	PS	690-105	96			
Cyclohexanone	OSHA 01	50		10		20(50)		8(3.3)		GC-FID	ST	226-110	50			
Cyclohexanone (Ketones I)	NIOSH 1300	25		10		20(50)		8(3.3)		GC-FID	ST	226-01	48			
Cyclohexanone (Ketones I)	NIOSH 2555			1-10		10-200		varies		GC-FID	ST	NA SKC				
Cyclohexene (hydrocarbons, BP 36 to 216 C)	NIOSH 1500	300		5-7		10-200		varies		GC-FID	ST	226-01	48			
Cyclohexylamine	OSHA PV2016			20		200		100 min		GC-FID	ST	226-98	50			
Cyclonite (RDX)	OSHA PV2135	1.5 mg/m ³		120		1000				HPLC-UV	F/CST	225-709	110	C/HLD	225-1	116
Cyhexatin	NIOSH 5504	0.1 mg/m ³		500		1500				AA-GF	F/CST C/HLD	225-709 225-1	110 116	ST	226-30	48
Cypermethrin	OSHA PV2063			60		1000		60 min		GC-ECD	ST	226-30-16	48			
2,4-D (2,4-dichlorophenoxyacetic acid)	NIOSH 5001	10 mg/m ³		180		1000		3		HPLC-UV	F/CST	225-706	110	C/HLD	225-1	116
2,4-D (2-butoxyethyl ester)	NIOSH 5602			480		1000		8		GC-ECD	ST	226-58	49			
2,4-D (2-butoxyethyl ester)	NIOSH 5602			480		1000		8		GC-ECD	ST	226-58	49			
2,4-D acid	NIOSH 5602	10		480		1000		8		GC-ECD	ST	226-58	49			
2,4-D, BE	NIOSH 5602			480		1000		8		GC-ECD	ST	226-58	49			
2,4-D, EH	NIOSH 5602			480		1000		8		GC-ECD	ST	226-58	49			
2,4-D, ME (2,4-dichlorophenoxyacetic acid)	NIOSH 5602			480		1000		8		GC-ECD	ST	226-58	49			
Dacthal	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54			
DBP (see dibutyl phthalate)	OSHA 104															

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skcinc.com for updates

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
p,p-DDE	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54			
p,p-DDT	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54			
DDVP (dichlorvos)	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54			
Decabromodiphenyl oxide	NIOSH 2559			48-960		2000		varies		HPLC-UV	FLT CST	225-1822 225-2LF	109 115	SP	225-27	117
n-Decane	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
n-Decane	Internal					12.2 ml/min		8-24 hrs		TD, GC	PS	690-101		or PS	690-104	96
n-Decane	Internal					12.2 ml/min		8-24 hrs		SE, GC	PS	690-105				96
n-Decane (hydrocarbons, BP 36 to 216 C)	NIOSH 1500			2		10-50		varies		GC-FID	ST	226-01				48
DEHP (see di-2-ethylhexyl phthalate)	OSHA 104															
Demeton	NIOSH 5514	0.1 mg/m ³		480		1000		8		GC-FPD	FLT CST C/HLD	225-5 225-2LF 225-1	102 115 116	SCN ST	225-26 226-30-05	117 48
DEP (see diethyl phthalate)	OSHA 104															
Desflurane	OSHA 106			3		50		1		GC-FID	ST	226-81A				49
Di-(2-ethylhexyl) phthalate (DEHP)	NIOSH 5020			180		1000		3		GC-FID	F/CST	225-3-01	102	C/HLD	225-1	116
Di(ethyleneglycol) ethyl ether acrylate	OSHA PV2132	1 mg/m ³		48		200		4		GC-FID	ST	226-110				50
Diacetone alcohol (alcohols combined)	NIOSH 1405	50		1-10		10-200		varies		GC-FID	ST	226-01				48
Diacetone alcohol (alcohols III)	NIOSH 1402	50		10		20(50)		8(3.3)		GC-FID	ST	226-01				48
Diacetyl	OSHA 1012	0.005	0.025	9	3	50	200	3	15	GC-FID	ST	226-183				51
Diallyl disulfide	OSHA PV2086			10		20(50)		8(3.3)		GC-FPD	ST	226-110				50
1,2-Diaminoethane	NIOSH 2540			10		100		1.7		HPLC-UV	ST	226-30-18				48
o-Dianisidine	OSHA 71			100	15	1000	1000	100 min		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
o-Dianisidine dyes (dyes, benzidine)	NIOSH 5013	LFC		480		1000		8		HPLC-UV	FLT C/HLD	225-17P 225-1	108 116	CST	225-3LF	115
Diazinon	ASTM D 4861			240-7200		1000-5000		4-24		GC-NPD	PUF	226-92				54
Diazinon	OSHA 62			480		1000		8		GC-FPD	ST	226-30-16				48
Diazinon (Organophosphorus Pesticides)	NIOSH 5600	0.1 mg/m ³		240		1000		4		GC-FPD	ST	226-58				49
Diazomethane	NIOSH 2515	0.2		10		200		50 min		GC-FID	ST	226-23				48
Dibenz(a,h)anthracene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF	226-131	55	FLT	225-1808	109
Dibenz(a,h)anthracene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515			480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Dibenz(a,h)anthracene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506			480		2000		4		HPLC-FD	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Dibromodifluoromethane (difluorodibromomethane)	NIOSH 1012	100		10		20(50)		8(3.3)		GC-FID	ST	226-01				48
1,2-Dibromoethane (ethylene dibromide)	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series	
1,2-Dibromoethane (ethylene dibromide)	NIOSH 1008	0.045	0.13	24	3	50	200	8	15	GC-ECD	ST	226-01				48
2-Dibutyl aminoethanol (aminoethanol compounds I)	NIOSH 2007	2		10		20(50)		8(3.3)		GC-FID	ST	226-10-04				48
Dibutyl phosphate	NIOSH 5017	1	2	240		2000		2		GC-FPD	FLT C/HLD	225-17-01 225-1	108 116	CST	225-2LF	115
Dibutyl phthalate	NIOSH 5020	5 mg/m ³		100		1000		100 min		GC-FID	F/CST	225-3-01	102	C/HLD	225-1	116
Dibutyl phthalate (DBP)	OSHA 104	5 mg/m ³		240		1000		4		GC-FID	ST	226-56				49
Dibutyltin bis (isooctyl mercaptoacetate) (organotin compounds as Sn)	NIOSH 5504	0.1 mg/m ³		480		1000		8		HPLC & AA-GF	ST C/HLD	226-30 225-1	48 116	F/CST	225-709	110
Dibutyltin dilaurate (as Sn)	OSHA ID 218SG			500		1000		500 min		AA	F/CST	225-3-01	102	C/HLD	225-1	116
Dibutyltin maleate (as Sn)	OSHA ID 224SG			200		1000		200 min		AA-GF	F/CST	225-3-01	102	C/HLD	225-1	116
2,2-Dichloro-1,1,1-trifluoroethane	NON 50			9		50		3		GC-FID	ST	226-09				48
1,1-Dichloro-1-fluoroethane	OSHA 113			1		50		20 min		GC-FID	ST	NA SKC				

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number				
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time							
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)						
1,1-Dichloro-1-nitroethane	NIOSH 1601	2		1.5-15		10-1000				GC-FID	ST	226-81A	49		
1,2-Dichlorobenzene	Internal					12.5 ml/min		8-24 hrs		TD, GC	PS	690-101 690-104	or 96	PS	690-103 96
1,2-Dichlorobenzene	Internal					12.5 ml/min		8-24 hrs		SE, GC	PS	690-105	96		
m-Dichlorobenzene	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series
m-Dichlorobenzene	NIOSH 1003			3		10-200				GC-FID	ST	226-01	48		
o-Dichlorobenzene	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series
p-Dichlorobenzene	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series
o-Dichlorobenzene (hydrocarbons, halogenated)	NIOSH 1003		50	3		10-200		varies		GC-FID	ST	226-01	48		
p-Dichlorobenzene (hydrocarbons, halogenated)	NIOSH 1003	1.7 (LOQ)		3		10-200		varies		GC-FID	ST	226-01	48		
3,3'-Dichlorobenzidine	OSHA 65			100		1000		100 min		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1 116
Dichlorodifluoromethane	NIOSH 1018	1000		3		20		2.5		GC-FID	ST	226-01	48	ST	226-09 48
1,2-Dichloroethane	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series 224-26-CPC	52 37	TH	224-26-02 37
1,2-Dichloroethane	Internal					14.2 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103 96
1,2-Dichloroethane	Internal					14.2 ml/min		1-7 days		SE, GC	PS	690-105	96		
1,1-Dichloroethane (ethylene chloride)	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series
1,1-Dichloroethane (Hydrocarbons, Halogenated)	NIOSH 1003	100		10		10-200		varies		GC-FID	ST	226-01	48		
Dichloroethyl ether	NIOSH 1004	5	10	10		20(50)		8(3.3)		GC-FID	ST	226-01	48		
cis-1,2-Dichloroethylene	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series
1,2-Dichloroethylene (hydrocarbons, halogenated)	NIOSH 1003	200		3		10-200		varies		GC-FID	ST	226-01	48		
Dichlorofluoromethane	NIOSH 2516	10		3		20		2.5		GC-FID	ST	226-25	48		
Dichloromethane (methylene chloride)	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series
Dichloromethane (methylene chloride)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series 224-26-CPC	52 37	TH	224-26-02 37
Dichloromethane (methylene chloride)	Internal					14.7 ml/min		8 hrs to 3 days		SE, GC	PS	690-105	96		
Dichloromethane (methylene chloride)	Internal					0.54 ml/min		1-7 days		SE, GC	PS	690-105	with	RR	690-300 96
Dichloromethane (see methylene chloride)															
Dichloromonofluoromethane (dichlorofluoromethane)	NIOSH 2516	10		3		20		2		GC-FID	ST	226-09	48		
2,4-Dichlorophenoxyacetic acid (2,4-D)	NIOSH 5001	10 mg/m ³		180		1000		3		HPLC-UV	F/CST	225-709	110	C/HLD	225-1 116
1,2-Dichloropropane (propylene dichloride)	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series
1,2-Dichloropropane (propylene dichloride)	Internal					14.3 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103 96
1,2-Dichloropropane (propylene dichloride)	Internal					14.3 ml/min		8-24 hrs		SE, GC	PS	690-105	96		
1,2-Dichloropropane (propylene dichloride)	NIOSH 1013	LFC		3		20		2.5		GC-ECN	ST	226-81A	49		
cis-1,3-Dichloropropene	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series
cis-1,3-Dichloropropene	Internal					13.6 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103 96
cis-1,3-Dichloropropene	Internal					13.6 ml/min		8-24 hrs		SE, GC	PS	690-105	96		
trans-1,3-Dichloropropene	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series
trans-1,3-Dichloropropene	Internal					14.4 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103 96
trans-1,3-Dichloropropene	Internal					14.4 ml/min		8-24 hrs		SE, GC	PS	690-105	96		
2,2-Dichloropropionic acid	OSHA PV2017			10		200		50 min		HPLC-UV	ST	226-10	48		
1,2-Dichlorotetrafluoroethane (dichlorodifluoromethane)	NIOSH 1018	1000		3		20		2.5		GC-FID	ST	226-01	48	ST	226-09 48
Dichlorotrifluoroethane	NON 50			9		50		3		GC-FID	ST	226-09	48		
Dichlorvos (DDVP)	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54		
Dichlorvos (DDVP)	OSHA 62	1 mg/m ³		480		1000		8		GC-FPD	ST	226-30-16	48		
Dicloran	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54		
Dicofol	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54		

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Sampling Guide

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Dicrotophos	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF	226-92	54			
Dicrotophos (Bidrin)	OSHA PV2099			480		1000		8		GC-FPD	ST	226-30-16	48			
Dicrotophos (Organophosphorus Pesticides)	NIOSH 5600	0.25 mg/m ³		240		1000		4		GC-FPD	ST	226-58	49			
Dicyclopentadiene	OSHA PV2098			10		100		100 min		GC-FID	ST	226-01	48			
Dieldrin	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54			
Diesel emissions (see elemental carbon)	NIOSH 5040									TOA-FID						
Diesel exhaust particles (see elemental carbon)	NIOSH 5040									TOA-FID						
Diesel particulate matter	ASTM D 6877			varies		1000-4000		varies		EGA-TOS	DPM	225-317	or	F/CST	225-401	109
Diesel particulate matter	MSHA 30CFR57	350 µg/m ³ (total carbon)		varies		2000		varies		TOA-FID C/HLD	DPM 225-1	225-317 120	109	CYC	225-105	126
Diesel particulate matter	MSHA 30CFR57	350 µg/m ³ (total carbon)		varies		varies		varies		TOA-FID	F/CST C/HLD	225-401 225-1	109	CYC	225-100	126
Diethanolamine	OSHA PV2018			10		100		100 min		HPLC-UV	ST	226-30-18	48			
Diethanolamine (DEA) (Aminoethanol Compounds I)	NIOSH 3509	3		240		1000		4		IC	IMP	225-36-1	70	IT	225-22	70
Diethyl ether (ethyl ether)	NIOSH 1610			0.25-3		10-200		varies		GC-FID	ST	226-01	48			
Diethyl ketone (3-pentanone)	OSHA PV2136			10		100		100		GC-FID	ST	NA SKC				
Diethyl phthalate (DEP)	OSHA 104			240		1000		4		GC-FID	ST	226-56	49			
Diethylamine	OSHA 41	25		10	3	200	200	50 min	15	HPLC	ST	226-96	50			
Diethylamine (amines, aliphatic)	NIOSH 2010	10	25	24	3	50	200	8	15	GC-FID	ST	226-10	48			
2-Diethylaminoethanol (aminoethanol compounds I)	NIOSH 2007	10		10		20(50)		8(3.3)		GC-FID	ST	226-10-04	48			
Diethylene dioxide (see dioxane)																
Diethylene ether (see dioxane)																
Diethylene glycol (glycols)	NIOSH 5523			60		1000		1		GC-FID	ST	226-57	49			
Diethylenetriamine	OSHA 60			10		100		100 min		HPLC-UV	ST	226-30-18	48			
Difluorodibromomethane	NIOSH 1012	100		6		50		2		GC-FID	ST	226-01	48			
Diglycidyl ether of bisphenol A	OSHA 1018			240		1000		240 (min)		HPLC-UV/ PDA	F/CST	225-709	110	C/HLD	225-1	116
Dihexyl phthalate	OSHA PV2076			240		1000		4		GC-FID	ST	226-56	49			
Dihydrocapsaicin	NIOSH 5041			480	15	1000	1000	8	15	HPLC-FD	FLT	225-16	110	CST	225-32	116
Diisobutyl ketone	Internal					10.3 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	96
Diisobutyl ketone	Internal					10.3 ml/min		8-24 hrs		SE, GC	PS	690-105	96			
Diisobutyl ketone (Ketones I)	NIOSH 1300	25		10		20(50)		8(3.3)		GC-FID	ST	226-01	48			
Diisobutyl ketone (Ketones I)	NIOSH 2555			1-10		10-200		varies		GC-FID	ST	NA SKC				
Diisocyanates	OSHA 42			240	15	1000	1000	4	15	HPLC-UV or HPLC-FD	CF/CST C/HLD	225-9002 225-1	or	CF/ CST	225-9013	68
Dimethazone	OSHA PV2066			60		1000		1		GC-ECD	ST	226-30-16	48			
Dimethoate	OSHA PV2113			480		1000		8		GC-FPD	ST	226-30-16	48			
Dimethoxymethane (methylal)	NIOSH 1611	1000		2		20		1.5		GC-FID	ST	226-01	48			
Dimethyl adipate	OSHA PV2019			20		200		100 min		GC-FID	ST	226-01	48			
Dimethyl arsenic acid (arsenic, organo-)	NIOSH 5022			960		2000		8		IC-AA	FLT C/HLD	225-17-01 225-1	108	CST	225-2LF	115
Dimethyl disulfide	NON 42			12		1000		12 min		GC-FPD	SB SB	253-10 231-10	or	SB	263-10	or
Dimethyl glutarate	OSHA PV2020			20		200		100 min		GC-FID	ST	226-01	48			
Dimethyl phthalate (DMP)	OSHA 104	5 mg/m ³		240		1000		4		GC-FID	ST	226-56	49			
Dimethyl succinate	OSHA PV2021			20		200		100 min		GC-FID	ST	226-01	48			
Dimethyl sulfate	NIOSH 2524	0.1 (8 hrs)		12		50		4		GC-ECN	ST	226-114	50			
Dimethyl sulfate	OSHA PV2147	1		10		100		100 min		GC-FPD	ST	226-115	50			

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Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number			
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time						
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)					
Dimethyl sulfide	NON 42			12		1000		12 min		GC-FPD	SB 263-10	or SB 231-10	60	
2,3-Dimethyl-2,3-dinitrobutane	NON 44	0.15 mg/m ³	OEL	10		200		50 min		GC-ECD	ST 226-35-03		48	
Dimethylacetamide	NIOSH 2004	10		80		1000		8		GC-FID	ST 226-10		48	
Dimethylamine	NIOSH 2010	10		24		50		8		GC-FID	ST 226-10		48	
Dimethylamine	OSHA 34	10		10		20		8		HPLC	ST 226-96		50	
2-Dimethylamino ethanol	NIOSH 2561			10-24		20-100		varies		GC-FID	ST 226-94		50	
1-Dimethylamino-2-propanol	NIOSH 2561			10-24		20-100		varies		GC-FID	ST 226-94		50	
2,4-Dimethylaminobenzene (Amines, Aromatic)	NIOSH 2002	2		24		50		8		GC-FID or GC-NSD	ST 226-10		48	
N,N-Dimethylaniline	OSHA PV2064	5		30		200		2.5		GC-FID	ST 226-98		50	
N,N-Dimethylaniline (Amines, Aromatic)	NIOSH 2002	5	10	24	3	50	200	8	15	GC-FID or GC-NSD	ST 226-10		48	
2,5-Dimethylbenzaldehyde	ASTM D 5197			varies		500-1200		5 min-24 hrs		HPLC-UV	ST 226-120 °	or ST 226-119	50	
N,N-Dimethylethanolamine	NIOSH 2561			10-24		20-100		varies		GC-FID	ST 226-94		50	
N,N-Dimethylformamide	NIOSH 2004	10		24		50		8		GC-FID	ST 226-10		48	
N,N-Dimethylformamide	OSHA 66	10		9.6	3	20	200	8	15	GC-NPD	ST 226-01		48	
1,1-Dimethylhydrazine	NIOSH 3515	0.06 (120 min)		60		1000		1		VAS	IMP 225-36-2	70 IT 225-22	70	
N,N-Dimethyl-p-toluidine (Amines, Aromatic)	NIOSH 2002			96		200		8		GC-FID or GC-NSD	ST 226-10		48	
Dimethyltin dichloride	NIOSH 5526	0.1 mg/m ³		60	60	250	1000	4	60	GC-FPD	ST 226-30-16		48	
Di-n-hexyl phthalate	OSHA PV2076			240		1000		4		GC-FID	ST 226-56		49	
Dinitrotoluene (DNT)	OSHA 44	1.5 mg/m ³		60		1000		1		GC-TEA	ST 226-56		49	
Di-n-octyl phthalate (DNOP)	OSHA 104			240		1000		4		GC-FID	ST 226-56		49	
n-Dioctyl phthalate (DNOP)	OSHA 104			240		1000		4		GC-FID	ST 226-56		49	
Dioxane (diethylene dioxide)	NIOSH 1602	1 (30 min)		10		20(50)		8(3.3)		GC-FID	ST 226-01		48	
Dioxin (including, PHDDs, PCDDs, PBDDs)	EPA TO-9A					200-280 L/min		24 hrs		HRGC-HRMS	PUF 226-131	55 FLT 225-1808	109	
Diphenyl	NIOSH 2530	0.2		30		100		5		GC-FID	ST 226-35-01		48	
Diphenyl ether	OSHA PV2022	0.2		20		200		100 min		GC-FID	ST 226-95		50	
p,p-Diphenyl methane diisocyanate (MDI) (see methylene bisphenyl isocyanate)	OSHA 47													
Diphenylamine	OSHA 78			100		1000		100 min		HPLC-UV	CF/CST 225-9004	68 C/HLD 225-1	116	
Diphenylmethane-4,4'-diisocyanate (4,4-methylene bisphenyl isocyanate) (isocyanates)	NIOSH 5521	50 µg/m ³	200 µg/m ³ (10 min) C	480	10	1000	1000	8	10	HPLC-ELCHM & HPLC-UV	IMP 225-36-1	70 IT 225-22	70	
Dipropyl disulfide	OSHA PV2086			10		20(50)		8(3.3)		GC-FPD	ST 226-110		50	
Dipropylene glycol methyl ether	OSHA 101	100		10		100		100 min		GC-FID	ST 226-01		48	
Dipropylene glycol methyl ether (glycol ethers)	NIOSH 2554			3-25		100-200		varies		GC-FID	ST 226-81A		49	
Dipropylene glycol monomethyl ether (glycol ethers)	NIOSH 2554			3-25		100-200		varies		GC-FID	ST 226-81A		49	
Direct black 38 (dyes, benzidine)	NIOSH 5013	LFC		480		1000		8		HPLC	FLT 225-17P C/HLD 225-1	108 CST 225-3LF 116	115	
Direct blue 6 (dyes, benzidine)	NIOSH 5013	LFC		480		1000		8		HPLC	FLT 225-17P C/HLD 225-1	108 CST 225-3LF 116	115	
Direct blue 8 (dyes, benzidine)	NIOSH 5013	LFC		480		1000		8		HPLC	FLT 225-17P C/HLD 225-1	108 CST 225-3LF 116	115	
Direct brown 95 (dyes, benzidine)	NIOSH 5013	LFC		480		1000		8		HPLC	FLT 225-17P C/HLD 225-1	108 CST 225-3LF 116	115	
Direct red 2 (dyes, benzidine)	NIOSH 5013	LFC		480		1000		8		HPLC	FLT 225-17P C/HLD 225-1	108 CST 225-3LF 116	115	
Direct red 28 (dyes, benzidine)	NIOSH 5013	LFC		480		1000		8		HPLC	FLT 225-17P C/HLD 225-1	108 CST 225-3LF 116	115	

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Sampling Guide

skcinc.com for updates

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Di-sec-octyl phthalate (see di-[2-ethylhexyl] phthalate)																
Disulfoton	OSHA PV2105			480		1000		8		GC-FPD	ST	226-30-16	48			
Disulfoton (Organophosphorus Pesticides)	NIOSH 5600	0.1 mg/m ³		240		1000		4		GC-FPD	ST	226-58	49			
Diuron	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF	226-92	54			
Diuron (Organonitrogen Pesticides)	NIOSH 5601	10 mg/m ³		240		1000		4		HPLC-UV	ST	226-58	or ST	226-30-16	48	
Divinyl benzene	OSHA 89			12		50		4		GC-FID	ST	226-73	49			
DMP (see dimethyl phthalate)	OSHA 104															
DNOP (see di-n-octyl phthalate)	OSHA 104															
DNT (dinitrotoluene)	OSHA 44	1.5 mg/m ³		60		1000		1		GC-TEA	ST	226-56	49			
n-Dodecane	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series	52	TH	224-26-02	37
Dursban (chlorpyrifos)(organophosphorus pesticides)	NIOSH 5600	0.2 mg/m ³ 0.6 mg/m ³		240		1000		4		GC-FPD	ST	226-58	49			
Dust (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107	C/HLD	225-1	116
Dust, inorganic				15-150		15,000		1-10 min		varies	STC	225-9820	114			
Dust, respirable	OSHA PV2121	5.0 mg/m ³		varies		varies		varies		GR	FLT CYC	225-803 225-105	107	C/HLD	225-1	116
Dust, respirable (particulates)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107	C/HLD	225-1	116
Dust, respirable (in workplace atmospheres)	ASTM D 4532			varies		2500		varies		GR	FLT CYC	225-5-37-P 225-01-02	107	C/HLD	225-1	116
Dust, total	OSHA PV2121	15 mg/m ³		720		1500		8		GR	FLT	225-802	107	C/HLD	225-1	116
Dust, total nuisance (particulates)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107	C/HLD	225-1	116
Dust, total, particulates not otherwise regulated	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107	C/HLD	225-1	116
Dyes, benzidine, o-tolidine, o-dianisidine	NIOSH 5013	LFC		480		1000		8		HPLC-UV	FLT C/HLD	225-17P 225-1	108	CST	225-3LF	115
Elemental carbon (diesel exhaust)	MSHA			varies		varies		varies		EGA-TOS	DPM	225-317	109	CYC	225-105	126
Elemental carbon (diesel exhaust)	NIOSH 5040			varies		varies		varies		TOA-FID	F/CST C/HLD	225-401 225-1	109	CYC	225-100	126
Elements by Cellulosic Internal Capsule Sampler (see specific element)	NIOSH 7306	Varies		Varies		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Elements by ICP Aqua Regia ashing (see specific element)	NIOSH 7301	varies		varies		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or	F/CST	225-803	107
Elements by ICP HNO ₃ digestion (see specific element)	NIOSH 7303	varies		varies		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Elements by ICP HNO ₃ /HClO ₄ ashing (see specific element)	NIOSH 7300	varies		varies		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Elements on wipes (see specific element)	NIOSH 9102			wipe						ICP-AES	W	225-2414	172	TMP	225-2415	172
Emery (corundum) (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107	C/HLD	225-1	116
Emery (corundum) (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107	C/HLD	225-1	116
Endosulfan (thiodan)	OSHA PV2023			60		1000		1		GC-ECD	ST	226-30-16	48			
Endotoxins (bacteria in air)	NON 48			62.5-375		12,500 +		5-30		varies	BS	225-9595	138	VT	225-9598A	138
Endrin	NIOSH 5519	0.1 mg/m ³		240		1000		4		GC-ECD	CST SCN C/HLD	225-2LF 225-26 225-1	115	FLT ST	225-5 NA SKC	102
Enflurane (ethrane)	OSHA 103			12		50		4		GC-FID	ST	226-81A	49			
Enflurane (ethrane)	OSHA 29			10		20		8		GC-FID	ST	226-01	48			
Environmental tobacco smoke (nicotine & 3-ethenylpyridine)	NON 49			90-720		1500		1-8		GC-NSD	ST	226-170	51			

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Environmental tobacco smoke (respirable particles)	ASTM D 5955			varies		varies		varies		GR & HPLC-UV & HPLC-FD	FLT CYC	225-3705 225-01-02	108 127	C/HLD CST	225-1 225-3LF	116 115
Environmental tobacco smoke (solanesol, respirable particles)	ASTM D 6271			150-3600		2500		1-24		HPLC-UV	FLT CYC	225-3705 225-01-02	108 127	CST C/HLD	225-3LF 225-1	115 116
Epichlorohydrin	NIOSH 1010	LFC		10	3	20(50)	200	8(3.3)	15	GC-FID	ST	226-01		48		
EPN	NIOSH 5012	0.5 mg/m ³		480		1000		8		GC-FPD	F/CST	225-709	110	C/HLD	225-1	116
1,2-Epoxypropane (see propylene oxide)																
tris(2,3-epoxypropyl)isocyanurate	OSHA 1024			180		1		3		GC-FID	FLT SP	225-7 225-27	110 117	CST C/HLD	225-2LF 225-1	115 116
2,4,D-Esters	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92		54		
Esters I (see specific compounds)	NIOSH 1450	varies		1-10		varies		varies		GC-FID	ST	226-01		48		
Estradiol	OSHA PV2001			240		1000		4		HPLC-UV	F/CST	225-706	110	C/HLD	225-1	116
Estril	OSHA PV2001			60		1000		1		HPLC-UV	F/CST	225-706	110	C/HLD	225-1	116
Estrone	OSHA PV2001			60		1000		1		HPLC-UV	F/CST	225-706	110	C/HLD	225-1	116
1,2-Ethanediol (ethylene glycol) (glycols)	NIOSH 5523			24		100		4		GC-FID	ST	226-57		49		
1,2-Ethanediol dinitrate	OSHA 43	0.2 (C)		15		1000		15		HPLC-TEA	ST	226-35-03		48		
Ethanol (ethyl alcohol)	OSHA 5001	1000		12		50		4			ST	226-82		50		
Ethanol (ethyl alcohol)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Ethanol (ethyl alcohol)	Internal					20.3 ml/min		8-24 hrs		SE, GC	PS	690-105		96		
Ethanolamine	OSHA PV2111	3		10	1.5	100	100	100 min	15	HPLC-UV	ST	226-30-18		48		
3-Ethenylpyridine	NON 49			90-720		1500		1-8		GC-NSD	ST	226-170		51		
3-Ethenylpyridine & nicotine	ASTM D 5075			90-2160		1500		1-24		GC-NPD	ST	226-93		50		
Ethion (Organophosphorus Pesticides)	NIOSH 5600	0.4 mg/m ³		240		1000		4		GC-FPD	ST	226-58		49		
Ethoprop (Organophosphorus Pesticides)	NIOSH 5600			240		1000		4		GC-FPD	ST	226-58		49		
2-Ethoxyethanol	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
2-Ethoxyethanol (alcohols IV)	NIOSH 1403	0.5 (skin)		1-6		10-50		varies		GC-FID	ST	226-01		48		
2-Ethoxyethanol (CELLOSOLVE solvent) (alcohols IV)	NIOSH 1403	0.5 (skin)		1-6		10-50		varies		GC-FID	ST	226-01		48		
2-Ethoxyethyl acetate	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
2-Ethoxyethyl acetate (Esters I)	NIOSH 1450	0.5 (skin)		1-10		10-200		varies		GC-FID	ST	226-01		48		
Ethrane (enflurane)	OSHA 29			10		100		1.6		GC-FID	ST	226-01		48		
Ethyl 2-cyanoacrylate	OSHA 55			12		100		2		HPLC-UV	ST	226-98		50		
Ethyl acetate	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Ethyl acetate	Internal					13.1 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	96
Ethyl acetate	Internal					13.1 ml/min		8-24 hrs		SE, GC	PS	690-105		96		
Ethyl acetate	NIOSH 1457	400		10		20		8		GC-FID	ST	226-01		48		
Ethyl acrylate	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Ethyl acrylate	Internal					13.7 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	96
Ethyl acrylate	Internal					13.7 ml/min		8-24 hrs		SE, GC	PS	690-105		96		
Ethyl acrylate	NON 54	5	15	10	3	20	200	8	15	GC-FID	ST	226-81A		49		
Ethyl acrylate	OSHA 92	25		12	0.75	50	50	4	15	GC-FID	ST	226-73		49		
Ethyl acrylate (Esters I)	NIOSH 1450	4 (LOQ)		1-10		10-200		varies		GC-FID	ST	226-01		48		
Ethyl alcohol (ethanol)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Ethyl alcohol (ethanol)	Internal					20.3 ml/min		8-24 hrs		SE, GC	PS	690-105		96		
Ethyl alcohol (ethanol)	OSHA 5001	1000		12		50		4		GC-FID	ST	226-82		50		

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Sampling Guide

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number				
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time							
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)						
Ethyl alcohol (ethanol) (Alcohols I)	NIOSH 1400	1000		1		50		20 min		GC-FID	ST	226-01	48		
Ethyl amyl ketone	NIOSH 1301	50		25		200		2		GC-FID	ST	226-01	48		
Ethyl benzene	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK	228 Series	
Ethyl benzene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series	52	TH	224-26-02 37
Ethyl benzene	Internal					0.41 ml/min		24 hrs to 7 days		TD, GC	PS	690-101	or	PS	690-103
Ethyl benzene	Internal					12.9 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103
Ethyl benzene	Internal					12.9 ml/min		8 hrs-30 days		SE, GC	PS	690-105	96		
Ethyl benzene	OSHA 1002	100				13.83		8		GC-FID	PS	575-002	82		
Ethyl benzene	OSHA 1002	100		12		50		4		GC-FID	ST	226-01	48		
Ethyl benzene (Hydrocarbons, Aromatic)	NIOSH 1501	100	125	1-24	1-24	10-200	10-200	varies	varies	GC-FID	ST	226-01	48		
Ethyl bromide (bromoethane)	NIOSH 1011			4		20		3.3		GC-FID	ST	226-01	48		
Ethyl butyl ketone (3-heptanone) (Ketones II)	NIOSH 2553	50		1-25		10-200		varies		GC-FID	ST	NA SKC			
Ethyl butyl ketone (3-heptanone) (Ketones II)	NIOSH 1301	50		24		200		2		GC-FID	ST	226-01	48		
Ethyl chloride	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK	228 Series	
Ethyl chloride	NIOSH 2519			3		50		1		GC-FID	ST	226-25	48		
Ethyl ether (ethyl ether)	NIOSH 1610			0.25-3		10-200		varies		GC-FID	ST	226-01	48		
Ethyl formate	NIOSH 1452	100		10		20		8		GC-FID	ST	226-01	48		
Ethyl lactate	OSHA PV2081			10		200		50 min		GC-FID	ST	226-01	48		
Ethyl mercaptan (mercaptans)	NIOSH 2542		0.5 (15 min)	48	12	100	200	8	60	GC-FPD	CF/CST	225-9007	68	C/HLD	225-1 116
Ethyl methacrylate	Internal					13.1 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103 96
Ethyl methacrylate	Internal					13.1 ml/min		8-24 hrs		SE, GC	PS	690-105	96		
Ethyl methacrylate	NIOSH 2537			1-8		10-50		varies		GC-FID	ST	226-30-06	48		
Ethyl methacrylate	OSHA PV2100			10		20(50)		8(3.3)		GC-FID	ST	226-01	48		
Ethyl O-(p-nitrophenyl) phenylphosphonothionate (EPN)	NIOSH 5012	0.5 mg/m³		480		1000		8		GC-FPD	F/CST	225-709	110	C/HLD	225-1 116
Ethyl parathion	ASTM D 4861			240-7200		1000-5000		4-24		GC-NPD	PUF	226-92	54		
Ethyl silicate	NIOSH S-264	100		9		50		3		GC-FID	ST	226-30-04	48		
2-Ethyl toluene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series	52	TH	224-26-02 37
3-Ethyl toluene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series	52	TH	224-26-02 37
4-Ethyl toluene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series	52	TH	224-26-02 37
Ethyl vinyl benzene	OSHA 89			12		50		4		GC-FID	ST	226-73	49		
Ethyl-3-ethoxypropionate	OSHA PV2025			10		100		100 min		GC-FID	ST	226-01	48		
Ethylamine	OSHA 36	10		10		200		50 min		HPLC-UV	ST	226-96	50		
Ethylene chlorohydrin	NIOSH 2513		1	10	3	20(50)	200	8(3.3)	15	GC-FID	ST	226-81A	49		
Ethylene dibromide (1,2-dibromoethane)	NIOSH 1008	0.045	0.13 (15 min)	10	3	20(50)	200	8(3.3)	15	GC-ECD	ST	226-01	48		
Ethylene dibromide (1,2-dibromoethane)	OSHA 02	20	30	10	1	20(50)	200	8(3.3)	5	GC-ECD	ST	226-01	48		
Ethylene dichloride	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series	52	TH	224-26-02 37
Ethylene dichloride (1,2-dichloroethane)	OSHA 03	50	100	10	3	200	200	1	15	GC-ECD	ST	226-01GWS	48		
Ethylene dichloride (1,2-dichloroethane) (hydrocarbons, halogenated)	NIOSH 1003	1	2	3	3	10-200	10-200	varies	varies	GC-FID	ST	226-01	48		
Ethylene glycol (glycols)	NIOSH 5523			60		1000		1		GC-FID	ST	226-57	49		
Ethylene glycol dinitrate	OSHA 43		0.2 (C)	15		1000		15		HPLC-TEA	ST	226-35-03	48		
Ethylene glycol dinitrate (nitroglycerine)	NIOSH 2507		0.1 mg/m3	15		1000		15		GC-ECD	ST	226-35-03	48		

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Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Ethylene oxide	ASTM D 4413			6	3	100	200	1	15	GC-FID	ST	226-16	or	ST	226-36	49
Ethylene oxide	ASTM D 5578			9.6	1.5	20	100	8	15	GC-ECD	ST	226-178		51		
Ethylene oxide	NIOSH 1614	0.1	5 (10 min)	24	1.5	100	150	4	10	GC-ECD	ST	226-178		51		
Ethylene oxide	OSHA 1010	1	5.0 EL	12	0.75	50	50	4	15	GC-ECD	ST	226-178		51		
Ethylene oxide (by portable GC)	NIOSH 3702	0.1	5 (10 min)	varies	varies	20-4000	varies	varies	varies	P GC-PID	SB	232 Series		61		
Ethylene oxide (Qazi-Ketcham)	NON 14			10		20(50)		8(3.3)		GC	ST	226-36		49		
Ethylene thiourea	NIOSH 5011	LFC		480		2000		4		VAS	F/CST	225-802	107	C/HLD	225-1	116
Ethylene thiourea	OSHA 95			480		2000		4		HPLC-UV	F/CST	225-706	110	C/HLD	225-1	116
Ethylenediamine	NIOSH 2540	10		10		100		1.7		HPLC-UV	ST	226-30-18		48		
Ethylenediamine	OSHA 60	10		10		100		100 min		HPLC-UV	ST	226-30-18		48		
Ethylenimine	NIOSH 3514			48		200		4		HPLC-UV	IMP	225-36-2	70	IT	225-22	70
2-Ethylhexyl acrylate	OSHA PV2026			12		100		2		GC-FID	ST	226-73		49		
di-2-Ethylhexyl phthalate (DEHP)	OSHA 104	5 mg/m ³		240		1000		4		GC-FID	ST	226-56		49		
ETS (see environmental tobacco smoke)	NON 49															
Fenamiphos (Organophosphorus Pesticides)	NIOSH 5600	0.1 mg/m ³		240		1000		4		GC-FPD	ST	226-58		49		
Fenvalerate	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF	226-92		54		
Ferric chloride (see iron salts, soluble as Fe)	OSHA ID 121															
Ferrovandium dust	OSHA ID 125G	1 mg/m ³		480	30	2000	2000	4	15	ICP-AES	F/CST F/CST C/HLD	225-3-01 225-803 225-1	or or 116	F/CST F/CST 225-8215	or or 107	
Fibers (bioaerosols)				15-150		15000		1-10 min		varies	STC	225-9820		114		
Fibers (see specific compounds)																
Fibrous glass (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115
Fibrous glass (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107	C/HLD	225-1	116
Fibrous glass dust	OSHA ID 160	15 mg/m ³	1 fbr/cc EL	60-300	48	500-2500	1600	120		PCM	FLT/CL	225-321		104		
Fluometuron	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF	226-92		54		
Fluoranthene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF	226-131	55	FLT	225-1808	109
Fluoranthene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515			480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108	ST	226-30-04	48
Fluoranthene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506			480		2000		4		HPLC-FD	F/CST C/HLD	225-1713 225-1	108	ST	226-30-04	48
Fluorene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF	226-131	55	FLT	225-1808	109
Fluorene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515			480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108	ST	226-30-04	48
Fluorene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506			480		2000		4		HPLC-UV	F/CST C/HLD	225-1713 225-1	108	ST	226-30-04	48
Fluoride (particulate)	NIOSH 7906	2.5 mg/m ³		960		2000		8		IC-CD	CF/CST	225-9031	68	C/HLD	225-1	116
Fluorides	ASTM D 4765			varies		2000		varies		ISE	CF/CST	225-9001	68	C/HLD	225-1	116
Fluorides (aerosol & gas by ISE)	NIOSH 7902	2.5 mg/m ³	6 (HF)	480	22.5	1000	1500	8	15	ISE	CF/CST	225-9001	68	C/HLD	225-1	116
Fluorides (as F)	OSHA ID 110	2.5 mg/m ³		90	22.5	1500	1500	1	15	ISE	CF/CST	225-9001	68	C/HLD	225-1	116
Fluorine	OSHA ID 110	0.1		480		1000				ISE	IMP	225-36-2	70	IT	225-22	70
Fluorotrichloromethane (trichlorofluoromethane)	NIOSH 1006		1000		5		20		240	GC-FID	ST	226-09		48		
Folpet	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92		54		
Fonofos (Dyfonate)	OSHA PV2027			480		1000		8		GC-FPD	ST	226-30-16		48		
Fonofos (Organophosphorus Pesticides)	NIOSH 5600	0.1 mg/m ³		240		1000		4		GC-FPD	ST	226-58		49		
Formaldehyde	ASTM D 5197			varies		500-1200		5 min-24 hrs		HPLC-UV	ST	226-120 °	or	ST	226-119	50
Formaldehyde	EPA IP-6A					100-1000 ml/min		5 min-24 hrs		HPLC-UV	ST	226-119	or	ST	226-120	50

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Abbreviations and references are found on pages 244-245.

Sampling Guide

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number		
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time					
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)				
Formaldehyde	EPA IP-6C					20.4 ml/min		7 days		HPLC-UV	PS	500-100	92
Formaldehyde	EPA IP-6C					20.4 ml/min		1-7 days		HPLC-UV	PS	500-100	92
Formaldehyde	EPA IP-6C					20.4 ml/min		15 min-8 hrs		HPLC-UV	PS	500-100	92
Formaldehyde	EPA TO-11A					28.6 ml/min		15 min-8 hrs		HPLC-UV	PS	500-100	92
Formaldehyde	EPA TO-11A					28.6 ml/min		7 days		HPLC-UV	PS	500-100	92
Formaldehyde	EPA TO-11A					28.6 ml/min		15 min-24 hrs		HPLC-UV	PS	500-100	92
Formaldehyde	EPA TO-11A			varies		100-2000 ml/min		varies		HPLC-UV	ST	226-119	or ST 226-120 50
Formaldehyde	NIOSH 2016	0.016	0.1 (C)	1-<15	1-<15	30-500	30-500	varies	varies	HPLC-UV	ST	226-119	50
Formaldehyde	NIOSH 2541	0.016	0.1 (C)	24	1	100	100	4	10	GC-FID	ST	226-118	50
Formaldehyde	NIOSH 3500	0.016	0.1	96	15	200	1000	8	15	VAS	IMP 225-36-1 FLT 225-1709 ** SCN 225-26	70 IT 225-22 108 CST 225-2LF 117	70 115
Formaldehyde	OSHA 1007	0.75	2	13.8	0.43	29.77	29.77	4	15	HPLC-UV	PS	500-100	92
Formaldehyde	OSHA 52	0.75	2	24	3	100	200	4	15	GC-NPD	ST	226-117	or ST 226-54 49
Formaldehyde (Aldehydes, Screening)	NIOSH 2539	0.016	0.1	5		20		4		GC-FID & GC-MS	ST	226-118	50
Formaldehyde on dust (textile or wood)	NIOSH 5700	0.016	0.1	240		2000		4		HPLC-UV	IOM	225-70A	122 FLT 225-5-25 107
Formetanate (Organonitrogen Pesticides)	NIOSH 5601			240		1000		4		HPLC-UV	ST	226-58	or ST 226-30-16 48
Formic acid	NIOSH 2011	5		24		200		2		IC-CD	FLT 225-1728A ST 226-10-03	108 CST 225-3-25LF 48 C/HLD 225-1	115 116
Freon 11	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK 228 Series
Freon 113	OSHA 113	1000		1		50		20 min		GC-FID	ST	NA SKC	
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK 228 Series
Freon 114	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK 228 Series
Freon 12	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK 228 Series
Freon 123	NON 50			9		50		3		GC-FID	ST	226-09	48
Freon 141b	OSHA 113	1000		1		50		20 min		GC-FID	ST	NA SKC	
Fungi	NIOSH 0800			varies		28,300		varies		varies	BI	225-9611	136
Fungi (in air)					15-150		15000		1-10 min	varies	STC	225-9820	114
Fungi (in air) (BioSampler method)	NON 48			62.5-375		12,500 +		5-30		varies	BS	225-9595	138 VT 225-9598A 138
Furans (including PHDFs, PCDFs, PBDFs)	EPA TO-9A					200-280 L/min		24 hrs		HRGC-HRMS	PUF	226-131	55 FLT 225-1808 109
Furfural	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 TH 224-26-02 37	37
Furfural	NIOSH 2529			5		20		4		GC-FID	ST	226-118	50
Furfural	OSHA 72	5		180		1000		3		GC-FID	ST	226-81A	49
Furfural (Aldehydes, Screening)	NIOSH 2539			5		20		4		GC-FID & GC-MS	ST	226-118	50
Furfuryl alcohol	NIOSH 2505	10	15	5		20		4		GC-FID	ST	226-115	50
Gallium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303			1-3,300		1000-4000		varies		ICP-AES	F/CST	225-3-01	102 C/HLD 225-1 116
Gasoline	OSHA PV2028			10	1.5	20(50)	100	8(3.3)	15	GC-FID	ST	226-01	48
Glass, fibrous (see asbestos fibers)	NIOSH 7400												
Glutaraldehyde	NIOSH 2531		0.2		4		200		20	HPLC-UV	ST	226-118	50
Glutaraldehyde	NIOSH 2532		0.2		3		200		15	HPLC-UV	ST	226-119	50
Glutaraldehyde	NON 43			30	15	250	1000	2	15	GC-FID	ST	226-10	48
Glutaraldehyde	OSHA 64				15		1000		15	HPLC-UV	CF/CST	225-9003	68 C/HLD 225-1 116
Glycerin mist (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT 225-5-37-P CYC 225-01-02	107 C/HLD 225-1 127 CST 225-3LF	116 115
Glycidol (2,3-epoxy-1-propanol)	NIOSH 1608	25		10		20(50)		8(3.3)		GC-FID	ST	226-01	48

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number								
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time											
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)										
Glycol chlorohydrin (see ethylene chlorohydrin)																			
Glycol ethers	NIOSH 2554			3-25		100-200		varies		GC-FID	ST	226-81A	49						
Glycols	NIOSH 5523			60		1000		1		GC-FID	ST	226-57	49						
Glyphosate	OSHA PV2067			100		1000		100 min		HPLC-UV	F/CST	225-706	110	C/HLD	225-1	116			
Gold	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Gold (Elements by ICP HNO ₃ Digestion)	NIOSH 7303			1-3,300		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Graphite (natural) (see Respirable dust)	OSHA ID 142 (V4)																		
Graphite (synthetic) (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115			
Graphite (synthetic) (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116			
Grunerite fibers (see asbestos)	OSHA ID 160																		
Gypsum (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115			
Gypsum (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116			
Hafnium	OSHA ID 121	0.5 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Halothane	OSHA 103			12		50		4		GC-FID	ST	226-81A	49						
Halothane	OSHA 29			9		100		1.5		GC-FID	ST	226-01	48						
HDI (see hexamethylene diisocyanate)																			
Heptachlor	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54						
Heptachlor	OSHA PV2029	0.5 mg/m ³		60		1000		1		GC-ECD	ST	226-30-16	48						
Heptachlor (non-occupational exposure)	ASTM D 4947			240-7200	250	1000-5000		4-24		GC-ECD	PUF	226-92	54						
Heptachlor epoxide	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54						
Heptanal (Aldehydes, Screening)	NIOSH 2539			5		20		4		GC-FID & GC-MS	ST	226-118	50						
n-Heptane	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37			
n-Heptane	Internal					13.9 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	96			
n-Heptane	Internal					13.9 ml/min		8-24 hrs		SE, GC	PS	690-105	96						
3-Heptanone (ethyl butyl ketone) (Ketones II)	NIOSH 2553	50		1-25		10-200		varies		GC-FID	ST	NA SKC							
2-Heptanone (methyl n-amyl ketone) (Ketones II)	NIOSH 2553	100		1-25		10-200		varies		GC-FID	ST	NA SKC							
Hexachloro-1,3-cyclopentadiene	NIOSH 2518	0.01		24		50		8		GC-ECD	ST	226-116	50						
Hexachlorobenzene	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54						
Hexachlorobutadiene	NIOSH 2543	0.02		48		100		8		GC-ECD	ST	226-30-04	48						
Hexachlorocyclopentadiene	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-124	54						
Hexachlorocyclopentadiene (hexachloro-1,3-cyclopentadiene)	NIOSH 2518	0.01		48		100		8		GC-ECD	ST	226-116	50						
Hexachloroethane (hydrocarbons, halogenated)	NIOSH 1003	1		10		10-200		varies		GC-FID	ST	226-01	48						
Hexamethylene diisocyanate	NIOSH 5522	35 µg/m ³	140 µg/m ³	360	20	1000	2000	6	10	HPLC-FD	IMP	225-36-1	70	IT	225-22	70			
1,6-Hexamethylene diisocyanate	OSHA 5002			15		1000		15 min		HPLC-UV or HPLC-FD	CF/CST CF/CST	225-9002 225-9022 ▼	68	CF/CST C/HLD	225-9013 225-1	or 116			
1,6-Hexamethylene diisocyanate homopolymer	OSHA 5002			15		1000		15 min		HPLC-UV or HPLC-FD	CF/CST CF/CST	225-9002 225-9022 ▼	68	CF/CST C/HLD	225-9013 225-1	or 116			
Hexamethylene diisocyanate (gaseous)	ASTM D 6562			15		1000		15 min		HPLC-UV or HPLC-FD	CF/CST C/HLD	225-9023 225-1	or 116	CF/CST	225-9022 ▼	68			
Hexamethylene diisocyanate (HDI) (isocyanates)	OR-OSHA 1010	0.02	0.02	45	5	1000	1000	45 min	5	HPLC	IMP CF/CST	225-36-1 225-9029	70 68	IT	225-22	70			
Hexamethylene diisocyanate (isocyanates)	NIOSH 5521	35 µg/m ³	140 µg/m ³ (10 min) (C)	480	10	1000	1000	8	10	HPLC- ELCHM & HPLC-UV	IMP	225-36-1	70	IT	225-22	70			
1,6-Hexamethylene diisocyanate (isocyanates, total)	NIOSH 5525	35 µg/m ³	140 µg/m ³ (10 min) (C)	1-500		1000-2000		varies		HPLC-UV	FLT SP FLT	225-7 225-27 225-702	110 or 110	CST IOM	225-4 225-76A	115 122			

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number			
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time						
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)					
Hexamethylene diisocyanate (monomeric aerosol)	ASTM D 6561			15		1000		15 min		HPLC-UV	CF/CST 225-9023 C/HLD 225-1	or	CF/CST 225-9022 116	▼ 68
Hexamethylene diisocyanate (monomeric gaseous)	ASTM D 6561			15		1000		15 min		HPLC-UV	CF/CST 225-9023 C/HLD 225-1	or	CF/CST 225-9022 116	▼ 68
Hexamethylene diisocyanate (oligomeric aerosol)	ASTM D 6561			15		1000		15 min		HPLC-UV	CF/CST 225-9023 C/HLD 225-1	or	CF/CST 225-9022 116	▼ 68
Hexamethylene diisocyanate biuret	OSHA PV2030			15		1000		15 min		HPLC-UV	FLT 225-7 C/HLD 225-1	110 CST	225-3LF	115
Hexamethylene diisocyanate biuret (HDI-BT) (isocyanates)	OR-OSHA 1010	1.0 mg/m ³	0.5 mg/m ³	45	5	1000	1000	45 min	5	HPLC	IMP 225-36-1 CF/CST 225-9029	70 IT	225-22	70
Hexamethylene diisocyanate isocyanurate (HDI-IC) (isocyanates)	OR-OSHA 1010	1.0 mg/m ³	0.5 mg/m ³	45	5	1000	1000	45 min	5	HPLC	IMP 225-36-1 CF/CST 225-9029	70 IT	225-22	70
Hexamethylenetetramine	NON 52			15		1000		15 min		GC-NPD or GC-FID	ST 226-57	49		
Hexanal	ASTM D 5197			varies		500-1200		5 min-24 hrs		HPLC-UV	ST 226-120	or	ST 226-119	50
Hexanal (Aldehydes, Screening)	NIOSH 2539			5		20		4		GC-FID & GC-MS	ST 226-118	50		
n-Hexane	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 TH	224-26-02	37
n-Hexane	Internal					14.3 ml/min		8-24 hrs		TD, GC	PS 690-101	or	PS 690-103	96
n-Hexane	Internal					14.3 ml/min		8-24 hrs		SE, GC	PS 690-105	96		
n-Hexane	NIOSH 1500	50		4		200		20 (min)		GC-FID	ST 226-01	48		
n-Hexane	OSHA 5000	500		4.9		50		1.63		GC-FID	ST 226-01	48		
1,6-Hexanediol	NIOSH 1500			5	3	200	200			GC-FID	ST 226-01	48		
Hexanediol diacrylate	NON 39			480		1000		8		GC-FID	ST 226-56	49		
1,6-Hexanediol diacrylate	OSHA PV2133	1 mg/m ³		48		200		4		GC-FID	ST 226-110	50		
2-Hexanone (Ketones I)	NIOSH 2555			1-10		10-200		varies		GC-FID	ST NA SKC			
2-Hexanone (methyl butyl ketone) (Ketones I)	NIOSH 1300	1		10		20(50)		8(3.3)		GC-FID	ST 226-01	48		
2-Hexanone (methyl butyl ketone, MBK)	Internal					14.3 ml/min		8-24 hrs		TD, GC	PS 690-101	or	PS 690-103	96
2-Hexanone (methyl butyl ketone, MBK)	Internal					14.3 ml/min		8-24 hrs		SE, GC	PS 690-105	96		
Hexavalent chromium	ASTM D 6832			varies		1000-5000		varies		IC	F/CST 225-802 F/CST 225-709	or	F/CST 225-1713 F/CST 225-401	or 109
Hexavalent chromium	NIOSH 7600	1 µg/m ³ (10 hrs)		240		1000		4		VAS	F/CST 225-802	107 C/HLD	225-1	116
Hexavalent chromium	NIOSH 7604	1 µg/m ³ (10 hrs)		240		1000		4		IC-CD	F/CST 225-802	107 C/HLD	225-1	116
Hexavalent chromium	NIOSH 7605	0.001 mg/m ³ (10 hrs)		1-400		1000-4000		varies		IC-PCD-UV	F/CST 225-802	107 C/HLD	225-1	116
Hexavalent chromium	NIOSH 7703	0.001 mg/m ³ (10 hrs)		10-1200		1000-4000		varies		P VAS	F/CST 225-802	107 C/HLD	225-1	116
Hexavalent chromium	OSHA ID 103	0.005 mg/m ³ (C)		960	30	2000	2000	8	15	DPP	F/CST 225-802	107 C/HLD	225-1	116
Hexavalent chromium	OSHA W4001	0.005 mg/m ³ (C)								IC-UV	FLT 225-5-37	or	FLT 225-1822	109
Hexavalent chromium (CR(VI))	OSHA ID 215 (V2)	0.005 mg/m ³		960		2000		8		IC-UV	F/CST 225-802	107 C/HLD	225-1	116
Hexavalent chromium (in settled dust)	NIOSH 9101			bulk	bulk					CLR or VAS or IC				
Hexone	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 TH	224-26-02	37
Hexone	OSHA 1004	100		12		50		4		GC-FID	ST NA SKC			
Hexone	OSHA 1004	100		12		50		4		GC-FID	ST NA SKC			
Hexone (Ketones I)	NIOSH 2555	50		1-10		10-200		varies		GC-FID	ST NA SKC			
Hexone (methyl isobutyl ketone) (Ketones I)	NIOSH 1300	50	75	10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01	48		
sec-Hexyl acetate	NIOSH 1450	50		10		200		50 (min)		GC-FID	ST 226-01	48		

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		Agency Standard		Vol. (liter)		Rate (ml/min)		Time							
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)						
Hexylene glycol	OSHA PV2101			3		200		15		GC-FID	ST	226-01	48		
HMX	OSHA PV2032			480		1000		8		HPLC-UV	F/CST	225-709	110	C/HLD	225-1 116
Hydrazine	NIOSH 3503		0.03 (120 min)	90		1000		1.5		VAS	IMP	225-36-2	70	IT	225-22 70
Hydrazine	NON 22			96		200		8		CLR	ST	226-42-02	49		
Hydrazine	OSHA 108	1		240		1000		4		LC-UV	CF/CST	225-9012	68	C/HLD	225-1 116
Hydrazine	OSHA 20	1		20		100		3.3		HPLC-UV	ST	226-42-02	49		
Hydrazoic acid	NON 25			15		1000		15		HPLC-UV	ST	226-55	49		
Hydrazoic acid	OSHA ID 211			5		1000		5		IC-UV	ST	226-55	49	FLT	225-5-37-P 107
											CST	225-2LF	115	SPC	225-23 117
											C/HLD	225-1	116		
Hydrocarbons BP 36 to 216 C (see specific compounds)	NIOSH 1500	varies		varies		varies		varies		GC-FID	ST	226-01	48		
Hydrocarbons, aromatic (see specific compounds)	NIOSH 1501	varies		varies		varies		varies		GC-FID	ST	226-01	48		
Hydrocarbons, halogenated (see specific compounds)	NIOSH 1003	varies		varies		varies		varies		GC-FID	ST	226-01	48		
Hydrofluoric acid (fluorides)	NIOSH 7906	3	6	960	30	2000	2000	8	15	IC-CD	CF/CST	225-9031	68	C/HLD	225-1 116
Hydrogen bromide	NIOSH 7907		3		30		2000		15	IC-CD	CF/CST	225-9032	68		
Hydrogen bromide	OSHA ID 165SG	3		97	3	200	200	8	15	IC	ST	226-10-03	48		
Hydrogen chloride	NIOSH 7907		5		30		2000		15	IC-CD	CF/CST	225-9032	68		
Hydrogen chloride (hydrochloric acid)	OSHA ID 174SG		5		7.5		500		15	IC	ST	226-10-03	48		
Hydrogen cyanide	NIOSH 6010		4.7		2-90		50-200		varies	VAS	ST	226-210	52	CST	225-710 110
Hydrogen cyanide	NIOSH 6017		4.7		2-90		50-200		varies	IC/ELCM	ST	226-210	52	CST	225-710 110
Hydrogen cyanide	OSHA 1015	10				28.4		8	15	IC-ELCM	PS	590-400	94		
Hydrogen cyanide	OSHA ID 120	10		120	15	1000	1000	2	15	ISE	CST	225-3LF	115	IMP	225-36-2 70
											IT	225-22	70	FLT	225-5 102
											SP	225-2902	117		
Hydrogen cyanide (cyanides)	NIOSH 7904		5 mg/m ³ (10 min)		15		1000		15	ISE	FLT	225-3705 Δ	108	CST	225-2LF 115
											IMP	225-36-2	70	IT	225-22 70
											C/HLD	225-1	116		
Hydrogen fluoride	NIOSH 7906	3	6	960	30	2000	2000	8	15	IC-CD	CF/CST	225-9031	68	C/HLD	225-1 116
Hydrogen fluoride (as F)	OSHA ID 110	3	6	90	22	1500	1500	1	15	ISE	CF/CST	225-9001	68	C/HLD	225-1 116
Hydrogen fluoride (fluorides)	NIOSH 7902	3	6	480	30	1000	2000	8	15	ISE	CF/CST	225-9001	68	C/HLD	225-1 116
Hydrogen peroxide	OSHA 1019		1.0 (1.4 mg.m ³)		240		2000		15	VAS	CF/CST	225-9030	68	C/HLD	225-1 116
Hydrogen sulfide	NIOSH 6013		10 (10 min)	24	3	100	300	4	10	IC	ST	NA SKC			
Hydrogen sulfide	NON 42			12		1000		12 min		GC-FPD	SB	231-10	60		
Hydrogen sulfide	OSHA 1008	10	20	12	7.5	50	500	4	15	IC	ST	226-177	51		
Hydroquinone	NIOSH 5004		2 mg/m ³ (15 min)		30		2000		15	HPLC-UV	F/CST	225-3-01	102	C/HLD	225-1 116
Hydroquinone	OSHA PV2094		2 mg/m ³		20		200		100 min	HPLC-UV	ST	226-98	50		
4-Hydroxy-4-methyl-2-pentanone (see diacetone alcohol)															
4-Hydroxy-4-methyl-2-pentanone (alcohols combined)	NIOSH 1405	50		1-10		10-200		varies		GC-FID	ST	226-01	48		
2-Hydroxypropyl acrylate	OSHA PV2078			10		100		100 min		GC-FID	ST	226-73	49		
2-Imidazolidinethione (ethylene thiourea)	NIOSH 5011	LFC		480		1000		8		VAS	F/CST	225-803	107	C/HLD	225-1 116
Indeno(1,2,3-cd)pyrene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515			480		2000		4		GC-FID	F/CST	225-1713	108	ST	226-30-04 48
											C/HLD	225-1	116		
Indeno(1,2,3-cd)pyrene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF	226-131	55	FLT	225-1808 109
Indeno(1,2,3-cd)pyrene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506			480		2000		4		HPLC-FD	F/CST	225-1713	108	ST	226-30-04 48
											C/HLD	225-1	116		

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Sampling Guide

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Indium	OSHA ID 121	0.1 mg/m³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Indium & compounds (as In)	OSHA ID 121	0.1 mg/m³		480-960		2000		4-8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Indium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	0.1 mg/m³		8-2000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Indium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303			15-500,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Iodine	NIOSH 6005		0.1		15		1000		15	IC	ST	226-67	49			
Iodine	NON 16			48		100		8		IC	ST	226-67	49			
Iodine	OSHA ID 212		0.1 (C)		2.5		500		5	IC	ST	226-80	49			
Iodine (particulates)	OSHA ID 212		0.1		2.5		500		5	IC	ST	226-142	51			
Iodine (vapor)	OSHA ID 212		0.1		2.5		500		5	IC	ST	226-80	49			
Iron	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Iron & compounds (as Fe)	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Iron (bulk)	OSHA ID 125G			480		2000		4		ICP-AES	F/CST F/CST C/HLD	225-3-01 225-803 225-1	or or 116	F/CST F/CST	225-3100 225-8215	or 107
Iron (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	5 mg/m³ (dust, fume) as Fe		2-500		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Iron (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	5 mg/m³ (dust, fume)		5-100		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or 116	F/CST	225-803	107
Iron (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	0.5 mg/m³ (dust, fume)		1-5,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Iron (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	5 mg/m³ (dust, fume)		5-100		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Iron (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W	225-2414	172	TMP	225-2415	172
Iron oxide (Elements by ICP HNO ₃ Digestion)	NIOSH 7303			1-5,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Iron oxide fume	OSHA ID 121	10 mg/m³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Iron oxide fume	OSHA ID 125G	10 mg/m³		480		2000		4		ICP-AES	F/CST F/CST C/HLD	225-3-01 225-803 225-1	or or 116	F/CST F/CST	225-3100 225-8215	or 107
Iron salts, soluble (as Fe)	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Isoamyl acetate (Esters I)	NIOSH 1450	100		1-10		10-200		varies		GC-FID	ST	226-01	48			
Isoamyl alcohol (alcohols combined)	NIOSH 1405	100	125 (skin)	1-10	1-10	10-200	10-200	varies	varies	GC-FID	ST	226-01	48			
Isoamyl alcohol (alcohols III)	NIOSH 1402	100	125	10	3	20(50)	200	8(3.3)	15	GC-FID	ST	226-01	48			
Isobutanol (isobutyl alcohol)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Isobutyl acetate	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Isobutyl acetate	OSHA 1009	150				13.16	13.16	8	15	GC-FID	PS	575-002	82			
Isobutyl acetate	OSHA 1009	150		12	0.75	50	50	4	15	GC-FID	ST	226-01	48			
Isobutyl acetate (Esters I)	NIOSH 1450	150		1-10		10-200		varies		GC-FID	ST	226-01	48			
Isobutyl alcohol	OSHA 5001	200		12		4				GC-FID	ST	226-82	50			
Isobutyl alcohol (alcohols combined)	NIOSH 1405	50		2-10		10-200		varies		GC-FID	ST	226-01	48			
Isobutyl alcohol (alcohols II)	NIOSH 1401	50		10		20(50)		8(3.3)		GC-FID	ST	226-01	48			
Isobutyl alcohol (isobutanol)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Isobutyl isobutyrate	OSHA PV2090			10		200		50 min		GC-FID	ST	226-01	48			
Isobutyraldehyde (Aldehydes, Screening)	NIOSH 2539			5		20		4		GC-FID & GC-MS	ST	226-118	50			

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Isocyanates (see specific isocyanate)	NIOSH 5521	varies		480	10	1000	1000	8	10	HPLC-ELCHM & HPLC-UV	IMP	225-36-1	70	IT	225-22	70
Isocyanates (see specific isocyanate)	NIOSH 5522	varies	varies	360	20	1000	2000	6	10	HPLC-FD	IMP	225-36-1	70	IT	225-22	70
Isocyanates (see specific isocyanate)	OR-OSHA 1010	varies	varies	45	5	1000	1000	45 min	5	HPLC	IMP CF/CST	225-36-1 225-9029	70 68	IT	225-22	70
Isocyanates, total (see specific isocyanate)	NIOSH 5525	varies	varies	1-500	1-500	1000-2000	1000-2000	varies	varies	HPLC-UV	FLT SP FLT	225-7 ‡ 225-27 225-702 ‡	110 or 110	CST IOM	225-4 225-76A	115 122
Isouflurane	OSHA 103			12		50		4		GC-FID	ST	226-81A	49			
Isooctyl alcohol	OSHA PV2033	100		10		20(50)		8(3.3)		GC-FID	ST	226-01	48			
Isophorone	NIOSH 2508	4		10		20(50)		8(3.3)		GC-FID	ST	226-81A	49			
Isophorone	NIOSH 2556	4		2-25		10-100		varies		GC-FID	ST	226-93	50			
Isophorone (3,5,5-trimethylcyclohex-2-enone)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Isophorone (3,5,5-trimethylcyclohex-2-enone)	Internal					11.3 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-104	96
Isophorone diisocyanate	OSHA 5002			60	15	1000	1000	1	15	HPLC-UV	CF/CST C/HLD	225-9002 225-1	or 116	CF/CST	225-9022 ▼	68
Isophorone diisocyanate (IPDI)	OR-OSHA 1010	0.02	0.02	45	5	1000	1000	45 min	5	HPLC	IMP CF/CST	225-36-1 225-9029	70 68	IT	225-22	70
Isophorone diisocyanate (isocyanates, total)	NIOSH 5525	45 µg/m³	180 µg/m³ (10 min) C	1-500		1000-2000		varies		HPLC-UV	FLT SP FLT	225-7 ‡ 225-27 225-702 ‡	110 or 110	CST IOM	225-4 225-76A	115 122
Isopropanol (isopropyl alcohol)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Isopropanol (isopropyl alcohol)	Internal					18.4 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	96
Isopropanol (isopropyl alcohol)	Internal					18.4 ml/min		8-24 hrs		SE, GC	PS	690-105	96			
Isopropyl acetate	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Isopropyl acetate	NIOSH 1454			9		50		3		GC-FID	ST	226-01	48			
Isopropyl acetate	NIOSH 1460			0.1-9		20-200		varies		GC-FID	ST	226-01	48			
Isopropyl alcohol	OSHA 5001	200		12		4				GC-FID	ST	226-82	50			
Isopropyl alcohol (Alcohols I)	NIOSH 1400	400	500	3	3	20	200	2.5	15	GC-FID	ST	226-01	48			
Isopropyl alcohol (isopropanol)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Isopropyl alcohol (isopropanol)	Internal					18.4 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	96
Isopropyl alcohol (isopropanol)	Internal					18.4 ml/min		8-24 hrs		SE, GC	PS	690-105	96			
Isopropyl amine	OSHA PV2126	5		20		100		200 min		HPLC	ST	226-30-18	48			
N-Isopropyl aniline	OSHA 78			100		1000		100 min		HPLC-UV	CF/CST	225-9004	68	C/HLD	225-1	116
Isopropyl benzen (cumene)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Isopropyl Benzene (cumene)	Internal					12.8 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-104	96
Isopropyl Benzene (cumene)	Internal					12.8 ml/min		8-24 hrs		SE, GC	PS	690-105	96			
Isopropyl ether	NIOSH 1618	500		0.1-3		10-50		varies		GC-FID	ST	226-01	48			
Isopropyl glycidyl ether	NIOSH 1620		50 (15 min)		3		200		15	GC-FID	ST	226-01	48			
Isovaleraldehyde	ASTM D 5197			varies		500-1200		5 min-24 hrs		HPLC-UV	ST	226-120 °	or	ST	226-119	50
Isovaleraldehyde (Aldehydes, Screening)	NIOSH 2539			5		20		4		GC-FID & GC-MS	ST	226-118	50			
Kaolin (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115
Kaolin (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116
Kathon 886 (kathon biocide)	NON 55			50	7.5	200	500	4	15	HPLC-UV	ST	226-99	50			
Kepone	NIOSH 5508	1 µg/m³		480		1000		8		GC-ECD	F/CST IT	225-3-01 225-22	102 70	IMP	225-36-1	70

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Sampling Guide

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number				
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time							
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)						
Kerosene	OSHA PV2139			20		100		200 min		GC-FID	ST	226-01	48		
Kerosene (naphthas)	NIOSH 1550	100 mg/m ³		10		20(50)		8(3.3)		GC-FID	ST	226-01	48		
Ketones	EPA TO-5			< 80 L		100-1000 ml/min				HPLC-UV	IMP	225-36-1	70	IT	225-22 70
Ketones (screening)	NIOSH 2549			5		20		4		GC-MS	ST	226-330	52		
Ketones I (see specific compounds)	NIOSH 1300	varies		varies		10-200		varies		GC-FID	ST	226-01	48		
Ketones I (see specific compounds)	NIOSH 2555			varies		varies		varies		GC-FID	ST	NA SKC			
Ketones II (see specific compounds)	NIOSH 1301	varies		varies		varies		8		GC-FID	ST	226-01	48		
Ketones II (see specific ketone)	NIOSH 2553	varies	varies	1-25	1-25	10-200	10-200	varies	varies	GC-FID	ST	NA SKC			
Lanthanum (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306			Varies		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1 116
Lanthanum (Elements by ICP Aqua Regia Ashing)	NIOSH 7301			5-1000		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or	F/CST	225-803 ¥ 107
Lanthanum (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300			5-1000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1 116
Lanthanum (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W	225-2414	172	TMP	225-2415 172
Lasso (aroclor)	OSHA PV2035			100		1000		100 min		HPLC-UV	F/CST	225-706	110	C/HLD	225-1 116
Lead	NIOSH 7082	< 0.1 mg/m ³		720		1500		8		AAS-F	F/CST	225-3-01	102	C/HLD	225-1 116
Lead	NIOSH 7105	< 0.1 mg/m ³		720		1500		8		AAS-GF	F/CST	225-3-01	102	C/HLD	225-1 116
Lead (by field portable XRF)	NIOSH 7702	< 0.1 mg/m ³		960		2000		8		XRF	F/CST	225-3-01	102		
Lead (by portable ultrasound extraction/ASV)	NIOSH 7701	0.05 mg/m ³		20-1500		1000-4000		varies		P ASV	F/CST	225-3-01	102	C/HLD	225-1 116
Lead (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	0.05 mg/m ³		4-2000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1 116
Lead (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	0.05 mg/m ³		50-2000		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or	F/CST	225-803 ¥ 107
Lead (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	0.5 mg/m ³		35-100,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1 116
Lead (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	0.05 mg/m ³		50-2000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1 116
Lead (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W	225-2414	172	TMP	225-2415 172
Lead (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206			480		2000		4		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1 116
Lead (in dust wipes)	NIOSH 9105									SPOT	W	550-001	or	W	550-002 171
Lead (in surface dust)	ASTM E 1792			bulk						varies	W	225-2414	172		
Lead (in surface dust)	OSHA ID 125G			wipe						ICP-AES	W	225-2414	172		
Lead (in workplace air)	ASTM D 6785			varies		varies		varies		AAS-F	IOM	225-70A	122	FLT	225-1930 102
Lead (on surfaces)	NIOSH 9100									AA-F or AA-GF or ICP	W	225-2401A	172		
Lead chromate (CR(VI))	OSHA ID 215 (V2)	0.005 mg/m ³		960		2000		8		IC-UV	F/CST	225-802 Ω	107	C/HLD	225-1 116
Lead oxide (as lead)	NIOSH 7082	< 0.1 mg/m ³		720		1500		8		AAS-F	F/CST	225-3-01	102	C/HLD	225-1 116
Lead oxide (as Pb)	NIOSH 7105	< 0.1 mg/m ³		720		1500		8		AAS-GF	F/CST	225-3-01	102	C/HLD	225-1 116
Lead oxide (by field portable XRF)	NIOSH 7702	< 0.1 mg/m ³		960		2000		8		XRF	F/CST	225-3-01	102		
Lead oxide (by portable ultrasound extraction/ASV)	NIOSH 7701	0.05 mg/m ³		20-1500		1000-4000		varies		P ASV	F/CST	225-3-01	102	C/HLD	225-1 116
Lead sulfide (as Pb)	NIOSH 7505	< 0.1 mg/m ³		750		2500		5		XRD	F/CST CYC	225-803 225-01-02	107	C/HLD	225-1 116
Lead, inorganic fumes & dusts (as Pb)	OSHA ID 121	0.05 mg/m ³		960	30	2000	2000	8	15	AA or AES	F/CST	225-3-01	102	C/HLD	225-1 116
Lead, inorganic fumes & dusts (as Pb)	OSHA ID 125G	0.05 mg/m ³		480	30	2000	15	4		ICP-AES	F/CST F/CST C/HLD	225-3-01 225-803 225-1	or	F/CST	225-3100 225-8215 107
Lead, inorganic surface dusts (as Pb)	OSHA ID 121									AA or AES	W	225-2401A	172		
Limestone (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107	C/HLD	225-1 116

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number								
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time											
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)										
Limestone (see calcium carbonate)																			
Limestone (see Particulates Not Otherwise Regulated, total and respirable)																			
Limonene	OSHA PV2036			10		20(50)		8(3.3)		GC-FID	ST	226-01	48						
Limonene (terpenes)	NIOSH 1552			24		50		8		GC-FID	ST	226-01	48						
Lindane (gamma-BHC)	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54						
Linuron	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF	226-92	54						
Lithium	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Lithium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306			Varies		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116			
Lithium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301			100-2000		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or 116	F/CST	225-803	¥	107		
Lithium (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300			100-2000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Lithium hydride (as Li)	OSHA ID 121	0.025 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Lithium hydroxide (alkaline dust)	NIOSH 7401			960		2000		8		TITRA	F/CST	225-1715	108	C/HLD	225-1	116			
Lithium hydroxide (as Li)	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Magnesite (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115			
Magnesite (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116			
Magnesium	OSHA ID 121			960	30	2000	2000	8	15	AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Magnesium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306			1-330		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116			
Magnesium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	10 mg/m ³ (fume, as oxide)		5-67		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or 116	F/CST	225-803	107			
Magnesium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303			1-10,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Magnesium (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	10 mg/m ³ (fume, as oxide)		5-67		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Magnesium oxide (as Mg, elements by ICP)	NIOSH 7303	10		5-33,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Magnesium oxide fume (respirable dust)	OSHA ID 121	5 mg/m ³		960		2000		8		GR & AA or GR & AES	F/CST CYC	225-3-01 225-105	102 126	C/HLD	225-1	116			
Magnesium oxide fume (total dust)	OSHA ID 121	15 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Malathion	ASTM D 4861			240-7200		1000-5000		4-24		GC-NPD	PUF	226-92	54						
Malathion	OSHA 62	15 mg/m ³		60		1000		1		GC-FPD	ST	226-30-16	48						
Malathion (Organophosphorus Pesticides)	NIOSH 5600	10 mg/m ³		60		1000		1		GC-FPD	ST	226-58	49						
Maleic anhydride	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37			
Maleic anhydride	NIOSH 3512	0.25		360		1000		6		HPLC-UV	IMP	225-36-2	70	IT	225-22	70			
Maleic anhydride	OSHA 86	0.25		60		500		2		HPLC-UV	CF/CST	225-9021 ††	68	C/HLD	225-1	116			
Maneb	OSHA 107			500		2000		250		HPLC-UV	F/CST	225-3-01	102	C/HLD	225-1	116			
Manganese & compounds (as Mn)	OSHA ID 121		5 mg/m ³ (C)	960	10	2000	2000	8	5	AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Manganese & compounds (as Mn)	OSHA ID 125G		5 mg/m ³		10		2000		5	ICP-AES	F/CST C/HLD	225-3-01 225-803 225-1	or 116	F/CST	225-3100 225-8215	or 107			
Manganese (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	1 mg/m ³	3 mg/m ³	1-1000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116			
Manganese (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	1 mg/m ³	3 mg/m ³	5-200	5-200	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST C/HLD	225-3-01 225-1	or 116	F/CST	225-803	¥	107		
Manganese (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	1 mg/m ³	3 mg/m ³	0.05-10,000	0.05-10,000	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Manganese (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	1 mg/m ³	3 mg/m ³	5-200	5-200	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116			

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Abbreviations and references are found on pages 244-245.

Sampling Guide

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number				
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time							
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)						
Manganese (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W 225-2414	172	TMP 225-2415	172	
Manganese fume	OSHA ID 125G	5 mg/m ³		480	30	2000	2000	4	15	ICP-AES	F/CST 225-3-01 F/CST 225-803 C/HLD 225-1	or or 116	F/CST 225-3100 F/CST 225-8215	or 107	
Manganese fume (as Mn)	OSHA ID 121	5 mg/m ³ (C)		960	10	2000	2000	8	5	AA or AES	F/CST 225-3-01	102	C/HLD 225-1	116	
Manganese in welding fume	NON 58	5 mg/m ³		varies		750		varies		GR	FLT 225-8050 C/HLD 225-6200	102	CST 225-6201	119	
Manganese tetroxide (as Mn)	OSHA ID 121			960		2000		8		AA or AES	F/CST 225-3-01	102	C/HLD 225-1	116	
Manganese tetroxide (as Mn)	OSHA ID 125G			480		2000		4		ICP-AES	F/CST 225-3-01 F/CST 225-803 C/HLD 225-1	or or 116	F/CST 225-3100 F/CST 225-8215	or 107	
Marble (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT 225-5-37-P CYC 225-01-02	107 127	C/HLD 225-1 CST 225-3LF	116 115	
Marble (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT 225-5-37-P CST 225-2LF	107	C/HLD 225-1	116	
Marble (see <i>Particulates Not Otherwise Regulated, total and respirable</i>)															
MDI (4,4-methylene bisphenyl isocyanate)	OSHA 47	50 µg/m ³	200 µg/m ³		10		1000		10	HPLC-UV	CF/CST 225-9002 C/HLD 225-1	or 116	CF/CST 225-9013	68	
MDI (4,4-methylenebis[phenyl isocyanate]) (isocyanates, total)	NIOSH 5525	50 µg/m ³	200 µg/m ³ (10 min) C		1-500		1000-2000		varies	HPLC-UV	FLT 225-7 ‡ SP 225-27 FLT 225-702 ‡	110 or 110	CST 225-4 IOM 225-76A	115 122	
MDI (4,4'-methylenebisphenyl isocyanate) (isocyanates)	NIOSH 5521	50 µg/m ³	200 µg/m ³ (10 min) C		480	10	1000	1000	8	10	HPLC-ELCHM & HPLC-UV	IMP 225-36-1	70	IT 225-22	70
MEK (see <i>methyl ethyl ketone</i>)															
Mercaptans (see <i>specific compounds</i>)	NIOSH 2542		0.5 (15 min)	48	12	100	200	8	60	GC-FPD	CF/CST 225-9007	68	C/HLD 225-1	116	
Mercury	NIOSH 6009	0.05 mg/m ³		48		200		4		AA	ST 226-17-1A	48	F/CST 225-3-01	102	
Mercury (Rathje & Marcero)	NON 17			48		100		8		AA	ST 226-17-1A	48			
Mercury (Rathje & Marcero)	NON 17			varies		1000-3000		varies		AA	ST 226-17-3A	48			
Mercury (vapor)	OSHA ID 140	0.1 mg/m ³		3-100		200		varies		AA	ST 226-17-1A	48	F/CST 225-3-01	102	
Mercury, Particulate (in Workplace Atmospheres, air samples)	OSHA ID 145		0.01 mg/m ³		30		2000		15	AA	F/CST 225-3-01	102	C/HLD 225-1	116	
Mercury, Particulate (in Workplace Atmospheres, wipe samples)	OSHA ID 145		0.01 mg/m ³							wipe	SM TB 225-24	172			
Mesityl oxide (Ketones II)	NIOSH 2553	10		1-25		10-200		varies		GC-FID	ST NA SKC				
Mesityl oxide (Ketones II)	NIOSH 1301	10		10		20(50)		8(3.3)		GC-FID	ST 226-01	48			
Mesitylene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 37	TH 224-26-02	37	
Mestranol	OSHA PV2068			480		2000		4		HPLC	F/CST 225-802	107	C/HLD 225-1	116	
Metal & metalloid particulates	OSHA ID 121	varies	varies	960	30	2000	2000	8	15	AA or AES	F/CST 225-3-01	102	C/HLD 225-1	116	
Metal & metalloid particulates	OSHA ID 125G	varies	varies	480	30	2000	2000	4	15	ICP-AES	F/CST 225-3-01 F/CST 225-803 C/HLD 225-1	or or 116	F/CST 225-3100 F/CST 225-8215	or 107	
Metal & metalloid particulates (bulk sample)	OSHA ID 125G	varies	varies	bulk	bulk					ICP-AES	SM TB 225-24	172			
Metal removal fluid (aerosol)	ASTM D 7049			960		2000		8		GR	FLT 225-37-07 C/HLD 225-1	108 116	CST 225-2LF SP 225-27	115 117	
Metal working fluids (aerosols)	ASTM D 7049			960		2000		8		GR	FLT 225-37-07 C/HLD 225-1	108 116	CST 225-2LF SP 225-27	115 117	
Metals (ICP analysis of metal/metalloid particulates from solder operations) (bulk sample)	OSHA ID 206	varies	varies	bulk	bulk					ICP-AES	SM TB 225-24	172			
Metals (in settled dust)	ASTM D 6966			wipe		wipe		wipe		varies	W 225-2414	172	TMP 225-2415	172	
Metals in workplace atmospheres	ASTM D 4185			varies		2000		varies		AAS	F/CST 225-3-01	102	C/HLD 225-1	116	
Metals, trace (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	varies	varies	varies	varies	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116	

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Metalworking fluids (thoracic particulates)	NIOSH 5524	0.4 mg/m ³ (thoracic particulates)		2000		varies		varies		GR	PPI 225-381 IS 225-388 SCN 225-26	130 FLT 130 SP 117	225-37-07 225-27	108 or		
Metalworking fluids (total particulates)	NIOSH 5524	0.5 mg/m ³ (total particulates)		1000 (min)		2000		varies		GR	FLT 225-37-07 C/HLD 225-1	108 CST 116 SP	225-2LF 225-27	115		
Methacrylic acid	OSHA PV2005	20		20		100		4		LC-UV	ST 226-30-08	48				
Methacrylic acid	NON 60			24		100		4		HPLC-UV	ST 226-30-08	48				
Methamidophos (Organophosphorus Pesticides)	NIOSH 5600			240		1000		4		GC-FPD	ST 226-58	49				
Methanol (methyl alcohol)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 TH 37	224-26-02	37		
Methanol (methyl alcohol)	NIOSH 2000	200	250	5	3	20	200	4	15	GC-FID	ST 226-51	49				
Methidathion	OSHA PV2074			60		1000		1		GC-ECD	ST 226-58	49				
Methiocarb (Organonitrogen Pesticides)	NIOSH 5601			240		1000		4		HPLC-UV	ST 226-58	or ST	226-30-16	48		
Methomyl	OSHA PV2114			60		1000		1		HPLC-UV	ST 226-30-16	48				
Methomyl (Organonitrogen Pesticides)	NIOSH 5601	2.5 mg/m ³		240		1000		4		HPLC-UV	ST 226-58	or ST	226-30-16	48		
Methotrexate	OSHA PV2146			120		1000		2		HPLC-UV	ST 226-30-16	48				
2-Methoxy-1-propanol	OSHA 99			10		100		100 min		GC-FID	ST 226-01	48				
2-Methoxy-1-propyl acetate	OSHA 99			10		100		100 min		GC-FID	ST 226-01	48				
1-Methoxy-2-propanol	OSHA 99			10		100		100 min		GC-FID	ST 226-01	48				
1-Methoxy-2-propanol (glycol ethers)	NIOSH 2554			3-25		100-200		varies		GC-FID	ST 226-81A	49				
1-Methoxy-2-propyl acetate	OSHA 99			10		100		100 min		GC-FID	ST 226-01	48				
1-Methoxy-2-propyl acetate (glycol ethers)	NIOSH 2554			3-25		100-200		varies		GC-FID	ST 226-81A	49				
Methoxychlor	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF 226-92	54				
Methoxychlor	OSHA PV2038	15 mg/m ³		60		1000		1		GC-ECD	ST 226-30-16	48				
2-Methoxyethanol	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 TH 37	224-26-02	37		
2-Methoxyethanol (methyl CELLOSOLVE solvent) (alcohols IV)	NIOSH 1403	0.1 (skin)		6-50		10-50		varies		GC-FID	ST 226-01	48				
2-Methoxyethyl acetate	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 TH 37	224-26-02	37		
2-Methoxyethyl acetate	OSHA 53	25		10		100		100 min		GC-FID	ST 226-01	48				
2-Methoxyphenol	OSHA PV2039			20		200		100 min		GC-FID	ST 226-95	50				
3-Methoxyphenol	OSHA PV2039			20		200		100 min		GC-FID	ST 226-95	50				
4-Methoxyphenol	OSHA PV2039			20		200		100 min		GC-FID	ST 226-95	50				
Methoxypropanol	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 TH 37	224-26-02	37		
Methyl acetate	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 TH 37	224-26-02	37		
Methyl acetate	NIOSH 1458	200	250	5	3	20	200	4	15	GC-FID	ST 226-01	48				
Methyl acrylate	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 TH 37	224-26-02	37		
Methyl acrylate	Internal					15.7 ml/min		8-24 hrs		TD, GC	PS 690-101	or PS	690-103	96		
Methyl acrylate	Internal					15.7 ml/min		8-24 hrs		SE, GC	PS 690-105	96				
Methyl acrylate	NIOSH 1459	10		5		20		4		GC-FID	ST 226-01	48				
Methyl acrylate	NIOSH 2552	10		1-5		10-200		varies		GC-FID	ST NA SKC					
Methyl acrylate	NON 54	5	15	10	3	20	200	8	15	GC-FID	ST 226-81A	49				
Methyl acrylate	OSHA 92	10		12		50		4		GC-FID	ST 226-73	49				
Methyl acrylonitrile	OSHA 37			20		200		100 min		GC-NPD	ST 226-01	48				
Methyl alcohol (methanol)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 TH 37	224-26-02	37		
Methyl alcohol (methanol)	NIOSH 2000	200	250	5	3	20	200	4	15	GC-FID	ST 226-51	49				
Methyl alcohol (RH < 50% @ 25 C)	OSHA 5001	200		3		50		1		GC-FID	ST 226-82	50				

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Sampling Guide

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Methyl alcohol (RH > 50% @ 25 C)	OSHA 5001	200		5		50		100 min		GC-FID	ST	226-82	50			
Methyl amine	OSHA 40	10		10		20		8		HPLC-UV	ST	226-96	50			
Methyl arsonic acid (arsenic, organo-)	NIOSH 5022			480		1000		8		IC-AA	FLT C/HLD	225-17-01 225-1	108 116	CST	225-2LF	115
Methyl bromide	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK	228 Series		
Methyl bromide	NIOSH 2520	LFC		1-5		10-100		varies		GC-AED	ST	226-82	50	ST	226-44-02	49
Methyl bromide	OSHA PV2040	20		3		200		15		GC-FID	ST	226-82	50			
Methyl butyl ketone (Ketones I)	NIOSH 2555			1-10		10-200		varies		GC-FID	ST	NA SKC				
Methyl butyl ketone (MBK, 2-hexanone)	Internal					14.3 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	96
Methyl butyl ketone (MBK, 2-hexanone)	Internal					14.3 ml/min		8-24 hrs		SE, GC	PS	690-105			96	
Methyl butyl ketone (MBK, 2-hexanone) (Ketones I)	NIOSH 1300	1		10		20(50)		8(3.3)		GC-FID	ST	226-01			48	
Methyl CELLOSOLVE acetate (2-methoxyethyl acetate)	NIOSH 1451	0.1		12		50		4		GC-FID	ST	226-01			48	
Methyl CELLOSOLVE solvent (2-methoxyethanol) (alcohols IV)	NIOSH 1403	0.1 (skin)		6-50		10-50		varies		GC-FID	ST	226-01			48	
Methyl chloride	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK	228 Series		
Methyl chloride	NIOSH 1001	LFC		0.5		100		5		GC-FID	ST	226-09	48	ST	226-01	48
Methyl chloroform	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK	228 Series		
Methyl chloroform (1,1,1-Trichloroethane)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Methyl chloroform (1,1,1-Trichloroethane)	Internal					14.1 ml/min		8-24 hrs		SE, GC	PS	690-105			96	
Methyl chloroform (1,1,1-trichloroethane)	OSHA 14	350		3	3	20	200	2.5	15	GC-FID	ST	226-01			48	
Methyl chloroform (1,1,1-trichloroethane) (hydrocarbons, halogenated)	NIOSH 1003	350		3		10-200		varies		GC-FID	ST	226-01			48	
Methyl cyclohexane	Internal					14.2 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	96
Methyl cyclohexane	Internal					14.2 ml/min		8-24 hrs		SE, GC	PS	690-105			96	
Methyl cyclohexane (hydrocarbons, BP 36 to 216 C)	NIOSH 1500	400		4		10-200		varies		GC-FID	ST	226-01			48	
Methyl ethyl ketone	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Methyl ethyl ketone	Internal					16.9 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	96
Methyl ethyl ketone	Internal					16.9 ml/min		8-24 hrs		SE, GC	PS	690-105			96	
Methyl ethyl ketone	OSHA 1004	200		12		50		4		GC-FID	ST	NA SKC				
Methyl ethyl ketone (Ketones I)	NIOSH 2555			1-10		10-200		varies		GC-FID	ST	NA SKC				
Methyl ethyl ketone (MEK) (see 2-butanone)																
Methyl ethyl ketone (MEK) (see 2-butanone)	NIOSH 2500	200	300	10	3	20(50)	200	8(3.3)	15	GC-FID	ST	226-81A			49	
Methyl ethyl ketone (MEK, 2-butanone)	OSHA 1004	200				16.88		8		GC-FID	PS	575-002			82	
Methyl ethyl ketone peroxide	NIOSH 3508		0.2 (15 min)		120		1000		120	VAS	IMP	225-36-1	70	IT	225-22	70
Methyl ethyl ketone peroxide	OSHA 77				15		1000		15	HPLC-UV	ST	226-93			50	
Methyl formate	OSHA PV2041	100		3		50		1		GC-FID	ST	226-83			50	
Methyl iodide	NIOSH 1014	2		48		100		8		GC-FID	ST	226-01			48	
Methyl isoamyl acetate (Esters I)	NIOSH 1450	50		1-10		10-200		varies		GC-FID	ST	226-01			48	
Methyl isoamyl ketone	OSHA PV2042	100		24		50		8		GC-FID	ST	226-01			48	
Methyl isobutyl carbinol (methyl amyl alcohol) (alcohols combined)	NIOSH 1405	25	40 (skin)	1-10	1-10	10-200	10-200	varies	varies	GC-FID	ST	226-01			48	
Methyl isobutyl carbinol (methyl amyl alcohol) (Alcohols III)	NIOSH 1402	25	40	10	3	20(50)	200	8(3.3)	15	GC-FID	ST	226-01			48	
Methyl isobutyl ketone	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Methyl isobutyl ketone	Internal					13.5 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	96
Methyl isobutyl ketone	Internal					13.5 ml/min		8-24 hrs		SE, GC	PS	690-105			96	
Methyl isobutyl ketone	OSHA 1004	100		12		50		4		GC-FID	ST	NA SKC				

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number				
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time							
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)						
Methyl isobutyl ketone (hexone)	OSHA 1004	100				13.62		8		GC-FID	PS	575-002	82		
Methyl isobutyl ketone (hexone) (Ketones I)	NIOSH 1300	50	75	10	3	20(50)	200	8(3.3)	15	GC-FID	ST	226-01	48		
Methyl isobutyl ketone (Ketones I)	NIOSH 2555	50		1-10		10-200		varies		GC-FID	ST	NA SKC			
Methyl isocyanate (MIC)	OSHA 54	0.02		15		50		5		HPLC-FD	ST	NA SKC			
Methyl mercaptan	NIOSH 2542		0.5 (15 min)	48	12	100	200	8	60	GC-FPD	CF/CST	225-9007	68	C/HLD	225-1 116
Methyl mercaptan	NON 42			12		1000		12 min		GC-FPD	SB	231-10	60		
Methyl mercaptan	OSHA 26		10	20		200		100 min		GC-FPD	CF/CST	225-9007	68	C/HLD	225-1 116
Methyl methacrylate	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series 224-26-CPC	52 37	TH	224-26-02 37
Methyl methacrylate	Internal					13.1 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103 96
Methyl methacrylate	Internal					13.1 ml/min		8-24 hrs		SE, GC	PS	690-105	96		
Methyl methacrylate	NIOSH 2537	100		1-8		10-50		varies		GC-FID	ST	226-30-06	48		
Methyl methacrylate	NON 54	50	75	10	3	20	200	8	15	GC-FID	ST	226-81A	49		
Methyl methacrylate	OSHA 94	100		3		50		1		GC-FID	ST	226-73	49		
Methyl n-amyl ketone (2-heptanone) (Ketones II)	NIOSH 2553	100		1-25		10-200		varies		GC-FID	ST	NA SKC			
Methyl parathion	ASTM D 4861			240-7200		1000-5000		4-24		GC-NPD	PUF	226-92	54		
Methyl parathion	OSHA PV2112			480		1000		8		GC-FPD	ST	226-30-16	48		
Methyl parathion (Organophosphorus Pesticides)	NIOSH 5600	0.2 mg/m ³		240		1000		4		GC-FPD	ST	226-58	49		
Methyl propyl ketone (2-pentanone)	NIOSH 1300	150		10		200		50 (min)	15	GC-FID	ST	226-01	48		
Methyl propyl ketone (Ketones I)	NIOSH 2555			1-10		10-200		varies		GC-FID	ST	NA SKC			
alpha-Methyl styrene	Internal					12.6 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-104 96
alpha-Methyl styrene	Internal					12.6 ml/min		8-24 hrs		SE, GC	PS	690-105	96		
alpha-Methyl styrene (Hydrocarbons, Aromatic)	NIOSH 1501	50	100	1-30	1-30	10-200	10-200	varies	varies	GC-FID	ST	226-01	48		
beta-Methyl styrene (Hydrocarbons, Aromatic)	NIOSH 1501	50	100	1-30	1-30	10-200	10-200	varies	varies	GC-FID	ST	226-01	48		
Methyl styrene (vinyl toluene)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series 224-26-CPC	52 37	TH	224-26-02 37
17-a-Methyl testosterone	OSHA PV2001			60		1000		1		HPLC-UV	F/CST	225-706	110	C/HLD	225-1 116
Methyl-2-cyanoacrylate	OSHA 55			12		100		2		HPLC-UV	ST	226-98	50		
1-Methyl-2-ethyl benzene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series 224-26-CPC	52 37	TH	224-26-02 37
1-Methyl-2-pyrrolidinone	OSHA PV2043			10		200		50 min		GC-FID	ST	226-01	48		
N-Methyl-2-pyrrolidinone	NIOSH 1302			96		200		8		GC-NPD, FID	ST	226-01	48		
N-Methyl-2-pyrrolidinone	OSHA PV2043			10		200		50 min		GC-FID	ST	226-01	48		
1-Methyl-3-ethyl benzene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series 224-26-CPC	52 37	TH	224-26-02 37
5-Methyl-3-heptanone (ketones II)	NIOSH 2553	25		1-25		10-200		varies		GC-FID	ST	NA SKC			
5-Methyl-3-heptanone (ketones II)	NIOSH 1301	25		10		20(50)		8(3.3)		GC-FID	ST	226-01	48		
1-Methyl-4-ethyl benzene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series 224-26-CPC	52 37	TH	224-26-02 37
2-Methyl-4-isothiazolin-3-one (Kathon 886)	NON 55	1.5 mg/m ³	4.5 mg/m ³	50	7.5	200	500	4	15	HPLC-UV	ST	226-99	50		
Methylal (dimethoxymethane)	NIOSH 1611	1000		1.8		20		1.5		GC-FID	ST	226-01	48		
Methylal (see dimethoxymethane)															
Methylcyclohexanol	NIOSH 1404	50		12		25		8		GC-FID	ST	226-01	48		
Methylcyclohexanone	NIOSH 2521	50	75	3		50		1		GC-FID	ST	226-115	50		
4,4-Methylene bisphenyl isocyanate (MDI)	OSHA 5002		200 µg/m ³		15		1000		15	HPLC-UV	CF/CST	225-9002	or	CF/CST	225-9013 or 225-1 116
4,4-Methylene bisphenyl isocyanate (MDI) (isocyanates)	NIOSH 5521	50 µg/m ³	200 µg/m ³ (10 min) C	480	10	1000	1000	8	10	HPLC-ELCHM & HPLC-UV	IMP	225-36-1	70	IT	225-22 70
4,4-Methylene bisphenyl isocyanate (MDI) (isocyanates)	OR-OSHA 1010	0.02	0.005	45	5	1000	1000	45 min	5	HPLC	IMP	225-36-1	70	IT	225-22 70
										CF/CST	225-9029	68			

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Sampling Guide

skcinc.com for updates

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Methylene chloride	NIOSH 1005	LFC		2	1.5	20	100	1.6	15	GC-FID	ST	226-01	48			
Methylene chloride	OSHA 80	25	125	3	0.25	50	50	1	5	GC-FID	ST	NA SKC				
Methylene chloride (dichloromethane)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series	52	TH	224-26-02	37
Methylene chloride (dichloromethane)	Internal					0.54 ml/min			1-7 days	SE, GC	PS	690-105	with	RR	690-300	96
Methylene chloride (dichloromethane)	Internal					14.7 ml/min			8 hrs-3 days	SE, GC	PS	690-105				96
4,4'-Methylene diphenyl isocyanate (MDI)	NIOSH 5522	50 µg/m³	200 µg/m³ (10 min) C	360	20	1000	2000	6	10	HPLC-FD	IMP	225-36-1	70	IT	225-22	70
4,4'-Methylenebis(2-chloroaniline) (MOCA)	OSHA 71			100		1000		100	min	GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
Methylene-bis-(4-cyclohexylisocyanate)	OSHA 5002				15	1000			15	HPLC-UV	CF/CST	225-9013	or	CF/CST	225-9022 ▼	68
Methylene-bis-(4-cyclohexylisocyanate) (isocyanates, total)	NIOSH 5525		110 µg/m³ (10 min) C		1-500		1000-2000		varies	HPLC-UV	FLT	225-7 ‡	110	CST	225-4	115
											SP	225-27	or	IOM	225-76A	122
											FLT	225-702 ‡	110			
4,4'-Methylenebisphenyl isocyanate (MDI) (isocyanates, total)	NIOSH 5525	50 µg/m³	200 µg/m³ (10 min) C	1-500		1000-2000			varies	HPLC-UV	FLT	225-7 ‡	110	CST	225-4	115
											SP	225-27	or	IOM	225-76A	122
											FLT	225-702 ‡	110			
4,4'-Methylenedianiline (MDA)	NIOSH 5029	LFC		480		1000		8		HPLC-UV	CF/CST	225-9004	68	C/HLD	225-1	116
4,4'-Methylenedianiline (MDA)	OSHA 57			100		1000		100		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
Methyl-n-aryl ketone (2-heptanone) (Ketones II)	NIOSH 1301	100		1-25		10-200		8		GC-FID	ST	226-01			48	
Methylphenols	EPA TO-8			< 80 L		100-1000 ml/min				HPLC-UV	IMP	225-36-1	70	IT	225-22	70
Methyl-t-butyl-ether (MTBE)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series	52	TH	224-26-02	37
Methyl-t-butyl-ether (MTBE)	Internal					13.6 ml/min			8 hrs-30 days	SE, GC	PS	690-105				96
Methyl-tert-butyl ether	NIOSH 1615			96		200		8		GC-FID	ST	226-37			49	
Methyltetrahydrophthalic anhydride	NON 28			200	20	40	1000	8	20	GC-FID	ST	226-30			48	
Methyltin dichloride	NIOSH 5526	0.1 mg/m³		60	60	250	1000	4	60	GC-FPD	ST	226-30-16			48	
Metolachlor	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92			54	
Metolachlor	NIOSH 5602			480		1000		8		GC-ECD	ST	226-58			49	
Metribuzin	OSHA PV2044			240		1000		4		GC-FPD	ST	226-30-16			48	
Mevinphos (phosdrin) (Organophosphorus Pesticides)	NIOSH 5600	0.01		240		1000		4		GC-FPD	ST	226-58			49	
Mexacarbate	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92			54	
MIBK (see methyl isobutyl ketone)																
MIC (methyl isocyanate)	OSHA 54	0.02		15		50		5		HPLC-FD	ST	NA SKC				
Mica (see Respirable dust)	OSHA ID 142 (v4)															
Mineral spirits (naphthas)	NIOSH 1550	350 mg/m³	1800 mg/m³	3	1	20	200	2.5	5	GC-FID	ST	226-01			48	
Mineral wool fiber (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT	225-5-37-P	107	C/HLD	225-1	116
											CYC	225-01-02	127	CST	225-3LF	115
Mineral wool fiber (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT	225-5-37-P	107	C/HLD	225-1	116
											CST	225-2LF	115			
Mirex	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92			54	
Mold spores (in air)					15-150		15000		1-10 min	varies	STC	225-9820			114	
Molybdenum (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306			1-330		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Molybdenum (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	5 mg/m³ (soluble)	10 mg/m³ (insoluble)	5-67		1000-4000		varies		ICP-AES	F/CST	225-3-01	or	F/CST	225-803	107
											C/HLD	225-1	116			
Molybdenum (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	5 mg/m³ (soluble)	10 mg/m³ (insoluble)	0.5-10,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Molybdenum (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	5 mg/m ³ (soluble) 10 mg/m ³ (insoluble)		6-67		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Molybdenum (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W	225-2414	172	TMP	225-2415	172
Molybdenum insolubles (as Mo)	OSHA ID 125G	15 mg/m ³		480		2000		4		ICP-AES	F/CST F/CST C/HLD	225-3-01 225-803 225-1	or or 116	F/CST F/CST	225-3100 225-8215	or 107
Molybdenum insolubles (as Mo) (respirable fraction)	OSHA ID 121	15 mg/m ³ (total dust)		960		2000		8		GR & AA or GR & AES	F/CST CYC	225-3-01 225-105	102 126	C/HLD	225-1	116
Molybdenum solubles (as Mo)	OSHA ID 121	5 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Monochloroacetic acid (chloroacetic acid)	NIOSH 2008			48		100		8		IC-CD	ST	226-47-01	49			
Monochlorotoluene (1-chloro-2-methyl benzene; OXSOL 10)	Internal					13.0 ml/min		8-24 hrs		TD, GC	PS PS	690-101 690-104	or 96	PS	690-103	or
Monochlorotoluene (1-chloro-2-methyl benzene; OXSOL 10)	Internal					13.0 ml/min		8-24 hrs		SE, GC	PS	690-105	96			
Monocrotophos (Azodrin)	OSHA PV2045			480		1000		8		GC-FPD	ST	226-30-16	48			
Monocrotophos (Organophosphorus Pesticides)	NIOSH 5600	0.25 mg/m ³		240		1000		4		GC-FPD	ST	226-58	49			
Monoethanolamine (2-aminoethanol)	NIOSH 3509	3	6	240		1000		4		IC	IMP	225-36-1	70	IT	225-22	70
Monoethanolamine (see 2-aminoethanol)																
Monomethyl aniline	NIOSH 3511	0.5		100		1000		100 min		GC-FID	IMP	225-36-2	70	IT	225-22	70
Monomethyl hydrazine	NIOSH 3510		0.04 (120 min)		15	1000		15		VAS	IMP	225-36-2	70	IT	225-22	70
Monomethyl hydrazine	OSHA 20		0.2		4.5	300		15		HPLC-UV	ST	226-42-02	49			
Monuron	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF	226-92	54			
Morpholine	OSHA PV2123	20		10		100		100 min		GC-FID	ST	226-98	50			
Mycobacteria	NIOSH 0801			50-300		28300		varies		GC-FID	BI	225-9611	136			
Mycobacterium tuberculosis (airborne)	NIOSH 0900			1920		4000		8		PCR	FLT CST	225-3705 225-3LF	108 115	SP C/HLD	225-27 225-1	117 116
Mycotoxins (fungi in air)	NON 48			62.5-375		12,500 +		5-30		varies	BS	225-9595	138	VT	225-9598A	138
Naphtha (coal tar)	NIOSH 1550	100		10		20(50)		8(3.3)		GC-FID	ST	226-01	48			
Naphtha (coal tar)	OSHA 48	100		3		200		15 min		GC-FID	ST	226-01	48			
Naphthalene	OSHA 35	10		10	3	20(50)	200	8(3.3)	15	GC-FID	ST	226-110	50			
Naphthalene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF	226-131	55	FLT	225-1808	109
Naphthalene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515			480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Naphthalene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506	10	15	480		2000		4		HPLC-UV	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
1,5-Naphthalene diisocyanate	OSHA PV2046			60		1000		1		HPLC-UV-FD	CF/CST	225-9013	68	C/HLD	225-1	116
1,5-Naphthalene diisocyanate (isocyanates, total)	NIOSH 5525	40 µg/m ³	70 µg/m ³ (10 min) C	1-500	1-500	1000-2000	1000-2000	varies	varies	HPLC-UV	FLT SP FLT	225-7 ‡ 225-27 225-702 ‡	110 or 110	CST IOM	225-4 225-76A	115 122
Naphthas (see specific compounds)	NIOSH 1550	varies		varies		varies		8		GC-FID	ST	226-01	48			
alpha-Naphthylamine	OSHA 93			100		1000		100 min		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
beta-Naphthylamine	OSHA 93			100		1000		100 min		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
Naphthylamines (alpha- & beta-)	NIOSH 5518			96		200		8		GC-FID	FLT ST	225-16 226-51	110 49	CST	225-32	116
Naphthylene diisocyanate (NDI) (isocyanates)	NIOSH 5521	40 µg/m ³	70 µg/m ³ (10 min) C	480	10	1000	1000	8	10	HPLC-ELCHM & HPLC-UV	IMP	225-36-1	70	IT	225-22	70
Naphthylthiourea (see ANTU)																
Nickel (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	0.015 mg/m ³		2-2000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116

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skcinc.com for updates

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		Agency Standard		Vol. (liter)		Rate (ml/min)		Time						
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)					
Nickel (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	0.015 mg/m ³		5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01 C/HLD 225-1	or 116	F/CST 225-803	107
Nickel (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	0.012 mg/m ³		1-50,000		1000-4000		varies		ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116
Nickel (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	0.15 mg/m ³		5-1000		1000-4000		varies		ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116
Nickel (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W 225-2414	172	TMP 225-2415	172
Nickel (metal & insoluble compounds as Ni)	OSHA ID 125G	1 mg/m ³		480		2000		4		ICP-AES	F/CST 225-3-01 F/CST 225-803 C/HLD 225-1	or 116	F/CST 225-3100 F/CST 225-8215	or 107
Nickel (metal, soluble, & insoluble compounds as Ni)	OSHA ID 121	1 mg/m ³		960		2000		8		AA or AES	F/CST 225-3-01	102	C/HLD 225-1	116
Nickel (soluble compounds as Ni)	OSHA ID 121	1 mg/m ³		960		2000		8		AA or AES	F/CST 225-3-01	102	C/HLD 225-1	116
Nickel (soluble compounds as Ni)	OSHA ID 125G	1 mg/m ³		480		2000		4		ICP-AES	F/CST 225-3-01 F/CST 225-803 C/HLD 225-1	or 116	F/CST 225-3100 F/CST 225-8215	or 107
Nickel carbonyl	NIOSH 6007	0.001		72		150		8		AA-GF	ST NA SKC		F/CST 225-3-01	102
Nicotine	NIOSH 2544	0.5 mg/m ³		360		1000		6		GC-NPD	ST 226-30-04		48	
Nicotine	NIOSH 2551	0.5 mg/m ³		480		1000		8		GC-NPD	ST 226-93		50	
Nicotine	NON 19			120		1000		2		GC	ST 226-93		50	
Nicotine	NON 49			90-720		1500		1-8		GC-NSD	ST 226-170		51	
Nicotine & 3-ethenylpyridine	ASTM D 5075			varies		1500		varies		GC-NPD	ST 226-93		50	
Niobium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	0.012 mg/m ³		0.1-3,300		1000-4000		varies		ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116
Nitric acid	NIOSH 7907	2	4	600	30	2000	2000	5	15	IC-CD	CF/CST 225-9032	68	C/HLD 225-1	116
Nitric acid	OSHA ID 165SG	2		96	7.5	200	500	8	15	IC	ST 226-10-03		48	
Nitric oxide	NON 59	25		3-24		100		4		IC	ST 226-40A		49	
p-Nitroaniline	NIOSH 5033	3 mg/m ³		240		1000		4		HPLC-UV	F/CST 225-3-01	102	C/HLD 225-1	116
Nitrobenzene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 37	TH 224-26-02	37
Nitrobenzene	NIOSH 2005	1		48		100		8		GC-FID	ST 226-10		48	
Nitrobenzene	NIOSH 2017	1		24		200		2		GC-FID	CF/CST 225-9004	68	ST 226-15	48
p-Nitrochlorobenzene (nitrobenzenes)	NIOSH 2005	0.1		96		200		8		GC-FID	ST 226-10		48	
Nitrochloroform	NON 51	0.1		144		100		24		GC-MSD	ST 226-175		51	
Nitrochloromethane	NON 51	0.1		144		100		24		GC-MSD	ST 226-175		51	
4-Nitrodiphenyl	OSHA PV2082			240		500		8		GC-FID	ST 226-30-16		48	
Nitroethane	NIOSH 2526	100		2.4		20		2		GC-FID	ST 226-3002A		48	
Nitrofurazone	OSHA PV2069			240		1000		4		HPLC-UV	F/CST 225-709	110	C/HLD 225-1	116
Nitrogen dioxide	NIOSH 6014		1 (NO ₂)	1.5-6		25-200		varies		VAS	ST 226-40-02		49	
Nitrogen dioxide	OSHA ID 182		5 (C)	3		200		15		IC	ST 226-40-02		49	
Nitroglycerin	NIOSH 2507		0.1 mg/m ³	3		200		15		GC-ECD	ST 226-35-03		48	
Nitroglycerin	OSHA 43		0.1 mg/m ³	15		1000		15		HPLC	ST 226-35-03		48	
Nitromethane	NIOSH 2527			2.4		20		2		GC-NSD	ST 226-111A		50	
1-Nitropropane	OSHA 46	25		3		100		30 min		GC-FID	ST 226-93		50	
2-Nitropropane	NIOSH 2528	LFC		2		20		1.5		GC-FID	ST 226-110		50	
2-Nitropropane	OSHA 46	25		3		100		30 min		GC-FID	ST 226-93		50	
1-Nitropyrene in diesel particulates	NIOSH 2560			480-960		1000-2000		varies		GC-NCD	FLT 225-7 SPC 225-23	110	SP 225-27	117
N-Nitrosodiethanolamine	OSHA 31			480		2000		4		GC-TEA	F/CST 225-706	110	C/HLD 225-1	116
N-Nitrosodiphenylamine	OSHA 23			240		1000		4		HPLC-UV	IMP 225-36-2	70	IT 225-22	70
m-Nitrotoluene (nitroaromatic compounds)	NIOSH 2005	2 ppm		96		200		8		GC-FID	ST 226-10		48	
o-Nitrotoluene (nitroaromatic compounds)	NIOSH 2005	2 ppm		96		200		8		GC-FID	ST 226-10		48	

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number						
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time									
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)								
p-Nitrotoluene (nitroaromatic compounds)	NIOSH 2005	2 ppm		96		200		8		GC-FID	ST	226-10	48				
Nitrotoluene (nitrobenzenes)	NIOSH 2005	2 ppm		96		200		8		GC-FID	ST	226-10	48				
Nitrous oxide	NIOSH 6600	25		3		100-4000		varies		P IR	SB	231-05	60				
trans-Nonachlor	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54				
Nonane	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37	
Nonane	Internal					10.6 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-104	96	
Nonane	Internal					10.6 ml/min		8-24 hrs		SE, GC	PS	690-105				96	
n-Nonane (hydrocarbons, BP 36 to 216 C)	NIOSH 1500	200		4		10-200		varies		GC-FID	ST	226-01				48	
Nonpolar organic compounds	NON 38	varies		varies				varies		GC	PUF	226-129				55	
Norethindrone	OSHA PV2070			480		2000		4		HPLC-UV	F/CST	225-802	107	C/HLD	225-1	116	
Nuisance dust (Particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1	225-3LF	116 115
Nuisance dust (see dust, respirable nuisance)																	
n-Octane	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37	
n-Octane	Internal					12.7 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-104	96	
n-Octane	Internal					12.7 ml/min		8-24 hrs		SE, GC	PS	690-105				96	
n-Octane	OSHA 5000	500		12		50		4		GC-FID	ST	226-01				48	
n-Octane (hydrocarbons, BP 36 to 216 C)	NIOSH 1500	75	385	4	4	0-200	0-200	varies	varies	GC-FID	ST	226-01				48	
1-Octanethiol	NIOSH 2510		0.5 (15 min)		3			200		15	GC-FPDS	ST	226-35-03			48	
Octanol	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37	
Octyl alcohol	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37	
di-n-Octyl phthalate (DNOP)	OSHA 104			240		1000		4		GC-FID	ST	226-56				49	
Oil mist (mineral)	NIOSH 5026	5 mg/m ³	10 mg/m ³	480	30	1000	2000	8	15	IR	F/CST C/HLD	225-3-01 225-1	or	F/CST	225-802	107 116	
Oil mist (mineral)	OSHA ID 178SG	5 mg/m ³		960		2000		8		GR & IR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116	
Oil mist (total aerosol)	NON 46	5 mg/m ³		varies		2000		varies		GR	IOM	225-70A	122	FLT	225-5-25	107	
Oil mist (vegetable) (see Particulates Not Otherwise Regulated, total and respirable)																	
Organic vapors (charcoal tube method)	ASTM D 3686			varies	varies	varies	varies	varies	varies	GC	ST	226-01				48	
Organic vapors (diffusive sampler method)	ASTM D 4597			varies	varies	varies	varies	varies	varies	GC	PS	575-001	or	PS	575-002	82	
Organonitrogen pesticides (see specific compounds)	NIOSH 5601			240		1000		4		HPLC-UV	ST	226-58	or	ST	226-30-16	48	
Organophosphorus pesticides (see specific compounds)	NIOSH 5600	varies		varies		varies		8		GC-FPD	ST	226-58				49	
Organotin compounds as Sn (see specific compounds)	NIOSH 5504	0.1 mg/m ³		480		1000		8		HPLC & AA-GF	ST C/HLD	226-30 225-1	48 116	F/CST	225-709	110	
Organotin compounds as Sn (see specific compounds)	NIOSH 5526	0.1 mg/m ³		60	60	250	1000	4	60	GC-FPD	ST	226-30-16				48	
Oxalic acid	OSHA PV2115	1 mg/m ³		100		1000		100 min		IC	FLT C/HLD	225-701 225-1	110 116	CST	225-3LF	115	
Oxamyl (Organonitrogen Pesticides)	NIOSH 5601			240		1000		4		HPLC-UV	ST	226-58	or	ST	226-30-16	48	
Oxychlorodane	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92				54	
Ozone	OSHA ID 214	0.1		90-120	22.5	250-500	1500	180 min at 500 ml/min 480 min at 250 ml/min		IC	CF/CST	225-9014				68	
PAHs (Polynuclear Aromatic Hydrocarbons by GC, see specific compounds)	NIOSH 5515			480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48	
PAHs (Polynuclear Aromatic Hydrocarbons by GC-MS, see specific compounds)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF	226-131	55	FLT	225-1808	109	
PAHs (Polynuclear Aromatic Hydrocarbons by HPLC, see specific compounds)	NIOSH 5506			480		2000		4		HPLC-UV	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48	

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Abbreviations and references are found on pages 244-245.

Sampling Guide

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Palladium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303			0.1-3300		1000-4000			varies	ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Paper fiber (cellulose) (particulates, respirable)	NIOSH 0600			375		2500			2.5	GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115
Paper fiber (cellulose) (particulates, total)	NIOSH 0500			120		2000			1	GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116
Paraffin wax fume	OSHA PV2047			100		1000			100 min	GC-FID	F/CST	225-706	110	C/HLD	225-1	116
Paraquat	NIOSH 5003	0.1 mg/m ³		480		1000			8	HPLC-UV	FLT C/HLD	225-17-01 225-1	108	CST	225-2LF	115
Parathion	OSHA 62	0.1 mg/m ³		480		1000			8	GC-FPD	ST	226-30-16	48			
Parathion (Organophosphorus Pesticides)	NIOSH 5800	0.05 mg/m ³		240		1000			4	GC-FPD	ST	226-58	49			
Particulates not otherwise regulated (total dust)	OSHA PV2121	15 mg/m ³		960		2000			4-8	GR	FLT	225-802	107	C/HLD	225-1	116
Particulates not otherwise regulated, respirable	NIOSH 0600			375		2500			2.5	GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115
Particulates not otherwise regulated, respirable fraction	OSHA PV2121	5 mg/m ³		varies		varies			varies	GR	FLT CYC	225-803 225-105	107 126	C/HLD	225-1	116
Particulates, inorganic (bioaerosols)					15-150		15000		1-10 min	varies	STC	225-9820	114			
Particulates, respirable	NIOSH 0600			375		2500			2.5	GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115
Particulates, total (see specific compounds)	NIOSH 0500			120		2000			1	GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116
Particulates, total (see specific compounds)	NIOSH 0501			120		2000			1	GR	AC CST	225-8516GLA 225-2LF	106	C/HLD	225-1	116
PCBs (42% Cl) (see polychlorobiphenyls)	NIOSH 5503															
PCBs (54% Cl) (see polychlorobiphenyls)	NIOSH 5503															
PCBs (polychlorinated biphenyls)	EPA TO-4A					200-280 L/min			24 hrs	varies	PUF	226-131	55	FLT	225-1808	109
Pentachlorobenzene	ASTM D 4861			240-7200		1000-5000			4-24	GC-ECD	PUF	226-92	54			
Pentachlorobenzene (polychlorobenzenes)	NIOSH 5517			12		25			8	GC-ECD	FLT ST	Special order 226-30-04	48	CST	Special order	
Pentachlorophenol	ASTM D 4861			240-7200		1000-5000			4-24	GC-ECD	PUF	226-92	54			
Pentachlorophenol	NIOSH 5512	0.5 mg/m ³		480		1000			8	HPLC-UV	CST IMP FLT	225-3LF 225-36-2 225-5	115 70 102	SCN IT	225-26 225-22	117 70
Pentachlorophenol	OSHA 39	0.5 mg/m ³		48		200			4	HPLC-UV	ST	226-97	50			
Pentaerythritol (particulates, respirable)	NIOSH 0600			375		2500			2.5	GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115
Pentaerythritol (particulates, total)	NIOSH 0500			120		2000			1	GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116
Pentamidine isethionate	NIOSH 5032			960		2000			8	HPLC-FD	CST C/HLD	225-4 225-1	115 116	FLT	225-5-37-P	107
n-Pentane	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
n-Pentane	Internal					14.9 ml/min			8-24 hrs	SE, GC	PS	690-105	96			
n-Pentane (hydrocarbons, BP 36 to 216 C)	NIOSH 1500	120	610	4	4	10-200	10-200	varies	varies	GC-FID	ST	226-01	48			
2,3-Pentanedione	OSHA 1016	0.5		10	3	50	200	200 (min)	15	GC-FID	ST	226-183	51			
2-Pentanone (Ketones I)	NIOSH 2555			1-10		10-200		varies		GC-FID	ST	NA SKC				
2-Pentanone (methyl propyl ketone)	NIOSH 1300	150		10		200		50 (min)	15	GC-FID	ST	226-01	48			
2-Pentanone (methyl propyl ketone) (Ketones I)	NIOSH 1300	150		10		20(50)		8(3.3)		GC-FID	ST	226-01	48			
Peracetic acid and Hydrogen peroxide	NON 57			15		1000 π			15	MAS/HPLC-UV	CF/CST ST	225-9030 226-199-UC	68 52	ST	226-193-UC	or
Peracetic acid	OSHA PV2321	0.4		15		1000			15	GC-FID	CF/CST	225-9037	68	IMP	225-0024	70
Perchloric acid	OSHA ID 115SG			120		500			4	CLR	IMP	225-36-2	70	IT	225-22	70
Perchloroethylene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37

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Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number			
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time						
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)					
Perchloroethylene	Indoor					13.1 ml/min		8-24 hrs		TD, GC	PS 690-101 PS 690-104	or 96	PS 690-103 PS 690-300	or 96
Perchloroethylene	Internal					0.55 ml/min		24 hrs to 7 days		TD, GC	PS 690-101 PS 690-104	or with	PS 690-103 RR 690-300	or 96
Perchloroethylene	Internal					13.1 ml/min		8 hrs-30 days		SE, GC	PS 690-105	96		
Perchloroethylene (tetrachloroethylene)	OSHA 1001	100	200 (C)			13.06		8	5	GC-FID	PS 575-002	82		
Perchloroethylene (tetrachloroethylene)	OSHA 1001	100	200 (C)	12	0.75	50	50	4	5	GC-FID	ST 226-01	48		
Perchloroethylene (tetrachloroethylene) (hydrocarbons, halogenated)	NIOSH 1003	LFC		3		10-200		varies		GC-FID	ST 226-01	48		
Perchloroethylene (tetrachloroethylene) (portable GC)	NIOSH 3704	LFC		1		20-5000		varies		P GC	SB 232-01 PT NA SKC	or with	SB 249-01-PP SBLK NA SKC	with
Perlite (< 1% Quartz) (see <i>Particulates Not Otherwise Regulated, total and respirable</i>)														
cis-Permethrin	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92	54		
trans-Permethrin	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92	54		
Peroxyacetic acid (peracetic acid) & Hydrogen peroxide	NON 57				15	1000 π		15		MAS/HPLC-UV	CF/CST 225-9030 ST 226-199-UC	68 52	ST 226-193-UC	or
Pesticides	EPA IP-8			240-7200		1000-5000		4-24 hrs		GC-ECD	PUF 226-92	or	PUF 226-124	54
Pesticides	EPA TO-10A			240-7200		1000-5000		4-24 hrs		GC-ECD	PUF 226-92	or	PUF 226-124	54
Pesticides, carbamate	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92	54		
Pesticides, organochlorine	ASTM D 4861			240-7200		1000-5000		4-24		varies	PUF 226-92	or	PUF 226-124	54
Pesticides, organochlorine	EPA TO-4A					200-280 L/min		24 hrs		varies	PUF 226-131	55	FLT 225-1808	109
Pesticides, organonitrogen (see <i>specific compounds</i>)	NIOSH 5601			240		1000		4		HPLC-UV	ST 226-58	or	ST 226-30-16	48
Pesticides, organophosphorus	ASTM D 4861			240-7200		1000-5000		4-24		varies	PUF 226-92	or	PUF 226-124	54
Pesticides, pyrethrin	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92	54		
Pesticides, triazine	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV or GC-ECD	PUF 226-92	54		
Petroleum distillate (naphthas)	NIOSH 1550	350 mg/m ³	1800 mg/m ³	3.6	1.5	20	100	3	15	GC-FID	ST 226-01	48		
Petroleum distillate fractions (PDF)	OSHA 48	500		3		20		2.5		GC-FID	ST 226-01	48		
Petroleum ether (benzin) (naphthas)	NIOSH 1550	350 mg/m ³	1800 mg/m ³	3	1.5	20(50)	100	2.5(1)	15	GC-FID	ST 226-01	48		
Petroleum naphtha (naphthas)	NIOSH 1550	350 mg/m ³	1800 mg/m ³	3	1.5	20(50)	100	2.5(1)	15	GC-FID	ST 226-01	48		
Phenanthrene	OSHA 58			960		2000		8		GR & HPLC-FD, or GR & HPLC-UV	FLT 225-7 C/HLD 225-1	110 116	CST 225-2LF	115
Phenanthrene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF 226-131	55	FLT 225-1808	109
Phenanthrene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515			480		2000		4		GC-FID	F/CST 225-1713 C/HLD 225-1	108 116	ST 226-30-04	48
Phenanthrene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506			480		2000		4		HPLC-UV	F/CST 225-1713 C/HLD 225-1	108 116	ST 226-30-04	48
Phenol	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 37	TH 224-26-02	37
Phenol	EPA TO-8			< 80 L		100-1000 ml/min				HPLC-UV	IMP 225-36-1	70	IT 225-22	70
Phenol	OSHA 32	5		24		100		4		HPLC-UV	ST 226-95	50		
Phenol (cresols)	NIOSH 2546	5	15.6 (15 min)	24	3	100	200	4	15	GC-FID	ST 226-95	50		
Phenolics (screening)	NIOSH 2549			5		20		4		GC-MS	ST 226-330	52		
Phenothiazine	OSHA PV2048			100		1000		1		GC-NPD	F/CST 225-706	110	C/HLD 225-1	116
Phenyl ether	NIOSH 1617	1		48		100		8		GC-FID	ST 226-01	48		
Phenyl ether	OSHA PV2022	1		20		200		100 min		GC-FID	ST 226-95	50		
Phenyl ether-biphenyl mix	NIOSH 2013	1		24		50		8		GC-FID	ST 226-10	48		

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skcinc.com for updates

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number			
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time						
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)					
Phenyl glycidyl ether	NIOSH 1619	1 (15 min)		80		1000		80		GC-FID	ST	226-01	48	
Phenyl hydrazine	NIOSH 3518	0.14 (120 min)		120		1000		120		VAS	IMP	225-36-2	70	IT 225-22 70
Phenyl mercaptan	OSHA PV2075			20		200		100 min		GC-FID	CF/CST	225-9007	68	C/HLD 225-1 116
N-Phenyl-1-naphthylamine	OSHA 96			240		2000		4		HPLC-FD	FLT	225-703 ‡	110	CST 225-3-23 115
N-Phenyl-2-naphthylamine	OSHA 96			240		1000		4		HPLC-FD	C/HLD	225-1	116	
m-Phenylenediamine	OSHA 87			100		1000		100 min		HPLC-UV	CF/CST	225-9004	68	C/HLD 225-1 116
o-Phenylenediamine	OSHA 87			100		1000		100 min		HPLC-UV	CF/CST	225-9004	68	C/HLD 225-1 116
p-Phenylenediamine	OSHA 87	0.1 mg/m³		100		1000		100 min		HPLC-UV	CF/CST	225-9004	68	C/HLD 225-1 116
o-Phenylphenol	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF	226-92	54	
Phorate	ASTM D 4861			240-7200		1000-5000		4-24		GC-NPD	PUF	226-92	54	
Phorate (Organophosphorus Pesticides)	NIOSH 5600	0.05 mg/m³ 0.2 mg/m³		240		1000		4		GC-FPD	ST	226-58	49	
Phosdrin (mevinphos) (Organophosphorus Pesticides)	NIOSH 5600	0.01 0.03		120 15		1000 1000		2 15		GC-FPD	ST	226-58	49	
Phosgene	EPA TO-6			< 50 L		100-1000 ml/min				HPLC-UV	IMP	225-36-1	70	IT 225-22 70
Phosgene	OSHA 61	0.1		240		1000		4		GC-NPD	ST	226-117	50	
Phosgene & chloroformates	NON 40			24		50		8		GC-FPD	ST	226-153	51	
Phosphine	NIOSH 6002	0.3 1		12 3		100 200		8 15		UV-VIS	ST	226-165A ††	51	
Phosphine	OSHA 1003	0.3		240 30		1000 2000		4 15		ICP-AES	CF/CST	225-9018 ††	68	C/HLD 225-1 116
Phosphoric acid	NIOSH 7908	1 mg/m³ 3 mg/m³		960 30		2000 2000		8 15		IC-CD	CF/CST	225-9033	68	C/HLD 225-1 116
Phosphoric acid	OSHA ID 111	1 mg/m³		960 30		2000 2000		8 15		IC	F/CST	225-3-01	102	C/HLD 225-1 116
Phosphoric acid	OSHA ID 165SG	1 mg/m³		960 30		2000 2000		8 15		IC	ST	226-10-03	48	
Phosphorous (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	0.1 mg/m³		250-500,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD 225-1 116
Phosphorus	NIOSH 7905	0.1 mg/m³		12		200		1		GC-FPD	ST	226-35-03	48	
Phosphorus (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	0.1 mg/m³		9-2000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD 225-1 116
Phosphorus (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	0.1 mg/m³		25-2000		1000-4000		varies		ICP-AES	F/CST	225-3-01	or	F/CST 225-803 107
Phosphorus (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	0.1 mg/m³		25-200		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD 225-1 116
Phosphorus (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W	225-2414	172	TMP 225-2415 172
Phosphorus pentasulfide	OSHA ID 128SG	1 mg/m³		960 30		2000 2000		8 15		IC	F/CST	225-802	107	C/HLD 225-1 116
Phosphorus pentoxide	OSHA ID 111			480		1000		8		IC	F/CST	225-3-01	102	C/HLD 225-1 116
Phosphorus trichloride	NIOSH 6402	0.2 0.5		24		200		2		VAS	IMP	225-36-2	70	IT 225-22 70
<i>Phthalates (see specific compounds)</i>														
Phthalic anhydride	OSHA 90	2		75		1000		1.25		HPLC-UV	CF/CST	225-9034	68	C/HLD 225-1 116
Picloram (tordon) (total dust)	OSHA PV2049	15 mg/m³		60		1000		1		GR	F/CST	225-803	107	C/HLD 225-1 116
Picloram (tordon) (respirable dust)	OSHA PV2049	5 mg/m³		varies		varies		varies		GR	FLT	225-706	110	C/HLD 225-1 116
											CYC	225-105	126	
alpha-Pinene	Internal					11.3 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS 690-104 96
alpha-Pinene	Internal					11.3 ml/min		8-24 hrs		SE, GC	PS	690-105	96	
alpha-Pinene (terpenes)	NIOSH 1552			24		50		8		GC-FID	ST	226-01	48	
beta-Pinene (terpenes)	NIOSH 1552			24		50		8		GC-FID	ST	226-01	48	
Piperonyl butoxide	OSHA PV2110			30		1000		30 min		HPLC-UV	ST	226-30-16	48	
Pirimiphos methyl	OSHA PV2071			120		1000		2		GC-ECD	ST	226-30-16	48	

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞							Analytical Method	SKC Collecting Equipment & Page Number						
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)							CLG/STEL (min)	
Plaster of Paris (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115
Plaster of Paris (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116
Platinum	OSHA ID 130SG			90		1000		1.5		AA	F/CST	225-3-01	102	C/HLD	225-1	116
Platinum (Elements by ICP HNO ₃ Digestion)	NIOSH 7303			200- 25,000,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Platinum (as Pt), metal	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Platinum (as Pt), soluble salts	OSHA ID 121	2 µg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
PM2.5	EPA IP-10A					9 L/min		24 hrs		GR	CI FLT	225-370 225-1709	134 108	FLT	225-3708	108
PM2.5	EPA IP-10A					10 L/min		24 hrs		GR	PEM	761-203B	132	FLT	225-1709	108
PNAs (Polynuclear Aromatic Hydrocarbons by GC, see specific compounds)	NIOSH 5515			480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
PNAs by HPLC (see specific compounds)	NIOSH 5506			480		2000		4		HPLC-UV	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
PNAs selected	OSHA 58			960		2000		8		GR & HPLC- FD, or GR & HPLC-UV	FLT C/HLD	225-7 225-1	110 116	CST	225-2LF	115
Pollen (in air)					15-150		15000		1-10 min	varies	STC	225-9820	114			
Pollen (in air)	NON 48			62.5-375		12,500 +		5-30		varies	BS	225-9595	138	VT	225-9598A	138
Polychlorinated biphenyls	ASTM D 4861			240-7200		1000-5000		4-24		varies	PUF	226-92	or	PUF	226-124	54
Polychlorinated biphenyls	NIOSH 5503	0.001 mg/ m ³ (10 hrs)		48		100(200)		8(4)		GC-ECD	FLT ST	225-16 226-39	110 49	CST	225-32	116
Polychlorobenzenes (see specific compounds)	NIOSH 5517	varies		varies		varies		8		GC-ECD	FLT CST	Special order Special order		ST C/HLD	226-30-04 225-1	48 116
Polychlorobiphenyls (42% Cl)	NIOSH 5503	0.001 mg/ m ³ (10 hrs)		48		100(200)		8(4)		GC-ECD	FLT ST	225-16 226-39	110 49	CST	225-32	116
Polychlorobiphenyls (54% Cl)	NIOSH 5503	0.001 mg/ m ³ (10 hrs)		48		100(200)		8(4)		GC-ECD	FLT ST	225-16 226-39	110 49	CST	225-32	116
Polycyclic aromatic compounds (PACs), total	NIOSH 5800			960	30	2000	2000	8	15	FLUOR	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Polycyclic aromatic hydrocarbons (PAHs)	EPA IP-7			30,000 L		20 L/min				GC-FID, -MS, HPLC	PUF	226-131	55	FLT	225-1808	109
Polycyclic aromatic hydrocarbons (PAHs)	EPA TO-13A					220 L/min		24 hrs		GC-MS	PUF	226-131	55	FLT	225-1808	109
Polynuclear aromatic hydrocarbons (polynuclear aromatic hydrocarbons by GC, see specific compounds)	NIOSH 5515	varies		480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Polynuclear aromatic hydrocarbons (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209	varies		350 m ³ (max)		225 L/min		4-24		GC-MS	PUF	226-131	55	FLT	225-1808	109
Polynuclear aromatic hydrocarbons by HPLC (see specific compounds)	NIOSH 5506	varies		480		2000		4		HPLC-UV	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Portland cement (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115
Portland cement (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116
Portland cement (respirable dust) (see respirable dust)	OSHA ID 142 (w4)															
Portland cement (total dust)	OSHA ID 207	15 mg/m ³		240		1000		4		XRD	F/CST	225-803	107	C/HLD	225-1	116
Potassium & compounds	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Potassium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306			Varies		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Potassium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301			5-1000		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or	F/CST	225-803	107

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Sampling Guide

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Potassium (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300			5-1000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Potassium chromate (CR(VI))	OSHA ID 215 (V2)	0.005 mg/m ³		960		2000		8		IC-UV	F/CST	225-802	107	C/HLD	225-1	116
Potassium cyanide (cyanides)	NIOSH 7904	5 mg/m ³ (10 min)		15		1000		15		ISE	FLT IMP C/HLD	225-3705 Δ 225-36-2 225-1	108 70 116	CST IT	225-2LF 225-22	115 70
Potassium hydroxide (alkaline dust)	NIOSH 7401			960		2000		8		TITRA	F/CST	225-1715	108	C/HLD	225-1	116
Potassium hydroxide (as K)	OSHA ID 121			10		2000		5		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Progesterone	OSHA PV2001			60		1000		1		HPLC-UV	F/CST	225-706	110	C/HLD	225-1	116
Propane	OSHA PV2077	1000		5		100		50 min		GC-FID	ST	NA SKC				
1,2,3-Propanetriol trinitrate	OSHA 43			15		1000		15 min		HPLC-UV	ST	226-35-03	48			
n-Propanol	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Propargyl alcohol	OSHA 97			6		50		2		GC-ECD	ST	226-178	51			
Propazine	ASTM D 4861			240-7200		1000-5000		4-24		GC-NPD	PUF	226-92	54			
Propham (Organonitrogen Pesticides)	NIOSH 5601			240		1000		4		HPLC-UV	ST	226-58	or	ST	226-30-16	48
Propionaldehyde	ASTM D 5197			varies		500-1200		5 min-24 hrs		HPLC-UV	ST	226-120 °	or	ST	226-119	50
Propionaldehyde (Aldehydes, Screening)	NIOSH 2539			5		20		4		GC-FID & GC-MS	ST	226-118	50			
Propionic acid	OSHA PV2293			18		2000		90 min		IC	ST	226-15	48			
Propionitrile	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Propoxur (Baygon)	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF	226-92	54			
Propoxur (Baygon)	OSHA PV2007			60		1000		1		HPLC-UV	ST	226-30-16	48			
Propoxur (Organonitrogen Pesticides)	NIOSH 5601	0.5 mg/m ³		240		1000		4		HPLC-UV	ST	226-58	or	ST	226-30-16	48
n-Propyl acetate	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
n-Propyl acetate (Esters I)	NIOSH 1450	200	250	1-10	1-10	10-200	10-200	varies	varies	GC-FID	ST	226-01	48			
Propyl alcohol	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
n-Propyl alcohol	OSHA 5001	200		12		4				GC-FID	ST	226-82	50			
n-Propyl alcohol (alcohols combined)	NIOSH 1405	200	250 (skin)	1-10	1-10	10-200	10-200	varies	varies	GC-FID	ST	226-01	48			
n-Propyl alcohol (alcohols II)	NIOSH 1401	200	250	10	3	20(50)	200	8(3.3)	15	GC-FID	ST	226-01	48			
n-Propyl benzene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Propylene dichloride (1,2-dichloro propane)	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK	228 Series		
Propylene dichloride (1,2-dichloro propane)	NIOSH 1013	LFC		3		20		2.5		GC-ECN	ST	226-81A	49			
Propylene glycol	NIOSH 5523			60		1000		1		GC-FID	ST	226-57	49			
Propylene glycol	OSHA PV2051			60	15	1000	1000	1	15	GC-FID	ST	226-57	49			
Propylene glycol monomethyl ether (glycol ethers)	NIOSH 2554			3-25		100-200		varies		GC-FID	ST	226-81A	49			
Propylene glycol monomethyl ether acetate (glycol ethers)	NIOSH 2554			3-25		100-200		varies		GC-FID	ST	226-81A	49			
Propylene oxide (1, 2-epoxypropane)	NIOSH 1612	LFC		5		20		4.2		GC-FID	ST	226-01	48			
Propylene oxide (1, 2-epoxypropane)	OSHA 88	100		5	5	100	1000	50 min	5	GC-FID	ST	226-81A	49			
Pyrene	OSHA 58			960		2000		8		GR & HPLC-FD, or GR & HPLC-UV	FLT C/HLD	225-7 225-1	110 116	CST	225-2LF	115
Pyrene (Polynuclear Aromatic Hydrocarbons by GC-MS)	ASTM D 6209			350 m ³ (max)		225 L/min		1-24		GC-MS	PUF	226-131	55	FLT	225-1808	109
Pyrene (Polynuclear Aromatic Hydrocarbons by GC)	NIOSH 5515			480		2000		4		GC-FID	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Pyrene (Polynuclear Aromatic Hydrocarbons by HPLC)	NIOSH 5506			480		2000		4		HPLC-FD	F/CST C/HLD	225-1713 225-1	108 116	ST	226-30-04	48
Pyrethrin pesticides (<i>see specific compounds</i>)	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF	226-92	54			

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Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number			
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time						
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)					
Pyrethrum	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92	54		
Pyrethrum	NIOSH 5008	5 mg/m ³		100		1000		2		HPLC-UV	F/CST 225-709 SP 225-27	110	C/HLD 225-1	116
Pyrethrum	OSHA 70	5 mg/m ³		60		1000		1		GC-ECD	ST 226-30-16	48		
Pyridine	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52	TH 224-26-02	37
Pyridine	NIOSH 1613	5		48		100		8		GC-FID	ST 226-01	48		
Pyridine	OSHA PV2295	5		10		100		100 min		GC-FID	ST 226-95	50		
Quartz (respirable) in coal dust, (silica in coal mine dust)	NIOSH 7603	0.05 mg/m ³		300-1000		2000-4000		varies		IR	FLT 225-5-37-P CYC 225-01-02	107	C/HLD 225-1	116
Quartz (see silica, respirable crystalline)	OSHA ID 142 (v4)													
Quartz (silica, crystalline [respirable]) by XRD	NIOSH 7500	0.05 mg/m ³		400-1000		2500		varies		XRD	F/CST 225-803 C/HLD 225-1	107	CYC 225-01-02	127
Quartz (silica, crystalline by IR)	NIOSH 7602	0.05 mg/m ³		1000		2000-4000		varies		IR	F/CST 225-803 CYC 225-01-02	107	C/HLD 225-1	116
Radon progeny (on dust, in mines)	NON 56			5		2000		5 min		DRI	FLT 225-702	110	CST 225-1107	116
Resmethrin	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92	54		
Resmethrin	OSHA PV2052			60		1000		1		HPLC-UV	ST 226-30-16	48		
Resorcinol	NIOSH 5701	10		120		500		4		GC-FID	ST 226-57	49		
Respirable Dust using Aluminum Cyclone	OSHA ID 142 (v4)	50 µg/m ³		1200		2500		8		GR & XRD	FLT 225-5-37-P C/HLD 225-1	107	CST 225-3050LF	115
Respirable Dust using GS-3 Cyclone	OSHA ID 142 (v4)	50 µg/m ³		1320		2750		8		GR & XRD	FLT 225-5-37-P C/HLD 225-1	107	CST 225-3050LF	115
Respirable Dust using PPI Samplers	OSHA ID 142 (v4)	50 µg/m ³		960		2000		8		GR & XRD	FLT 225-5-37-P	107	PPI 225-385	128
Rhodamine B	OSHA PV2072			240		1000		4		HPLC-UV	F/CST 225-709	110	C/HLD 225-1	116
Ribavirin	NIOSH 5027			480		1000		8		HPLC-UV	F/CST 225-709	110	C/HLD 225-1	116
Ronnel	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF 226-92	54		
Ronnel	OSHA PV2054	15 mg/m ³		60		1000		1		GC-FPD	ST 226-30-16	48		
Ronnel (Organophosphorus Pesticides)	NIOSH 5600	10 mg/m ³		60		1000		1		GC-FPD	ST 226-58	49		
Rotenone	NIOSH 5007	5 mg/m ³		120		1000		2		HPLC-UV	FLT 225-17-01 C/HLD 225-1	108	CST 225-4	115
Rouge (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT 225-5-37-P CYC 225-01-02	107	C/HLD 225-1	116
Rouge (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT 225-5-37-P CST 225-2LF	107	C/HLD 225-1	116
Rubber solvent (naphthas)	NIOSH 1550	350 mg/m ³ 1800 mg/m ³	10	1.5	20(50)	100	8(3.3)	15		GC-FID	ST 226-01	48		
Safrotin	OSHA PV2050			60		1000		1		GC-ECD	F/CST 225-709	110	C/HLD 225-1	116
Scopolamine methyl nitrate	OSHA PV2144			120		1000		2		HPLC-UV	F/CST 225-709 C/HLD 225-1	or 116	F/CST 225-706	110
Selenium	OSHA ID 121	0.2 mg/m ³		960		2000		8		AA or AES	F/CST 225-3-01	102	C/HLD 225-1	116
Selenium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	0.2 mg/m ³		2-2000		1000-4000		varies		ICP-AES	SC 225-8517	103	C/HLD 225-1	116
Selenium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	0.2 mg/m ³		13-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 C/HLD 225-1	or 116	F/CST 225-803	107
Selenium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	0.2 mg/m ³		8-250,000		1000-4000		varies		ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116
Selenium (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	0.2 mg/m ³		13-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116
Selenium (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W 225-2414	172	TMP 225-2415	172
Sevin (see carbaryl)														
Silica (quartz) in coal dust (quartz in coal mine dust by IR)	NIOSH 7603	0.05 mg/m ³		300-1000		2000-4000		varies		IR	FLT 225-5-37-P CYC 225-01-02	107	C/HLD 225-1	116
Silica, amorphous (respirable)	NIOSH 7501	6 mg/m ³		50-400		2500		varies		XRD	F/CST 225-803 CYC 225-01-02	107	C/HLD 225-1	116
Silica, crystalline (respirable) by XRD	NIOSH 7500	0.05 mg/m ³		400-1000		2500		varies		XRD	F/CST 225-803 C/HLD 225-1	107	CYC 225-01-02	127

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skcinc.com for updates

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Silica, crystalline by IR	NIOSH 7602	0.05 mg/m ³		1000		2000-4000		varies		IR	F/CST CYC	225-803 225-01-02	107 127	C/HLD 225-1	116	
Silica, fused (<i>see silica, respirable crystalline</i>)	OSHA ID 142 (v4)															
Silica, respirable crystalline (as quartz, cristobalite, tridymite) using Aluminum Cyclone	OSHA ID 142 (v4)	50 µg/m ³		1200		2500		8		XRD	FLT C/HLD	225-5-37-P 225-1	107 116	CST CYC	225-3050LF 225-01-02	115 127
Silica, respirable crystalline (as quartz, cristobalite, tridymite) using GS-3 Cyclone	OSHA ID 142 (v4)	50 µg/m ³		1320		2750		8		XRD	FLT C/HLD	225-5-37-P 225-1	107 116	CST CYC	225-3050LF 225-100	115 126
Silica, respirable crystalline (as quartz, cristobalite, tridymite) using PPI Samplers	OSHA ID 142 (v4)	50 µg/m ³		960		2000		8		XRD	FLT	225-5-37-P	107	PPI	225-385	128
Silicon (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115
Silicon (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116
Silicon carbide (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115
Silicon carbide (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116
Silver (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	0.01 mg/m ³		6-2000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Silver (Elements by ICP Aqua Regia Ashing)	NIOSH 7301			250-2000		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or 116	F/CST	225-803	107
Silver (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	0.01 mg/m ³ (metal, soluble)		250-2000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Silver (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W	225-2414	172	TMP	225-2415	172
Silver, metal & soluble compounds (as Ag)	OSHA ID 121	0.01 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Silver, metal & soluble compounds (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206	0.01 mg/m ³		960		2000		8		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Simazine	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF	226-92	54			
Simazine	NIOSH 5602			480		1000		8		GC-ECD	ST	226-58	49			
Sodium azide	OSHA ID 211			5		1000		5		IC-UV	ST CST C/HLD	226-55 225-2LF 225-1	49 115 116	FLT SPC	225-5-37-P 225-23	107 117
Sodium bisulfite	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Sodium fluoride (fluorides)	NIOSH 7902	2.5 mg/m ³		480	30	1000	2000	8	15	ISE	CF/CST	225-9001	68	C/HLD	225-1	116
Sodium fluoride (fluorides)	NIOSH 7906	2.5 mg/m ³		960	30	2000	2000	8	15	IC-CD	CF/CST	225-9031	68	C/HLD	225-1	116
Sodium hexafluoroaluminate (fluorides)	NIOSH 7902	2.5 mg/m ³		480	30	1000	2000	8	15	ISE	CF/CST	225-9001	68	C/HLD	225-1	116
Sodium hexafluoroaluminate (fluorides)	NIOSH 7906	2.5 mg/m ³		960		2000		8		IC-CD	CF/CST	225-9031	68	C/HLD	225-1	116
Sodium hydroxide	OSHA ID 121	2 mg/m ³		960	30	2000	2000	8	15	AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Sodium hydroxide (alkaline dust)	NIOSH 7401	2 mg/m ³ (15 min)		360		1500		4		TITRA	F/CST	225-1715	108	C/HLD	225-1	116
Sodium metabisulfite	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Sodium polyacrylate (<i>see super absorbent polymer</i>)																
Solanesol (environmental tobacco smoke, respirable particles)	ASTM D 6271			150-3600		2500		1-24		HPLC-UV	FLT CYC	225-3705 225-01-02	108 127	CST C/HLD	225-3LF 225-1	115 116
Solder fume (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206			480		2000		4		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Soot (<i>see elemental carbon</i>)	NIOSH 5040									TOA-FID						
Spores (bacterial, fungal) (in air)				15-150		15000		1-10 min		varies	STC	225-9820	114			
Spores (bacterial, fungal) (in air)	NON 48			62.5-375		12,500 +		5-30		varies	BS	225-9595	138	VT	225-9598A	138
Starch (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115
Starch (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number								
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time											
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)										
Starch (see <i>Particulates Not Otherwise Regulated, total and respirable</i>)																			
Stoddard solvent	OSHA 48	500		3		200		15 min		GC-FID	ST	226-01	48						
Stoddard solvent (naphthas)	NIOSH 1550	350 mg/m ³	1800 mg/m ³	10	1.5	20(50)	100	8(3.3)	15	GC-FID	ST	226-01	48						
Strontium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306				Varies	1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116			
Strontium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301				10-1000	1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or	F/CST	225-803	¥	107		
Strontium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303				300-100,000,000	1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Strontium (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	0.5 mg/m ³			10-1000	1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116			
Strontium (Elements on Wipes)	NIOSH 9102				wipe					ICP-AES	W	225-2414	172	TMP	225-2415	172			
Strychnine	NIOSH 5016	0.15 mg/m ³			180	1500		2		HPLC-UV	F/CST	225-706	110	C/HLD	225-1	116			
Styrene	EPA TO-17				1 L & 4 L	16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37			
Styrene	Internal					13.7 ml/min		8-24 hrs		TD, GC	PS PS	690-101 690-104	or	PS	690-103	or			
Styrene	Internal					13.7 ml/min		8-24 hrs		SE, GC	PS	690-105	96						
Styrene (phenylethylene)	ASTM D 5466				6	varies		varies		GC-MS	CAN	228 Series		PK	228 Series				
Styrene (phenylethylene)	NON 54				10	3	20	200	8	15	GC-FID	ST	226-81A	49					
Styrene (phenylethylene)	OSHA 1014	100	200 (C)			13.55	13.55	8	15	HPLC-UV	PS	575-006	82						
Styrene (phenylethylene)	OSHA 89	100	200 (C)	12	0.75	50	50	4	15	GC-FID	ST	226-73	49						
Styrene (phenylethylene) (Hydrocarbons, Aromatic)	NIOSH 1501	50	100	1-14	1-14	10-1000	10-1000	varies	varies	GC-FID	ST	226-01	48						
Sucrose (particulates, respirable)	NIOSH 0600				375	2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115			
Sucrose (particulates, total)	NIOSH 0500				120	2000		1		GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116			
Sulfur (see <i>Particulates Not Otherwise Regulated, total and respirable</i>)																			
Sulfur dioxide	NIOSH 6004	2	5	180	15	1000	1000	3	15	IC	CF/CST	225-9005	68	C/HLD	225-1	116			
Sulfur dioxide	OSHA 1011	5 ppm		12	7.5	50	500	4	15	IC	CF/CST	225-9005	68						
Sulfur hexafluoride by portable GC	NIOSH 6602	1000			varies	20-100		varies		P GC-ECD	SB	232-03	or	SB	231-03	60			
Sulfur tetrafluoride	OSHA ID 110				5	1000		5		ISE	IMP	225-36-2	70	IT	225-22	70			
Sulfuric acid	NIOSH 7908	1 mg/m ³			960	2000		8		IC-CD	CF/CST	225-9033	68	C/HLD	225-1	116			
Sulfuric acid	NIOSH 7908	0.2 mg/m ³ Σ			960	2000		8		IC	PPI IS	225-381 225-388	130 130	FLT SP	225-1827 225-27	109 117			
Sulfuric acid	OSHA ID 113	1 mg/m ³			480	2000		4		IC	F/CST	225-3-01	102	C/HLD	225-1	116			
Sulfuric acid	OSHA ID 113	0.2 mg/m ³ Σ			480	2000		4		IC	PPI IS	225-381 225-388	130 130	FLT SP	225-5 225-27	102 117			
Sulfuric acid	OSHA ID 165SG	1 mg/m ³			96	200		8		IC	ST	226-10-03	48						
Sulfuric acid mist	ASTM D 4856				40	1000		40 min		IC	F/CST	225-3-01	102	C/HLD	225-1	116			
Sulfuryl fluoride	NIOSH 6012	5	10		varies	50-100		varies		IC-CD	ST	226-16	48						
Sulprofos	OSHA PV2037				240	1000		4		GC-FPD	ST	226-30-16	48						
Sulprofos (Organophosphorus Pesticides)	NIOSH 5600	1 mg/m ³			240	1000		4		GC-FPD	ST	226-58	49						
Super absorbent polymers	NIOSH 5035				960	2000		8		ICP-AES or AA	F/CST	225-802	107	C/HLD	225-1	116			
Systox (see <i>demeton</i>)																			
Talc (containing asbestos) (see <i>asbestos</i>)	OSHA ID 160																		
Talc (respirable, no asbestos)	OSHA PV2121	20 mppcf			varies	varies		varies		GR	CYC C/HLD	225-105 225-1	126	F/CST	225-803	107			
2,4-TDI (toluene diisocyanate)	ASTM D 5932				15	1000		15		HPLC-UV- FD	CF/CST	225-9022 ▼	68	C/HLD	225-1	116			

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Sampling Guide

skcinc.com for updates

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number				
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time							
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)						
2,4-TDI (toluene diisocyanate)	NIOSH 5522	LFC		360	20	1000	2000	6	10	HPLC-FD	IMP 225-36-1	70	IT	225-22	70
2,4-TDI (toluene diisocyanate)	OSHA 42		0.02 (C)	240	15	1000	1000	4	15	HPLC-UV or HPLC-FD	CF/CST 225-9002 or C/HLD 225-1	or	CF/CST 225-9013	68	116
2,6-TDI (toluene diisocyanate)	ASTM D 5932			15		1000		15		HPLC-UV-FD	CF/CST 225-9022 ▼	68	C/HLD 225-1	116	
2,6-TDI (toluene diisocyanate)	NIOSH 5522	LFC		360	20	1000	2000	6	10	HPLC-FD	IMP 225-36-1	70	IT	225-22	70
2,6-TDI (toluene diisocyanate)	OSHA 42				15		2000		15	HPLC-UV or HPLC-FD	CF/CST 225-9002 or C/HLD 225-1	or	CF/CST 225-9013	68	116
2,4-TDI (Toluene diisocyanate) (isocyanates)	OR-OSHA 1010	0.02	0.005	45	5	1000	1000	45 min	5	HPLC	IMP 225-36-1 or CF/CST 225-9029	70	IT	225-22	70
2,6-TDI (Toluene diisocyanate) (isocyanates)	OR-OSHA 1010	0.02	0.005	45	5	1000	1000	45 min	5	HPLC	IMP 225-36-1 or CF/CST 225-9029	70	IT	225-22	70
2, 4-TDI (toluene diisocyanate) (isocyanates, total)	NIOSH 5525	LFC		1-500		1000-2000		varies		HPLC-UV	FLT 225-7 ‡ or SP 225-27 or FLT 225-702 ‡	110	CST or IOM	225-4	115 122
2, 6-TDI (toluene diisocyanate) (isocyanates, total)	NIOSH 5525	LFC		1-500		1000-2000		varies		HPLC-UV	FLT 225-7 ‡ or SP 225-27 or FLT 225-702 ‡	110	CST or IOM	225-4	115 122
Tellurium	OSHA ID 121		0.1 mg/m³	960		2000		8		AA or AES	F/CST 225-3-01	102	C/HLD 225-1	116	
Tellurium	OSHA ID 1325G		0.1 mg/m³	100 to 1000		1500 to 2000		varies		AA-GF	F/CST 225-3-01	102	C/HLD 225-1	116	
Tellurium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306			7-2000		1000-4000		varies		ICP-AES	SC 225-8517	103	C/HLD 225-1	116	
Tellurium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		0.1 mg/m³	25-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01 or C/HLD 225-1	or	F/CST 225-803 †	107	116
Tellurium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303		0.1 mg/m³	125-500,000		1000-4000		varies		ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116	
Tellurium (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300		0.1 mg/m³	25-2000		1000-4000		varies		ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116	
Tellurium (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W 225-2414	172	TMP 225-2415	172	
Temephos (respirable dust)	OSHA PV2056		5 mg/m³	varies		varies		varies		GC-FPD	F/CST 225-706	110	C/HLD 225-1	116	
Temephos (total dust)	OSHA PV2056		15 mg/m³	60		1000				HPLC-UV	F/CST 225-802	107	C/HLD 225-1	116	
Terbufos (Organophosphorus Pesticides)	NIOSH 5600			240		1000		4		GC-FPD	ST 226-58	49			
Terbutiuron	ASTM D 4861			240-7200		1000-5000		4-24		HPLC-UV	PUF 226-92	54			
Terpenes (screening)	NIOSH 2549			5		20		4		GC-MS	ST 226-330	52			
Terpenes (see specific compounds)	NIOSH 1552			24		50		8		GC-FID	ST 226-01	48			
o-Terphenyl	NIOSH 5021		0.5		30		2000		15	GC-FID	F/CST 225-1713	108	C/HLD 225-1	116	
Testosterone	OSHA PV2001			60		1000		1		HPLC-UV	F/CST 225-706	110	C/HLD 225-1	116	
1,1,2,2-Tetrabromoethane	NIOSH 2003			96		200		8		GC-FID	ST 226-10	48			
Tetrabutyltin (organotin compounds as Sn)	NIOSH 5504		0.1 mg/m³	480		1000		8		HPLC & AA-GF	ST 226-30 or C/HLD 225-1	48	F/CST 225-709	110	116
1,1,2,2-Tetrachloro-1,2-difluoroethane	NIOSH 1016		500	2		20		1.5		GC-FID	ST 226-01	48			
1,1,1,2-Tetrachloro-2,2-difluoroethane	NIOSH 1016		500	2		20		1.5		GC-FID	ST 226-01	48			
1,2,3,4-Tetrachlorobenzene	ASTM D 4861			240-7200		1000-5000		4-24		GC-ECD	PUF 226-124	54			
1,2,4,5-Tetrachlorobenzene (polychlorobenzenes)	NIOSH 5517			12		25		8		GC-ECD	FLT 226-30-04 or C/HLD 225-1	48	CST 116	Special order	
1,1,1,2-Tetrachloroethane	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series or CPC 224-26-CPC	52	TH 37	224-26-02	37
1,1,2,2-Tetrachloroethane	ASTM D 5466			6		varies		varies		GC-MS	CAN 228 Series	PK	228 Series		
1,1,2,2-Tetrachloroethane	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series or CPC 224-26-CPC	52	TH 37	224-26-02	37
1,1,2,2-Tetrachloroethane	Internal					11.8 ml/min		8-24 hrs		TD, GC	PS 690-101 or PS 690-104	or	PS 690-103	or	
1,1,2,2-Tetrachloroethane	Internal					11.8 ml/min		8-24 hrs		SE, GC	PS 690-105	96			
1,1,2,2-Tetrachloroethane	NIOSH 1019		1	24		50		8		GC-FID	ST 226-81A	49			

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number						
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time									
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)								
1,1,2,2-Tetrachloroethane	NIOSH 2562	1		3-30		10-200		varies		GC-FID	ST	NA SKC					
Tetrachloroethylene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series	52	TH	224-26-02	37	
Tetrachloroethylene	Indoor					13.1 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	or	
Tetrachloroethylene	Internal					0.55 ml/min		24 hrs to 7 days		TD, GC	PS	690-101	or	PS	690-103	or	
Tetrachloroethylene	Internal					13.1 ml/min		8 hrs-30 days		SE, GC	PS	690-104	96				
Tetrachloroethylene (hydrocarbons, halogenated)	NIOSH 1003	LFC		3		10-200		varies		GC-FID	ST	226-01	48				
Tetrachloroethylene (perchloroethylene)	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK		228 Series		
Tetrachloroethylene (perchloroethylene)	OSHA 1001	100	200 (C)			13.06		8	5	GC-FID	PS	575-002	82				
Tetrachloroethylene (perchloroethylene)	OSHA 1001	100	200 (C)	12	0.75	50	50	4	5	GC-FID	ST	226-01	48				
Tetrachloroethylene (perchloroethylene) (portable GC)	NIOSH 3704	LFC		1		20-5000		varies		P GC	SB	232-01	or	SB	249-01-PP	with	
										PT	NA SKC	with	SBLK	NA SKC			
2,3,4,6-Tetrachlorophenol	OSHA 45			48		200		4		HPLC-UV	ST	226-97	50				
Tetraethyl lead (as Pb)	NIOSH 2533	0.075 mg/m ³		30-200		10-1000				GC-PID	ST	226-30-04	48				
Tetraethyl pyrophosphate	NIOSH 2504	0.05 mg/m ³		24		50		8		GC-FPD	ST	NA SKC					
Tetraethyl tin	OSHA 110	0.1 mg/m ³		48	3	200	200	4	15	GC-FID	ST	226-95	50				
Tetraethylene glycol	NIOSH 5523			60		1000		1		GC-FID	ST	226-57	49				
Tetrahydrofuran	Internal					17.7 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-103	96	
Tetrahydrofuran	Internal					17.7 ml/min		8-24 hrs		SE, GC	PS	690-105	96				
Tetrahydrofuran	NIOSH 1609	200	250	9	1.5	20(50)	100	7(3)	15	GC-FID	ST	226-01	48				
Tetrahydrofurfuryl acrylate	OSHA PV2131	1 mg/m ³		48		200		4		GC-FID	ST	226-110	50				
Tetrakis(hydroxymethyl)phosphonium chloride	NIOSH 5046			1-480		1000-1700		varies		HPLC-UV	CF/CST	225-9003	68				
Tetramethyl lead (as Pb)	NIOSH 2534	0.075 mg/m ³		15-100		10-200				GC-PID	ST	226-30-06	48				
Tetramethyl thiouram disulfide (see thiram)																	
Tetramethyl thiourea	NIOSH 3505			96		200		8		VAS	IMP	225-36-1	70	IT	225-22	70	
Tetramethyl tin	OSHA PV2057	0.1 mg/m ³		20		200		100 min		GC-FID	ST	226-01	48				
Tetranitromethane	NIOSH 3513	1		240		1000		4		GC-NPD	IMP	225-36-1	70	IT	225-22	70	
Tetrasodium pyrophosphate	OSHA ID 111			960		2000		8		GR & IC	FLT	225-5-37-P	107	C/HLD	225-1	116	
										CST	225-2LF	115					
Tetrasodium pyrophosphate	OSHA ID 121			960		2000		8		AA or AES	FLT	225-5-37-P	107	C/HLD	225-1	116	
										CST	225-2LF	115					
Thallium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	0.1 mg/m ³ (skin, soluble)		25-2000		1000-4000		varies		ICP-AES	F/CST	225-3-01	or	F/CST	225-803	107	
										C/HLD	225-1	116					
Thallium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	0.1 mg/m ³ (skin)		7-2000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116	
Thallium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	0.1 mg/m ³ (skin, soluble)		35-500,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116	
Thallium (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	0.1 mg/m ³ (skin, soluble)		25-2000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116	
Thallium (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W	225-2414	172	TMP	225-2415	172	
Thallium (soluble compounds) (as TI)	OSHA ID 121	0.1 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116	
Thiobencarb (Organonitrogen Pesticides)	NIOSH 5601			240		1000		4		HPLC-UV	ST	226-58	or	ST	226-30-16	48	
Thiophanate-methyl	OSHA PV2058			240		1000		4		HPLC-UV	F/CST	225-709	110	C/HLD	225-1	116	
Thiophanate-methyl in air	NIOSH 5606			20-480		10-1000		varies		HPLC-UV	ST	226-58	49				
Thiourea	OSHA PV2059			480		2000		4		HPLC-UV	F/CST	225-706	110	C/HLD	225-1	116	

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Abbreviations and references are found on pages 244-245.

Sampling Guide

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Thiram	NIOSH 5005	5 mg/m ³		120		1000		2		HPLC-UV	FLT C/HLD	225-17-01 225-1	108 116	CST	225-2LF	115
Tin (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	2 mg/m ³		1-2000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Tin (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	2 mg/m ³		5-1000		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or 116	F/CST	225-803	107
Tin (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	2 mg/m ³		1-25,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Tin (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	2 mg/m ³		5-1000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Tin (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206	2 mg/m ³		480		2000		4		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Tin (inorganic compounds, except oxides) (as Sn)	OSHA ID 121	2 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Tin (organic compounds) (as Sn) (organotin compounds)	NIOSH 5504	0.1 mg/m ³		480		1000		8		HPLC & AA-GF	ST C/HLD	226-30 225-1	48 116	F/CST	225-706	110
Tin oxide ((Stannous Oxide) as Sn)	OSHA ID 121	0.1 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Titanium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306			Varies		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Titanium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301			5-1000		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or 116	F/CST	225-803	107
Titanium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303			0.1-10,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Titanium (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300			5-100		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Titanium dioxide (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 225-3LF	116 115
Titanium dioxide (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT CST	225-5-37-P 225-2LF	107 115	C/HLD	225-1	116
Titanium dioxide (total dust)	OSHA PV2121	15 mg/m ³		480-960		2000		4-8		GR	F/CST	225-802	107	C/HLD	225-1	116
TNT (2,4,6-trinitrotoluene)	OSHA 44	1.5 mg/m ³		60		1000		1		GC-TEA-EAP	ST	226-56	49			
o-Tolidine	OSHA 71			100		1000		100 min		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
o-Tolidine dyes (dyes, benzidine)	NIOSH 5013	LFC		480		1000		8		HPLC-UV	FLT C/HLD	225-17P 225-1	108 116	CST	225-3LF	115
m-Tolualdehyde	ASTM D 5197			varies		500-1200		5 min-24 hrs		HPLC-UV	ST	226-120 °	or	ST	226-119	50
o-Tolualdehyde	ASTM D 5197			varies		500-1200		5 min-24 hrs		HPLC-UV	ST	226-120 °	or	ST	226-119	50
p-Tolualdehyde	ASTM D 5197			varies		500-1200		5 min-24 hrs		HPLC-UV	ST	226-120 °	or	ST	226-119	50
Toluene	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK	228 Series		
Toluene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
Toluene	Internal					14.5 ml/min		8-24 hrs		TD, GC	PS PS	690-101 690-104	or 96	PS	690-103	or
Toluene	Internal					0.63 ml/min		24 hrs to 7 days		TD, GC	PS PS	690-101 690-104	or with	PS RR	690-103 690-300	or 96
Toluene	Internal					14.5 ml/min		8 hrs-30 days		SE, GC	PS	690-105	96			
Toluene	OSHA 111	200	300 (C)	12	0.5	50	50	4	10	GC-FID	ST	226-81A	49	ST	226-01	48
Toluene (Hydrocarbons, Aromatic)	NIOSH 1501	100	150	1-8	1-8	10-200	10-200	varies	varies	GC-FID	ST	226-01	48			
2,4-Toluene diisocyanate	ASTM D 5836			15		1000		15		HPLC-UV or HPLC-FD	CF/CST	225-9002	68	C/HLD	225-1	116
2,4-Toluene diisocyanate	ASTM D 5932			15		1000		15		HPLC-UV-FD	CF/CST	225-9022 ▼	68	C/HLD	225-1	116
2,4-Toluene diisocyanate	OSHA 5002		0.02 (C)	240	15	1000	1000	4	15	HPLC-UV or HPLC-FD	CF/CST	225-9002	or 68	CF/CST	225-9013 225-1	or 116
2,6-Toluene diisocyanate	ASTM D 5836			15		1000		15		HPLC-UV or HPLC-FD	CF/CST	225-9002	68	C/HLD	225-1	116
2,6-Toluene diisocyanate	ASTM D 5932			15		1000		15		HPLC-UV-FD	CF/CST	225-9022 ▼	68	C/HLD	225-1	116
2,6-Toluene diisocyanate	OSHA 5002			240		1000		4		HPLC-UV or HPLC-FD	CF/CST	225-9002	or 68	CF/CST	225-9013 225-1	or 116

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
2,4-Toluene diisocyanate (isocyanates)	NIOSH 5521	LFC		480	10	1000	1000	8	10	HPLC-ELCHM & HPLC-UV	IMP	225-36-1	70	IT	225-22	70
2,4-Toluene diisocyanate (isocyanates)	OR-OSHA 1010	0.02	0.005	45	5	1000	1000	45 min	5	HPLC	IMP CF/CST	225-36-1 225-9029	70 68	IT	225-22	70
2,6-Toluene diisocyanate (isocyanates)	NIOSH 5521	LFC		480		1000		8		HPLC-ELCHM & HPLC-UV	IMP	225-36-1	70	IT	225-22	70
2,6-Toluene diisocyanate (isocyanates)	OR-OSHA 1010	0.02	0.005	45	5	1000	1000	45 min	5	HPLC	IMP CF/CST	225-36-1 225-9029	70 68	IT	225-22	70
2,4-Toluene diisocyanate (isocyanates, total)	NIOSH 5525	LFC		1-500		1000-2000		varies		HPLC-UV	FLT SP FLT	225-7 ‡ 225-27 225-702 ‡	110 or 110	CST IOM	225-4 225-76A	115 122
2,6-Toluene diisocyanate (isocyanates, total)	NIOSH 5525	LFC		1-500		1000-2000		varies		HPLC-UV	FLT SP FLT	225-7 ‡ 225-27 225-702 ‡	110 or 110	CST IOM	225-4 225-76A	115 122
p-Toluene sulfonic acid	NIOSH 5043			960	45	2000	3000	8	15	HPLC-UV	FLT	225-16	110	CST	225-32	116
Toluene-2,4-diamine	OSHA 65		0.02 (C)	100		1000		100 min		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
2,4-Toluenediamine	NIOSH 5516	LFC		480		1000		8		HPLC-UV	IMP	225-36-1	70	IT	225-22	70
2,4-Toluenediamine	OSHA 65		0.02 (C)	100		1000		100 min		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
2,6-Toluenediamine	NIOSH 5516	LFC		480		1000		8		HPLC-UV	IMP	225-36-1	70	IT	225-22	70
2,6-Toluenediamine	OSHA 65			100		1000		100 min		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
2,6-Toluenediamine	OSHA 65			100		1000		100 min		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
m-Toluidine	OSHA 73			100		1000		100 min		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
o-Toluidine	NIOSH 2017	LFC		24		200		2		GC-FID	CF/CST	225-9004	68	ST	226-15	48
o-Toluidine	OSHA 73	5		100		1000		100 min		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
p-Toluidine	OSHA 73			100		1000		100 min		GC-ECD	CF/CST	225-9004	68	C/HLD	225-1	116
o-Toluidine (Amines, Aromatic)	NIOSH 2002	LFC		48		100		8		GC-FID or GC-NSD	ST	226-10	48			
Toxaphene (see chlorinated camphene)																
Tremolite (see asbestos fibers)	NIOSH 7400															
Tremolite fibers (see asbestos)	OSHA ID 160															
Triazine pesticides	ASTM D 4861			960		2000		8		GC-ECD	PUF	226-92	54			
Tributyl phosphate	NIOSH 5034	0.2		90		1500		1		GC-FPD	F/CST	225-3-01	102	C/HLD	225-1	116
Tributyltin benzoate (tin, organic compounds [as Sn])	OSHA ID 222SG			200		2000		100 min		AA-GF	F/CST	225-803	107	C/HLD	225-1	116
Tributyltin chloride (organotin compounds as Sn)	NIOSH 5504	0.1 mg/m ³		480		1000		8		HPLC & AA-GF	ST C/HLD	226-30 225-1	48 116	F/CST	225-709	110
Tributyltin fluoride (tin, organic compounds [as Sn])	OSHA ID 223SG			200		2000		100 min		AA-GF	F/CST	225-803	107	C/HLD	225-1	116
Tributyltin neodecanoate (see tin, organic compounds)																
1,1,2-Trichloro-1,2,2-trifluoroethane	OSHA 113	1000		1		50		20 min		GC-FID	ST	NA SKC				
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	NIOSH 1020	1000	1250	2.4	0.3	20	20	2	15	GC-FID	ST	226-01	48			
Trichloroacetic acid	OSHA PV2017			10		200		50		HPLC-UV	ST	226-10	48			
1,2,3-Trichlorobenzene	ASTM D 4861			240-7200		1000-5000		4 to 24		GC-ECD	PUF	226-124	54			
1,2,3-Trichlorobenzene	OSHA in house file			12		200				GC-ECD	F/CST C/HLD	NA SKC 225-1	ST 116	226-30-04	48	
1,2,4-Trichlorobenzene	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK	228 Series		
1,2,4-Trichlorobenzene (polychlorobenzenes)	NIOSH 5517	5		12	3	25	200	8	15	GC-ECD	FLT ST C/HLD	Special order 226-30-04 225-1	48 116	CST	Special order	
1,1,2-Trichloroethane	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK	228 Series		
1,1,2-Trichloroethane	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
1,1,2-Trichloroethane	Internal					12.5 ml/min		8-24 hrs		SE, GC	PS	690-105	96			

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Sampling Guide

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number				
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time							
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)						
1,1,2-Trichloroethane	OSHA 11	10		10		200		1		GC-FID	ST	226-01	48		
1,1,2-Trichloroethane (hydrocarbons, halogenated)	NIOSH 1003	10 (skin)		10		10-200		varies		GC-FID	ST	226-01	48		
1,1,1-Trichloroethane (methyl chloroform)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series 224-26-CPC	52 37	TH	224-26-02 37
1,1,1-Trichloroethane (methyl chloroform)	Internal					14.1 ml/min		8-24 hrs		SE, GC	PS	690-105	96		
1,1,1-Trichloroethane (methyl chloroform) (hydrocarbons, halogenated)	NIOSH 1003	350		3		10-200		varies		GC-FID	ST	226-01	48		
Trichloroethylene	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series
Trichloroethylene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST	226-300 Series 224-26-CPC	52 37	TH	224-26-02 37
Trichloroethylene	Internal					14.9 ml/min		8-24 hrs		TD, GC	PS	690-101		or PS	690-103 96
Trichloroethylene	Internal					14.9 ml/min		8-24 hrs		SE, GC	PS	690-105	96		
Trichloroethylene	Internal					0.596 ml/min		24 hrs to 7 days		SE, GC	PS	690-105		with RR	690-300 96
Trichloroethylene	NIOSH 1022	25	2 (1 hrs)	10	2	20(50) 200		8(3.3) 10		GC-FID	ST	226-01	48		
Trichloroethylene	OSHA 1001	100	200 (C)			14.24		8 5		GC-FID	PS	575-002	82		
Trichloroethylene	OSHA 1001	100	200 (C)	12	0.75	50 50		4 5		GC-FID	ST	226-01	48		
Trichloroethylene (hydrocarbons, halogenated)	NIOSH 1003			10		10-200		varies		GC-FID	ST	226-01	48		
Trichloroethylene by portable GC	NIOSH 3701	25	2 (1 hrs)	varies	varies	20-50	varies	varies	varies	P GC-PID	SB	232 Series	61		
Trichlorofluoromethane (fluorotrichloromethane)	NIOSH 1006		1000		5		20		240	GC-FID	ST	226-09	48		
Trichloronitromethane	NON 51	0.1		144		100		24		GC-MSD	ST	226-175	51		
2,4,5-Trichlorophenol	ASTM D 4861			240-7200		1000-5000		4 to 24		GC-ECD	PUF	226-92	54		
2,4,5-Trichlorophenoxyacetic acid (see 2,4,5-T)															
1,2,3-Trichloropropane	Internal					11.9 ml/min		8-24 hrs		TD, GC	PS	690-101 690-104		or PS	690-103 or 96
1,2,3-Trichloropropane	Internal					11.9 ml/min		8-24 hrs		SE, GC	PS	690-105	96		
1,2,3-Trichloropropane (hydrocarbons, halogenated)	NIOSH 1003	10 (skin)		0.6-60		10-200		varies		GC-FID	ST	226-01	48		
Tricyclohexylin hydroxide (organotin compounds as Sn)	NIOSH 5504	0.1 mg/m³		480		1000		8		HPLC & AA-GF	ST	226-30 225-1	48 116	F/CST	225-709 110
Tridymite (see silica, respirable crystalline)	OSHA ID 142 (v4)														
Tridymite (Silica, cCrystalline (respirable) by XRD)	NIOSH 7500	0.05 mg/m³		400-1000		2500		varies		XRD	F/CST C/HLD	225-803 225-1	107 116	CYC	225-01-02 127
Tridymite (Silica, Crystalline by IR)	NIOSH 7602	0.05 mg/m³		1000		2000-4000		varies		IR	FLT CYC	225-5-37-P 225-01-02	107 127	C/HLD CST	225-1 116 225-309 115
Triethanolamine (TEA)	OSHA PV2141			120		1000		2		GC-FID	F/CST	225-709	110	C/HLD	225-1 116
Triethanolamine (TEA) (Aminoethanol Compounds II)	NIOSH 3509			240		1000		4		IC	IMP	225-36-1	70	IT	225-22 70
Triethylamine	OSHA PV2060	25		5	3	100 200		50 min	15	GC-FID	ST	226-98	50		
Triethylene glycol	NIOSH 5523			60		1000		1		GC-FID	ST	226-57	49		
Triethylenetetramine (TETA)	OSHA 60			10		100		100 min		HPLC-UV	ST	226-30-18	48		
Trifluorobromomethane	NIOSH 1017	1000		1		20		50 min		GC-FID	ST	226-01	48	ST	226-09 48
Trifluoromonobromomethane (trifluorobromomethane)	NIOSH 1017	1000		1		20		50 min		GC-FID	ST	226-01	48	ST	226-09 48
Trifluralin	ASTM D 4861			240-7200		1000-5000		4 to 24		GC-ECD	PUF	226-92	54		
1,3,5-triglycidyl isocyanurate	OSHA 1024			180		1		3		GC-FID	FLT SP	225-7 225-27	110 117	CST C/HLD	225-2LF 115 225-1 116
1,3,5-triglycidyl-s-triazinetriene	OSHA 1024			180		1		3		GC-FID	FLT SP	225-7 225-27	110 117	CST C/HLD	225-2LF 115 225-1 116
Trimellitic anhydride (TMA)	NIOSH 5036	0.005 (10 hrs)		960		2000		8		GC-FID	F/CST	225-802	107	C/HLD	225-1 116
Trimellitic anhydride (TMA)	OSHA 98			480		2000		4		HPLC-UV	CF/CST	225-9010	68	C/HLD	225-1 116
2,2,4-Trimethyl-1,3-pentanediol diisobutyrate	OSHA PV2002			10		100		100 min		GC-FID	ST	226-110	50		

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number				
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time							
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)						
1,2,3-Trimethylbenzene	OSHA 1020	25		2.78		11.6		4	15	GC-FID	PS	575-002	82		
1,2,3-Trimethylbenzene	OSHA 1020	25		12		50		4		GC-FID	ST	226-01	48		
1,2,4-Trimethylbenzene	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK	228 Series	
1,2,4-Trimethylbenzene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02 37
1,2,4-Trimethylbenzene	Internal					13.0 ml/min		8-24 hrs		TD, GC	PS PS	690-101 690-104	or 96	PS	690-103 or
1,2,4-Trimethylbenzene	Internal					13.0 ml/min		8-24 hrs		SE, GC	PS	690-105	96		
1,2,4-Trimethylbenzene	OSHA 1020	25		2.81		11.7		4	15	GC-FID	PS	575-002	82		
1,2,4-Trimethylbenzene	OSHA 1020	25		12		50		4		GC-FID	ST	226-01	48		
1,3,5-Trimethylbenzene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02 37
1,3,5-Trimethylbenzene (mesitylene)	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series	PK	228 Series	
1,3,5-Trimethylbenzene (mesitylene)	OSHA 1020	25		2.9		12.1		4	15	GC-FID	PS	575-002	82		
1,3,5-Trimethylbenzene (mesitylene)	OSHA 1020	25		12		50		4		GC-FID	ST	226-01	48		
Trimethylbenzene	OSHA 5000	25		12		50		4		GC-FID	ST	226-01	48		
3,5,5-Trimethylcyclohex-2-enone (isophorone)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02 37
3,5,5-Trimethylcyclohex-2-enone (isophorone)	Internal					11.3 ml/min		8-24 hrs		TD, GC	PS	690-101	or	PS	690-104 96
Trimethyltin dichloride	NIOSH 5526	0.1 mg/m³		60	60	250	1000	4	60	GC-FPD	ST	226-30-16	48		
2,4,7-Trinitrofluoren-9-one	NIOSH 5018			480		3000		2.7		HPLC-UV	FLT C/HLD	225-17-04 225-1	108 116	CST	225-3LF 115
2,4,6-Trinitrotoluene (TNT)	OSHA 44	1.5 mg/m³		60		1000		1		GC-TEA-EAP	ST	226-56	49		
Triorthocresyl phosphate	NIOSH 5037	0.1 mg/m³		90		1000		1.5		GC-FPD	F/CST	225-3-01	102	C/HLD	225-1 116
Triphenyl phosphate	NIOSH 5038	3 mg/m³		240		1000		4		GC-FPD	F/CST	225-3-01	102	C/HLD	225-1 116
Triphenyl tin chloride (as Sn)	NIOSH 5527	0.1 mg/m³ (skin)		100-2000		1000-4000		varies		HPLC & ICP-AES	FLT	225-5-37-P	107	C/HLD	225-1 116
Triphenyltin hydroxide (tin, organic compounds (as Sn))	OSHA ID 225SG	0.1 mg/m³		200		2000		100 min		AA-GF	F/CST	225-709	110	C/HLD	225-1 116
Tripoli (see silica, respirable crystalline)	OSHA ID 142 (w4)														
Tripropylene glycol diacrylate (TPGDA)	NON 39			480		1000		8		GC-FID	ST	226-56	49		
Tuberculosis (mycobacterium tuberculosis), airborne	NIOSH 0900			1920		4000		8		PCR	FLT CST	225-3705 225-3LF	108 115	SP C/HLD	225-27 117 225-1 116
Tungsten & compounds (insoluble) (as W)	OSHA ID 213			480	30	2000	2000	4	15	ICP	F/CST	225-3-01	102	C/HLD	225-1 116
Tungsten & compounds (soluble) (as W)	OSHA ID 213			480	30	2000	2000	4	15	ICP	F/CST	225-3-01	102	C/HLD	225-1 116
Tungsten (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	5 mg/m³	10 mg/m³	Varies		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1 116
Tungsten (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	5 mg/m³	10 mg/m³	50-1000	50-1000	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST C/HLD	225-3-01 225-1	or 116	F/CST	225-803 ¥ 107
Tungsten (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	5 mg/m³	10 mg/m³	5-1000	5-1000	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST	225-3-01	102	C/HLD	225-1 116
Tungsten insoluble	NIOSH 7074	5 mg/m³	10 mg/m³	480		1000		8		AA-F	F/CST	225-3-01	102	C/HLD	225-1 116
Tungsten soluble	NIOSH 7074	1 mg/m³	3 mg/m³	480		1000		8		AA-F	F/CST	225-3-01	102	C/HLD	225-1 116
Turpentine	NIOSH 1551	100		10		20(50)		8(3.3)		GC-FID	ST	226-01	48		
n-Undecane	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02 37
n-Undecane (hydrocarbons, BP 36 to 216 C)	NIOSH 1500	2		2		10-50		varies		GC-FID	ST	226-01	48		
Uranium (soluble compounds)	OSHA ID 170SG	0.05 mg/m³		240		2000		2		POL	F/CST	225-803	107	C/HLD	225-1 116
Urea pesticides	ASTM D 4861			240-7200		1000-5000		4 to 24		GC-ECD	PUF	226-92	54		
n-Valeraldehyde	ASTM D 5197			varies		500-1200		5 min to 24 hrs		HPLC-UV	ST	226-120	or	ST	226-119 50
n-Valeraldehyde	NIOSH 2536	50		10		20		8		GC-FID	ST	226-118	50		

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Sampling Guide

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Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number			
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time						
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)					
n-Valeraldehyde	OSHA 85			3		50		1		HPLC-UV	CF/CST 225-9020	68	C/HLD 225-1	116
n-Valeraldehyde (Aldehydes, Screening)	NIOSH 2539	50		5		20		4		GC-FID & GC-MS	ST 226-118	50		
Vanadium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303		0.05 mg/m ³		2.5-500,000		1000-4000		varies	ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116
Vanadium (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300		0.05 mg/m ³		5-2000		1000-4000		varies	ICP-AES	F/CST 225-3-01	102	C/HLD 225-1	116
Vanadium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306		0.05 mg/m ³ C (as pentoxide)	Varies		1000-4000		varies		ICP-AES	SC 225-8517	103	C/HLD 225-1	116
Vanadium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301		0.05 mg/m ³		5-2000		1000-4000		varies	ICP-AES	F/CST 225-3-01 C/HLD 225-1	or 116	F/CST 225-803	107
Vanadium (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W 225-2414	172	TMP 225-2415	172
Vanadium fume (as V ₂ O ₅)	OSHA ID 125G	0.05 mg/m ³ 0.1		480	20	2000	1000	4	20	ICP-AES	F/CST 225-3-01 F/CST 225-803 C/HLD 225-1	or or 116	F/CST 225-3100 F/CST 225-8215	or 107
Vanadium oxides	NIOSH 7504		0.05 mg/m ³ (15 min)	600		2600		4		XRD	F/CST 225-803 CYC 225-01-02	107	C/HLD 225-1	116
Vanadium pentoxide (V ₂ O ₅) (see vanadium oxides)	NIOSH 7504													
Vanadium pentoxide (fume)	OSHA PV2121		0.1 mg/m ³ (fume)	960		2000		8		GR	F/CST 225-803	107	C/HLD 225-1	116
Vanadium pentoxide (respirable dust)	OSHA PV2121		0.5 mg/m ³ (respirable dust)	960		2000		8		GR	F/CST 225-803 CYC 225-105	107	C/HLD 225-1	116
Vanadium respirable dust (as V ₂ O ₅)	OSHA ID 125G		0.5 mg/m ³		varies		varies		varies	ICP-AES	F/CST 225-3-01 C/HLD 225-1	102	CYC 225-105	126
Vanadium trioxide (see vanadium oxides)	NIOSH 7504													
Vermiculite (see Particulates Not Otherwise Regulated, total and respirable)														
Vinyl acetate	NON 21			24		50		8		GC	ST 226-68	49		
Vinyl acetate	OSHA 51			24	3	100	200	4	15	GC-FID	ST NA SKC			
Vinyl bromide	NIOSH 1009	LFC		10		20(50)		8(3.3)		GC-FID	ST 226-09	48		
Vinyl bromide	OSHA 08			5		20		4		GC-FID	ST 226-01	48		
Vinyl chloride	ASTM D 4766			24		100 or 50		4 or 8		GC-FID	ST 226-16	48		
Vinyl chloride	ASTM D 5466			6		varies		varies		GC-MS	CAN 228 Series	PK 228 Series		
Vinyl chloride	NIOSH 1007	LFC		5		50		1.6		GC-FID	ST 226-01	48		
Vinyl cyclohexene dioxide	OSHA PV2083			10		20(50)		8(3.3)		GC-FID	ST 226-30	48		
Vinyl toluene	NIOSH 1501	100		30		200		2.5		GC-FID	ST 226-01	48		
Vinyl toluene (methyl styrene)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 37	TH 224-26-02	37
N-Vinyl-2-pyrrolidinone	OSHA PV2106			10		100		100 min		GC-FID	ST 226-01	48		
Vinylidene chloride	ASTM D 5466			6		varies		varies		GC-MS	CAN 228 Series	PK 228 Series		
Vinylidene chloride	NIOSH 1015	LFC		5		20		4		GC-FID	ST 226-01	48		
Vinylidene chloride	OSHA 19			3	3	200	200	15 min	15	GC-FID	ST 226-01	48		
Viruses (in air)	NON 48			62.5-375		12,500 +		5-30		varies	BS 225-9595	138	VT 225-9598A	138
VM&P naphtha	OSHA 48			3	3	20	200	2.5	15	GC-FID	ST 226-01	48		
VM&P naphtha (naphthas)	NIOSH 1550	350 mg/m ³ 1800 mg/m ³		10	3	20(50)	200	8(3.3)	15	GC-FID	ST 226-01	48		
Volatile organic compounds (screening)	NIOSH 2549			5		20		4		GC-MS	ST 226-330	52		
Volatile organic compounds (VOCs) (canister)	EPA TO-14A			varies		varies		varies		GC-MS	CAN 228 Series	PK 228 Series		
Volatile organic compounds (VOCs) (canister)	EPA TO-15			varies		varies		varies		GC-MS	CAN 228 Series	PK 228 Series		
Volatile organic compounds (VOCs) (sample bag)	EPA 0040					250-1000 ml/min		1-2 hrs		GC-MS	VAC 231-939 SB 236-004 or SB 236-001	or or or	VAC 231-940 SB 232-939 or SB 232-01	with or or 61
Volatile organic compounds (VOCs) (thermal desorption tube)	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST 226-300 Series CPC 224-26-CPC	52 37	TH 224-26-02	37
VOST (volatile organic sampling train)	EPA 0031			20 min		1 L/min		20 min		TD, GC-MS	ST 226-134 £	51	ST Special Order	

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Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Warfarin	NIOSH 5002	0.1 mg/m ³		360		1500		4		HPLC-UV	FLT C/HLD	225-17-01 225-1	108 116	CST 225-2LF	115	
Welding fumes (total particulate)	OSHA ID 125G			480		2000		4		ICP-AES	F/CST F/CST C/HLD	225-3-01 225-803 225-1	or or 116	F/CST F/CST 225-8215	225-3100 225-8215	or 107
Wood alcohol (methanol)	NIOSH 2000	200	250	5	3	20	200	4	15	GC-FID	ST	226-51		49		
Wood dust	OSHA PV2121	15 mg/m ³		960		2000		4-8		GR	F/CST	225-802	107	C/HLD	225-1	116
Wood dust, hardwood	OSHA PV2121	15 mg/m ³		960		2000		4-8		GR	F/CST	225-802	107	C/HLD	225-1	116
Wood dust, softwood	OSHA PV2121	15 mg/m ³		960		2000		4-8		GR	F/CST	225-802	107	C/HLD	225-1	116
Wood spirit (methanol)	NIOSH 2000	200	250	5	3	20	200	4	15	GC-FID	ST	226-51		49		
m-Xylene	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series	
m-Xylene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
m-Xylene	Internal					0.61 ml/min		24 hrs to 7 days		TD, GC	PS PS	690-101 690-104	or with	PS RR	690-103 690-300	or 96
m-Xylene	Internal					12.5 ml/min		8-24 hrs		TD, GC	PS PS	690-101 690-104	or 96	PS	690-103	or 96
m-Xylene	Internal					12.5 ml/min		8 hrs-30 days		SE, GC	PS	690-105		96		
m-Xylene	OSHA 1002	100				13.82		8		GC-FID	PS	575-002		82		
o-Xylene	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series	
o-Xylene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
o-Xylene	Internal					0.61 ml/min		24 hrs to 7 days		TD, GC	PS PS	690-101 690-104	or with	PS RR	690-103 690-300	or 96
o-Xylene	Internal					11.9 ml/min		8-24 hrs		TD, GC	PS PS	690-101 690-104	or 96	PS	690-103	or 96
o-Xylene	Internal					11.9 ml/min		8 hrs-30 days		SE, GC	PS	690-105		96		
o-Xylene	OSHA 1002	100				14.24		8		GC-FID	PS	575-002		82		
p-Xylene	ASTM D 5466			6		varies		varies		GC-MS	CAN	228 Series		PK	228 Series	
p-Xylene	EPA TO-17			1 L & 4 L		16.7 ml/min & 66.7 ml/min				TD, GC	ST CPC	226-300 Series 224-26-CPC	52 37	TH	224-26-02	37
p-Xylene	Internal					12.8 ml ml/min		8-24 hrs		TD, GC	PS PS	690-101 690-104	or 96	PS	690-103	or 96
p-Xylene	Internal					0.61 ml/min		24 hrs to 7 days		TD, GC	PS PS	690-101 690-104	or with	PS RR	690-103 690-300	or 96
p-Xylene	Internal					12.8 ml ml/min		8 hrs-30 days		SE, GC	PS	690-105		96		
p-Xylene	OSHA 1002	100				13.94		8		GC-FID	PS	575-002		82		
m-Xylene (Hydrocarbons, Aromatic)	NIOSH 1501	100		2-23		10-200		varies		GC-FID	ST	226-01		48		
o-Xylene (Hydrocarbons, Aromatic)	NIOSH 1501	100	150	2-23	2-23	10-200	10-200	varies	varies	GC-FID	ST	226-01		48		
p-Xylene (Hydrocarbons, Aromatic)	NIOSH 1501	100		2-23		10-200		varies		GC-FID	ST	226-01		48		
Xylene (o-, m-, & p-isomers)	OSHA 1002	100		12		50		4		GC-FID	ST	226-01		48		
m-Xylenediamine (mXDA)	OSHA 105				15		1000		15	HPLC-UV	CF/CST	225-9004	68	C/HLD	225-1	116
p-Xylenediamine (pXDA)	OSHA 105				15		1000		15	HPLC-UV	CF/CST	225-9004	68	C/HLD	225-1	116
2,4-Xylidine (Amines, Aromatic)	NIOSH 2002	2		10		20(50)		8(3.3)		GC-FID or GC-NSD	ST	226-10		48		
Yttrium	OSHA ID 121	1 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Yttrium (Elements by ICP HNO ₃ Digestion)	NIOSH 7303			0.1-50,000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Yttrium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	1 mg/m ³		1-2000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Yttrium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301			5-1000		1000-4000		varies		ICP-AES	F/CST C/HLD	225-3-01 225-1	or 116	F/CST	225-803	107
Yttrium (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300			5-1000		1000-4000		varies		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116

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skcinc.com for updates

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Yttrium (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W	225-2414	172	TMP	225-2415	172
Zinc	OSHA ID 121			960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Zinc	OSHA ID 125G			480		2000		4		ICP-AES	F/CST	225-3-01	or	F/CST	225-3100	or
											F/CST	225-803	or	F/CST	225-8215	107
											C/HLD	225-1	116			
Zinc & compounds (as Zn)	NIOSH 7030	5 mg/m ³ (ZnO)	15 mg/m ³ (ZnO)	240	30	1000	2000	4	15	AA-F	F/CST	225-3-01	102	C/HLD	225-1	116
Zinc (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	5 mg/m ³	15 mg/m ³ C (dust) 10 mg/m ³ (fume)	Varies		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Zinc (Elements by ICP Aqua Regia Ashing)	NIOSH 7301			5-200		1000-4000		varies		ICP-AES	F/CST	225-3-01	or	F/CST	225-803 †	107
											C/HLD	225-1	116			
Zinc (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	5 mg/m ³ (ZnO)	15 mg/m ³ (ZnO)	0.5-10,000	0.5-10,000	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Zinc (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	5 mg/m ³ (ZnO)	10 mg/m ³ (ZnO)	5-200	5-200	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Zinc (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W	225-2414	172	TMP	225-2415	172
Zinc bromide (<i>see Particulates Not Otherwise Regulated, total and respirable</i>)																
Zinc chloride fume	OSHA ID 121	1 mg/m ³		960	30	2000	2000	8	15	AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Zinc chloride fume	OSHA ID 125G	1 mg/m ³		480	30	2000	2000	4	15	ICP-AES	F/CST	225-3-01	or	F/CST	225-3100	or
											F/CST	225-803	or	F/CST	225-8215	107
											C/HLD	225-1	116			
Zinc chromate (CR(VI))	OSHA ID 215 (V2)	0.005 mg/m ³		960		2000		8		IC-UV	F/CST	225-802 Ω	107	C/HLD	225-1	116
Zinc chromates (as CrO ₃)	OSHA ID 215 (V2)	0.005 mg/m ³		960		2000		15		IC-UV	F/CST	225-802 Ω	107	C/HLD	225-1	116
Zinc dibutylthiocarbamate	OSHA PV2065			180		1000		3		HPLC-UV	ST	226-30-16	48			
Zinc oxide	NIOSH 7502	5 mg/m ³	15 mg/m ³ (15 min)	240	30	1000	2000	4	15	XRD	FLT	225-3705	108	CST	225-3-23	115
Zinc oxide (Elements by ICP HNO ₃ Digestion)	NIOSH 7303	5 mg/m ³	15 mg/m ³	0.5-10,000	0.5-10,000	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Zinc oxide (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT	225-5-37-P	107	C/HLD	225-1	116
											CYC	225-01-02	127	CST	225-3LF	115
Zinc oxide (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT	225-5-37-P	107	C/HLD	225-1	116
											CST	225-2LF	115			
Zinc oxide dust (respirable dust)	OSHA PV2121	5 mg/m ³		varies		varies		varies		GR	F/CST	225-803	107	C/HLD	225-1	116
											CYC	225-105	126			
Zinc oxide dust (total dust)	OSHA PV2121	15 mg/m ³		960		2000		4-8		GR	F/CST	225-802	107	C/HLD	225-1	116
Zinc oxide fume	OSHA ID 121	5 mg/m ³		960	30	2000	2000	8	15	AA or AES	FLT	225-5-37-P	107	C/HLD	225-1	116
											CST	225-2LF	115			
Zinc oxide fume	OSHA ID 125G	5 mg/m ³		480	30	2000	2000	4	15	ICP-AES	F/CST	225-3-01	or	F/CST	225-3100	or
											F/CST	225-803	or	F/CST	225-8215	107
											C/HLD	225-1	116			
Zinc oxide fume	OSHA ID 143	5 mg/m ³		960	30	2000	2000	8	15	XRD	FLT	225-5-37-P	107	C/HLD	225-1	116
											CST	225-2LF	115			
Zinc oxide fume (ICP analysis of metal/metalloid particulates from solder operations)	OSHA ID 206	5 mg/m ³		480		2000		4		ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Zinc stearate (particulates, respirable)	NIOSH 0600			375		2500		2.5		GR	FLT	225-5-37-P	107	C/HLD	225-1	116
											CYC	225-01-02	127	CST	225-3LF	115
Zinc stearate (particulates, total)	NIOSH 0500			120		2000		1		GR	FLT	225-5-37-P	107	C/HLD	225-1	116
											CST	225-2LF	115			
Zinc stearate (respirable dust)	OSHA PV2121	5 mg/m ³		varies		varies		varies		GR	F/CST	225-803	107	C/HLD	225-1	116
											CYC	225-105	126			
Zinc stearate (total dust)	OSHA ID 121	15 mg/m ³		960		2000		8		AA or AES	F/CST	225-3-01	102	C/HLD	225-1	116
Zinc stearate (total dust)	OSHA ID 125G	15 mg/m ³		480		2000		4		ICP-AES	F/CST	225-3-01	or	F/CST	225-3100	or
											F/CST	225-803	or	F/CST	225-8215	107
											C/HLD	225-1	116			

Agency standards for OSHA listings represent the OSHA PELs reported in the 29 CFR 1910.1000 Part 1910, Section 1000.

Abbreviations and references are found on pages 244-245.

Chemical Hazard	Agency Reference	SAMPLING ∞								Analytical Method	SKC Collecting Equipment & Page Number					
		Agency Standard		Vol. (liter)		Rate (ml/min)		Time								
		TWA (ppm)	CLG/STEL (ppm)	TWA	CLG/STEL	TWA	CLG/STEL	TWA (hrs)	CLG/STEL (min)							
Zineb	OSHA 107			500		2000		250 min		HPLC-UV	F/CST	225-3-01	102	C/HLD	225-1	116
Ziram	OSHA PV2073			120		1000		2		HPLC-UV	ST	226-30-16	48			
Zirconium (Elements by Cellulosic Internal Capsule Sampler)	NIOSH 7306	5 mg/m ³	10 mg/m ³	1-1000		1000-4000		varies		ICP-AES	SC	225-8517	103	C/HLD	225-1	116
Zirconium (Elements by ICP Aqua Regia Ashing)	NIOSH 7301	5 mg/m ³	10 mg/m ³	5-200	5-200	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST C/HLD	225-3-01 225-1	or 116	F/CST	225-803	107
Zirconium (Elements by ICP HNO ₃ /HClO ₄ Ashing)	NIOSH 7300	5 mg/m ³	10 mg/m ³	5-200	5-200	1000-4000	1000-4000	varies	varies	ICP-AES	F/CST	225-3-01	102	C/HLD	225-1	116
Zirconium (Elements on Wipes)	NIOSH 9102			wipe						ICP-AES	W	225-2414	172	TMP	225-2415	172
Zirconium compounds (as Zr)	OSHA ID 121	5 mg/m ³		960	30	2000	2000	8	15	AA or AES	F/CST	225-803	107	C/HLD	225-1	116

Symbols and Notes

- ∞ The sampling parameters shown are suggestions based on the ranges of volume, flow, and time specified in the methods. It is the responsibility of the analyst performing the sampling and analysis to adjust parameters so that the required detection limits can be obtained. It is the responsibility of the user to research published methods to determine validation level and suitability for unique applications.
- C Ceiling Value
- EL Excursion Limit
- LFC NIOSH standard: Lowest Feasible Concentration
- LOQ Limit of Quantitation
- NA SKC Not available from SKC
- NON Non-agency reference
- OEL U.S. Army Occupational Exposure Limit
- OR-OSHA Oregon OSHA method and target concentrations
- PV Provisional Method
- Special order Because of limited shelf-life, certain sampling media are available only as special order items.
- ** Optional, use filter if particulates are present
- ‡ Filter or tube must be chemically treated before sampling.
- ♣ Modified procedure or sampler
- ◇ Other collection liquids may be more suited to target microorganisms.
- ¥ This method does not digest PVC filter Cat. No. 225-803 completely.
- Δ 1.0-micron PTFE filter is a NIOSH recommended substitute filter for the 0.8-micron PVC filter originally recommended in NIOSH Method 7904.
- Σ ACGIH Thoracic TWA. Use PPI for thoracic fraction TWA.
- + Sonic flow
- Use sorbent tube Cat. No. 226-120 when sampling in atmospheres containing ozone.
- †† Special order/limited shelf-life; contact SKC
- ▼ The MOPIP Derivatizing Solution, Cat. No. 225-9050, is needed to analyze for monomer/oligomer aerosol.
- Ω For sampling in chromium plating operations, PVC filters Cat. No. 225-802 require special treatment after receipt at the laboratory. Alternatively quartz fiber filters Cat. No. 225-1827 treated with NaOH may be used. Refer to the method for details.
- π SKC recommends the AirChek TOUCH, Essential, Connect, or XR5000 Sample Pump when using a silica gel sorbent tube with the coated filter at flows above 500 ml/min.
- £ Collect six samples at 20 minutes each. Use two Cat. No. 226-134 per sample.
- NIOSH Method 5524 analysis requires a Filter Funnel, which is not available from SKC.



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Sampling Guide

Abbreviations

Analytical Methods

AA	Atomic absorption
AAS	Atomic absorption spectroscopy
AED	Atomic emission detection
AES	Atomic emission spectroscopy
CA	Chromotropic acid assay
CD	Conductivity detection
CI	Colorimetric
CLR	Spectrophotometric method or colorimeter
DET TB	Detector tube, color-indicating
DID	Discharge ionization detector
DPCSP	Differential pulse cathodic stripping polarography
DPP	Differential pulse polarography
DR	Direct-reading
DRI	Direct-reading instrument
EAP	Explosives analysis package
ECD	Electron capture detector
ECN	Electrolytic conductivity detector
EGA-TOS	Evolved gas analysis with thermal-optical sensor
ELCHM	Electrochemical detector
F	Flame
FAME	Fatty acid methyl ester
FD	Fluorescence detector
FID	Flame ionization detector
FLAG	Flame arsine generation
FLUOR	Fluorescence
FPD	Flame photometric detector
FPDS	Flame photometric detector sulfur specific
GC	Gas chromatography
GF	Graphite furnace

Abbreviations

GR	Gravimetric analysis	P VAS	Portable visible absorption spectrophotometry
HGA	Heated graphite atomizer	PASV	Portable anodic stripping voltammetry
HPLC	High-performance liquid chromatography	PCD	Post-column derivatization
HRGC	High resolution gas chromatography	PCM	Phase contrast microscopy
HRMS	High resolution mass spectrometry	PCR	Polymerase chain reaction
IC	Ion chromatography	PDA	Photo diode array detector
IC-CD	Ion chromatography detector	PES	Plasma emission spectrometry
ICP	Inductively coupled plasma	PID	Photoionization detector
ICP-DCP	Inductively coupled plasma-directly coupled plasma spectroscopy	PLM	Polarized light microscopy
ICP-MS	Inductively coupled plasma-mass spectrometry	POL	Polarography
IR	Infrared spectrophotometry	SCD	Sulfur chemiluminescence detector
IRA	Immunoradiometric assay	SE	Soxhlet extraction
ISE	Ion-specific electrode	SEM	Scanning electron microscopy
LC	Liquid chromatography	SPOT	Chemical spot test
MAS	Molecular absorption spectrometry	TCD	Thermal conductivity detector
MD	Multi-detector	TD	Thermal desorption
MS	Mass spectrometry	TEA	Thermal energy analyzer
MSD	Mass selective detector	TEM	Transmission electron microscopy
N ACT	Neutron activation	TITRA	Titration
NCD	Nitrogen chemiluminescence detector	TOA	Thermal-optical analysis
NPD	Nitrogen-phosphorus detector	UV	Ultraviolet detector
NSD	Nitrogen-specific detector	VAS	Visible absorption spectrophotometry
NVM	No validated method	VIS	Visual
P FLUOR	Portable fluorescence	W	Wipe
P GC	Portable gas chromatography	XRD	X-ray diffraction
P IR	Portable infrared spectrophotometry	XRF	X-ray fluorescence
P IS	Portable infrared spectrophotometer	XRFS	X-ray fluorescence spectroscopy

Collecting Equipment

AC	Accu-CAP Capsule	F/CST	Filter in Preloaded Cassette	SC	Solu-CAP
BI	Bioaerosol Impactor	FLT	Filter	SCN	Screen
BS	BioSampler	FLT/CL	Filter Cassette with Cowl	SCRN	Stainless Steel Screen
C	Capsule	FOAM	Foam	SH	Sampling Head
C/HLD	Filter Cassette and Cyclone Holder	IMP	Impinger	SM TB	Smear Tab
CAN	Canister	IOM	IOM Particulate Sampler	SP	Support Pads
CF/CST	Coated Filter in Preloaded Cassette	IS	Impaction Substrate	SPC	Spacer
CH	Capsule Holder	IT	Impinger Trap	SSC	Stainless Steel Cassette
CI	Cascade Impactor	JAR	Jar	ST	Sorbent Tube
CPC	Constant Pressure Controller	MVC	Microvacuum Cassette	STC	Spore Trap Cassette
CST	Filter Cassette	PK	Passive Kit	SV	Sorbent Vial
CYC	Cyclone	PPI	Parallel Particle Impactor	T	Tape
DR	Direct-reading	PS	Passive Sampler	TH	Tube Holder
DRI	Direct-reading Instrument	PT	Plastic Tubing	TK	Test Kit
DRT	Drying Tube	PUF	PUF Cartridge	TMP	Template
DT	Detector Tube, Color	RR	Rate Reducer	VAC	Vac-U-Chamber
EPAM	Environmental Particulate Monitor	SB	Sample Bag	VT	ViaTrap for use with BioSampler
		SBLK	Bulk Sorbent	W	Wipe

References

SKC Sampling Guides are abstracted from publications by the National Institute of Occupational Safety and Health (NIOSH), the Occupational Safety and Health Administration (OSHA), American Society for Testing and Materials (ASTM) International, the Environmental Protection Agency (EPA), Health and Safety Executive (HSE), and published non-agency methods.

NIOSH, OSHA, EPA, HSE, and ASTM International Agency References

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Air Sampling Terms

8-Hour Time-weighted Average (TWA)

The average full-shift exposure level calculated by weighting concentrations throughout a workday with respect to time. The denominator "eight hours" is used because OSHA standards are based on an 8-hour workday. OSHA and ACGIH use the following formula to calculate TWA:

$$TWA = \frac{C_1T_1 + C_2T_2 + C_3T_3 \dots C_nT_n}{8 \text{ hrs}}$$

TWA = Time-weighted average concentrations in ppm or mg/m³
 C = Concentration of contaminant during an incremental exposure time
 T = Time — incremental exposure time

Absorption

The penetration of airborne chemicals into a collection medium, such as impinger fluid, where the chemicals will dissolve or react chemically

Active Sampling

The collection of airborne contaminants by means of a forced movement of air by a sample pump through appropriate collection media

Adsorption

The collection of gases and vapors onto the surface of a collection medium such as the sorbent material in sorbent tubes

Aerodynamic Diameter

A description of the shapes and densities of dust particles; the diameter of a unit-density sphere having the same settling velocity as the particle in question

Aerosol

Microscopic liquid or solid particles dispersed into the air

Air Volume

The total amount of air passed through a sampling medium; determined by multiplying flow rate in ml/min or L/min by the sample time in minutes

Ambient Air

Air that is external to buildings and accessible to the general public

Back Pressure

The pressure drop, i.e., resistance to flow created by the collected sample or the sample media itself

Bioaerosols

Airborne particles, molecules, or volatile compounds ranging in size from 100 microns to 0.01 micron that are living, contain living organisms, or were released from living organisms

Blank Sample

A representative sampling medium sent as a control with the actual sample to a lab. Blanks are subjected to the same procedures as samples, except no air is drawn through them.

Ceiling Value

The concentration that should not be exceeded during any part of the work day

Closed-face Sampling

Filter sampling using a two or three-piece cassette with the cassette inlet section in place and the sealing plugs removed

Constant Flow

A feature available on air sample pumps that allows the pump to automatically compensate for flow restrictions and variations, ensuring the set and calibrated flow rate is maintained throughout the sampling period

50% Cut-point

Describes the performance of cyclones and other particle size-selective devices. For personal sampling, the 50% cut-point is the size of the dust that the device collects with 50% efficiency.

Cyclone

A sampling device used to collect and separate respirable particulate mass. The cyclone functions as a centrifuge; the rapid circulation of air separates particles according to size.



Desorption Efficiency

A measure of how much analyte can be recovered from sorbent

Dust

Solid particles rendered airborne during the crushing or grinding of hard, rock-like materials

Fugitive Emissions

Emissions that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening

Fume

Solid airborne particles formed by the vaporization of solid materials, oxidation of the vapor, and condensation of the oxide

Gas

A state of matter consisting of molecules in constant random motion that is neither a defined volume nor shape and remains in this state at normal temperature (25 C) and pressure (1 atmosphere)

Grab Sampling

The direct collection of an air-contaminant mixture into a device such as a sample bag or detector tube over a brief period



Gravimetric Analysis

Sample analysis of filters by determining sample weight

Hearing Conservation Program

A program to prevent occupational hearing loss, preserve and protect hearing, and provide workers with knowledge and hearing protection necessary to safeguard themselves.

High Flow Sampling

The collection of airborne contaminants (typically particulates) at flow rates greater than 1000 ml/min

Inhalable Fraction and Vapor (IFV)

An ACGIH endnote designation on a compound that exerts sufficient vapor pressure such that it may be present in both particle and vapor phases, with each contributing a significant portion of the dose at the TLV-TWA concentration. Such compounds require simultaneous sampling of both aerosol and vapor phases.

Indoor Environmental Quality

The impacts of the indoor environment including, but not limited to, air quality, lighting, and temperature on occupant health, comfort, and performance

Integrated Sampling

The collection of air contaminants over an extended period

LEED

The Leadership in Energy and Environmental Design (LEED) program provides building owners/operators with a framework for identifying and implementing practical and measurable green building design, construction, operation, and maintenance solutions.

Low Flow Sampling

The sampling of airborne contaminants (typically gases and vapors) at flow rates less than 500 ml/min

Matched-weight Filters

Two filters that match in weight; the top filter collects contaminants, the bottom filter serves as a control. After sampling, both filters are weighed and the difference between weights is the sample weight.

Mist

Droplets rendered airborne by rubbing, boiling, splashing, or otherwise agitating a liquid

Air Sampling Terms

Nanoparticle

Intentionally manufactured particles of a consistent composition and/or size with at least one dimension in the size range of 1 to 100 nanometers (nm)

Noise Exposure Measurement

Noise is measured using unique instruments such as noise dosimeters and sound level meters to assess areas that are above the occupational exposure limits.

Noise vs Sound

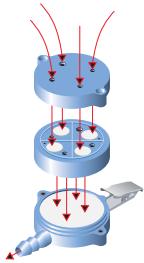
Noise is unwanted sound. **Sound** is a rapid variation of atmospheric pressure caused by some disturbance of the air.

Open-face Sampling

Filter sampling using a three-piece cassette with the cassette inlet section removed; this is typically used for sampling asbestos and other fibers

Parallel Particle Impactor (PPI) Samplers

Small impaction-based particulate samplers that precisely select for thoracic or respirable dust. Comprised of four small impactors arranged in parallel in the inlet plate, each with a unique 50% cut-point to target a specific one-quarter segment of the ISO 7708/CEN curve. Used with a sample pump at 2, 4, or 8 L/min (2 L/min only for thoracic). Larger particles are scrubbed and retained by porous oiled impaction substrate located immediately beneath each inlet nozzle. Smaller particles continue to a standard 37-mm collection filter for analysis.



Particulate Matter (PM)

A mix of solid particles and liquid droplets suspended in air. Origin, shape, size, and composition vary. Standards exist for PM10 (diameter $\leq 10 \mu\text{m}$) and PM2.5 (diameter $\leq 2.5 \mu\text{m}$) because they are easily trapped in the lungs and are most likely to cause adverse health effects. Additional particles of concern are PM1.0 (diameter $\leq 1 \mu\text{m}$) and PM Coarse (diameter $< 10 \mu\text{m}$ and $> 2.5 \mu\text{m}$).

Passive (Diffusive) Samplers

Small air samplers or "badges" that collect airborne gases or vapors without the use of a pump. Chemicals diffuse through a diffusion barrier onto a sorbing medium inside the sampler at a fixed rate that can be scientifically determined.



Preloaded Filter Cassettes

Ready-to-use cassettes that comprise a cassette, filter, support pad, and sealing plugs

Preweighed Filters

Individual filters that are weighed to within 5 decimals before they are loaded into a cassette

Sampling Parameters — Rate, Time, and Volume

Consult specific methods to determine the range given for each parameter. In the SKC Sampling Guide under "Sampling," some chemicals have two different recommendations for sampling rates and times; the sampling rate for an 8-hour sample is listed with the shorter period rate in parentheses. The choice of rate depends on sampling requirements.

Sampling Train

The entire sampling system: sampling medium (sorber tube, filter, cyclone, IOM, etc.) connected to a sample pump with flexible tubing

Short-term Exposure Limit (STEL)

A 15-minute time-weighted average exposure that should not be exceeded during any part of the workday

Smoke

Particles resulting from the incomplete combustion of organic matter and consisting predominantly of carbons and oxides of carbon

Solvent Desorption

The process of extracting adsorbed chemicals from sorbent material through the use of solvents

Source Emissions

Particulate or gaseous emissions generated from a stationary source, such as a stack

Thermal Desorption

The process of extracting adsorbed chemicals from sorbent material through the use of heat

TLV-TWA

An ACGIH-defined concentration level in air, typically for inhalation or skin exposure, to which it is believed a worker can be exposed day after day (8 hours per day, 40 hours per work week) for a working lifetime without adverse health effects

Traditional Workplace Exposure Guidelines

- **Total Dust**
Dust that is collected using closed-face 37-mm cassettes fitted with suitable filters
- **Respirable Dust**
Particles that penetrate to the gas exchange regions of the lung; collected using a filter cassette with suitable filter and a cyclone

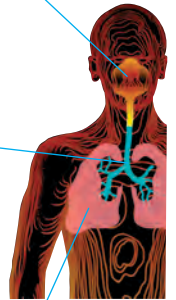
Ultrafine Particulate Matter

Ultrafine particles less than 100 nanometers (0.1 micron) result from combustion, friction, or natural processes in the air or water. While nano-sized, ultrafine particles are not nanoparticles because they are neither intentionally manufactured nor of a constant composition or size.

Updated Workplace Exposure Guidelines

The concept of size-selective sampling of industrial aerosol is based on the measurement of particles associated with a specific human health effect, i.e., how deeply particles penetrate into the respiratory tract. ACGIH recommends that particle size-selective threshold limit values (TLVs) be expressed in three forms:

- **Inhalable Particulate Mass** (100- μm 50% cut-point), hazardous when deposited anywhere in the respiratory tract
- **Thoracic Particulate Mass** (10- μm 50% cut-point), hazardous when deposited anywhere in the lung airways and the gas exchange regions
- **Respirable Particulate Mass** (4- μm 50% cut-point), hazardous when deposited in the gas exchange regions of the lungs



Vapor

The gaseous form of a substance that is typically a liquid at normal temperature (25 C) and pressure (1 atmosphere)

Vapor Intrusion

Volatile chemicals in buried wastes and/or contaminated groundwater emit vapors that migrate through subsurface soils into indoor air spaces of overlying buildings.

Whole Air Sampling

The collection of air into a sealable container such as a stainless steel canister or sampling bag for subsequent analysis

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Index

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A

Accu-CAP.....	106
AcoustiCHEK.....	150
Adapters, Calibration.....	40, 118
Adapters, Tubing.....	45, 118
Air Sampling Guide.....	174-247
AirChek 52/Sidekick.....	12-13
AirChek Connect.....	16, 19
AirChek Essential.....	16-17
AirChek TOUCH	16, 18
AirChek XR5000.....	20-21
AirLite.....	31
AIR-AIDE.....	154
All-in-One.....	36
Aluminum Cyclone.....	127
Ambient Air Quality Monitor.....	162-163
Analysis Accessories.....	119
App.....	33, 145
Area Pumps.....	24-30, 139
Asbestos Sampling.....	30-31, 104, 173
ASTM Methods.....	174-247

B

Badges	
Aldehydes.....	92
Ammonia.....	93
Anesthetic Gases.....	84
Formaldehyde.....	92
Health Care Industry.....	84
Hydrogen Cyanide.....	94
Mercury.....	94
Methanol.....	84
Nitrogen Dioxide.....	93
Organic Vapor.....	82-83, 96-97
Siloxanes.....	84
Sterilants.....	84
Sulfur Dioxide.....	93
SVOCs.....	96-97
ULTRA.....	96-97
UME [®]	92-93
VOCs.....	82-83, 96-97
VOC Chek.....	82-83
Bags, Sample.....	58-67
Battery Chargers.....	34-35
Bioaerosol Filters.....	111, 114
Bioaerosol Guide.....	135
Bioaerosol Samplers.....	135-142
Bioaerosol Tape.....	140
BioLite.....	139
BioSampler.....	138-139
BioStage.....	136-137
Breath Gas Analysis Bags.....	60-61, 63
Bubble Meters (Pump Calibrators).....	40
Bubblers (Impingers).....	70-71
Button Sampler.....	124, 141

C

Calibration Adapters.....	40, 118
Calibration Jars.....	40, 118
Calibration Service.....	42-43, 151
Calibrators.....	38-41
Carpet Sampling.....	140, 173
Cases, Pump.....	44
Cassette Blanks.....	115
Cellulose Filters.....	110
Chargers, Battery.....	34-35
Charging Cradle (Pump).....	16-19
Charging Dock (Noise).....	145
chek-mate.....	38-39
CHEKbox.....	147, 149
CLI by SKC.....	166-169
Cloud-based Storage.....	147, 149
Coated Filters.....	68-69, 112-113
Color Detection.....	72-79, 95
Constant Pressure Controller.....	37
Cyclones.....	126-127

D

DataCHEK dB/dB Pro.....	147
DataTrac Software.....	25
DataTrac dB Software.....	145
DataTrac Pro Software.....	32-33
DCS System.....	27
DECONtamination Solutions.....	169
Deployable Systems.....	26-27
Detector Tubes.....	72-79
Diesel Particulate Matter.....	109
Diffusive Samplers.....	80-99
Digestible Filter Capsules.....	103
Dosimeter Tubes.....	95
DPM Cassettes/Cyclone.....	109
DPS System.....	26-27

Drying Tubes.....	49
D-TAM/D-TAM Gold Skin Cleaners.....	169

Dust Samplers

Button.....	124
Cyclones.....	126-127
HAZ-DUST.....	156-161
HD-1620.....	160-161
IFV Pro.....	125
IMPACT.....	131
IOM.....	122-123
PEM.....	132
PMI.....	133
PPI.....	128-130
Sioutas.....	134
SM-7204.....	155
SPLIT2.....	158

E

e-Cradle.....	18, 35
Environmental Devices Corp.....	154-163
EPA Methods.....	174-247
EPAM-5000.....	159
EPAS.....	162-163
Ethylene Oxide Sampler.....	84
Exhaled Breath Bags.....	60-61, 63

F

Feraru Dynamics.....	152-153
Filter Calibrators.....	40
Filter Cassettes	
Asbestos.....	104, 173
Coated.....	68-69, 112-113
Matched-weight.....	102, 107
Microvacuum.....	104-105, 173
Preweighed.....	107
Solu-CAP.....	103
Filters and Accessories.....	101, 116-119
FlexFoil Bags.....	62-63
Flite4 Pump.....	30
Flowmeters.....	38-40
Foil Bags.....	62-63
Full Disclosure.....	171

G

Gastec.....	72-79, 95
Gelatin Filters.....	111
Ghost Wipes.....	172
Glass Fiber Filters.....	110
Grab Air Pump.....	64
Grab Sample Tubes.....	72-79
GS Cyclones.....	126
Guides	
Air Sampling.....	174-247
Bioaerosol.....	135
Particle Size-selective.....	120-121
Personal Pumps.....	7
VOC Chek 575.....	85-91

H

Hand-Arm Vibration.....	152-153
HAZ-DUST.....	156-161
HAZ-SCANNER.....	162-163
Health Care Industry Badges.....	84
Helmet Adapter.....	107, 118
High Flow Pumps.....	24-30

Holders

Filter Cassette.....	116
Impinger.....	70-71
Sample Tube.....	36-37

I

IAQ Pumps.....	28-29
IFV Pro Sampler.....	125
IMPACT Sampler.....	131
Impactor, BioStage.....	136-137
Impactor, Sioutas.....	134
Impingers and Accessories.....	70-71
Inhalable Dust Samplers.....	122-125
IOM Sampler.....	122-123
ISO-CHEK.....	68, 113

K

Knowledge Center.....	5
-----------------------	---

L

Lead Sampling.....	170-172
Leland Legacy Pump.....	24-25
Low Flow Tube Holders.....	36-37
Low Flow Pumps.....	10-11, 65
Luer Adapters.....	45, 118

M

MCE Filters.....	102-104
Mercury Badges.....	94
Meth Detection Kits.....	165
Microvacuum Cassettes.....	104-105, 173
Mini Sampler.....	119
Mixed-phase Contaminants.....	125
Mobile App.....	33, 145

Monitors

Dust.....	156-158
Hand-Arm Vibration.....	152-153
HAZ-DUST.....	156-161
Noise.....	144-145
Silica.....	155
Sound.....	146-149
Multiple-tube Holders.....	37

N

Nano-Neat.....	102
NIOSH Methods.....	174-247
Noise Instruments.....	144-145
NoiseCHEK.....	144-145

O

Organic Vapor Badges.....	82-83, 96-97
OSHA Methods.....	174-247
OVS Tubes.....	53

P

Parallel Particle Impactors.....	128-130
Particle Size-selective Guide.....	120-121
Particulate Monitors	
DPS System.....	26-27
EPAM-5000.....	159
HAZ-DUST.....	156-161
HD-1620.....	160-161
SM-7204.....	155
SPLIT2.....	158

Passive Samplers.....	80-99
Passive Tubes.....	95, 98
PEM.....	132
PERMEA-TEC.....	168
Personal Pumps.....	7-23, 31
PFA Impingers.....	71
Plastic Cyclone.....	127
PM2.5 Samplers.....	131-133
PM10 Samplers.....	131-133
PM Coarse Samplers.....	131, 133
PMI.....	133
Pocket Pump TOUCH	10-11, 65
Polycarbonate Filters.....	105
PowerFlex Chargers.....	34
PPI.....	128-130
PTFE Filters.....	108
PUF Tubes.....	54-55
Pump Cases.....	44
Pump Pouches.....	44

Pumps

5 to 3000 ml/min.....	12-15, 31
5 to 5000 ml/min.....	16-23
5 to 15 L/min.....	24-27
10 to 30 L/min.....	28-29
20 to 500 ml/min.....	10-11, 65
AirChek 52/Sidekick.....	12-13
AirChek Connect.....	16, 19
AirChek Essential.....	16-17
AirChek TOUCH	16, 18
AirLite.....	31
BioLite.....	139
Detector Tube, Piston.....	72
Flite4.....	30
Grab Air.....	64
Leland Legacy.....	24-25
Pocket Pump TOUCH	10-11, 65
QuickTake 30.....	28-29
Sidekick.....	12-13
Sonic Flow.....	139
Universal.....	22-23
XR5000.....	20-21
PVC Filters.....	106-107

Q

Quartz Filters.....	109
QuickTake 30.....	28-29

R

Respirable Samplers.....	126-130
Rotameters.....	41

S

Sample Bags.....	58-67
Sample Tubes	
Passive.....	95, 98-99
Sorbent.....	46-57
Thermal Desorption, Active.....	56
Thermal Desorption, Passive.....	98-99

Samplers

Area.....	24-30, 136-139
Passive (Diffusive).....	80-99
Personal.....	7-23, 31
Sampling Guide.....	174-247
Shrink Bands, Cassette.....	117
Silica.....	107, 126-130, 155
Siloxanes.....	84
Silver Membrane Filters.....	105
Sioutas Impactor.....	134
Skin Cleaners.....	169
SmartWave.....	33
SmartWave dB.....	145
Smear Tabs.....	172
Soap Solution.....	40

Software

DataCHEK dB/dB Pro.....	147
DataTrac.....	25
DataTrac dB.....	145
DataTrac Pro.....	32-33
Solu-CAP.....	103
Sonic Flow Sampler.....	139
Sorbent Sample Tubes.....	46-57
Sound Level Meters.....	146-149
SPLIT2.....	158
Spore Traps.....	114, 142
Sterile Swabs.....	140, 173
Stick-to-it.....	140, 173
SoundCHEK Connect.....	148-149
SoundCHEK Essential.....	146-147
Support Pads, Filter.....	117
Surface Decontamination.....	169
Surface Sampling, Biological.....	140, 173
Surface Sampling, Chemical.....	165-172
SureSeal Cassette Blanks.....	115
SWYPE.....	166-167

T

Take Charge 5.....	21, 25, 35
Tedlar Sample Bags.....	60-61
Thermal Desorption Tubes.....	56, 98-99

Thoracic Samplers.....	128-130
------------------------	---------

TOUCH Pumps.....	10-11, 16, 18-19, 65
Training.....	5
Trap, Impinger.....	70
Tripod.....	44
Tube Breakers.....	36, 52, 79
Tube Covers.....	36-37
Tube Holders.....	36-37
Tubes	
Color Detector.....	72-79, 95
Dosimeter.....	95
Grab Sample.....	72-79
OVS.....	53
PUF.....	54-55
Sorbent Sample.....	46-57
Thermal Desorption.....	56, 98-99
VOST.....	56
Tubing.....	45, 64, 117
Tubing Adapters.....	45, 118

U

ULTRA Passive Samplers.....	96-97
UME [®] Passive Samplers.....	92-93
Universal Pumps.....	22-23

V

Vac-U-Chamber.....	66-67
VersaTrap Spore Trap.....	114, 142
ViaTrap.....	138-139
VOC Chek.....	82-83

VOC Sampling

Badges.....	82-83, 96-97
Bags.....	58-67
Tubes.....	46-57, 98-99
VOST Trap.....	56

W

Wipe Sample Kit.....	172
----------------------	-----

X

XR5000.....	20-21
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