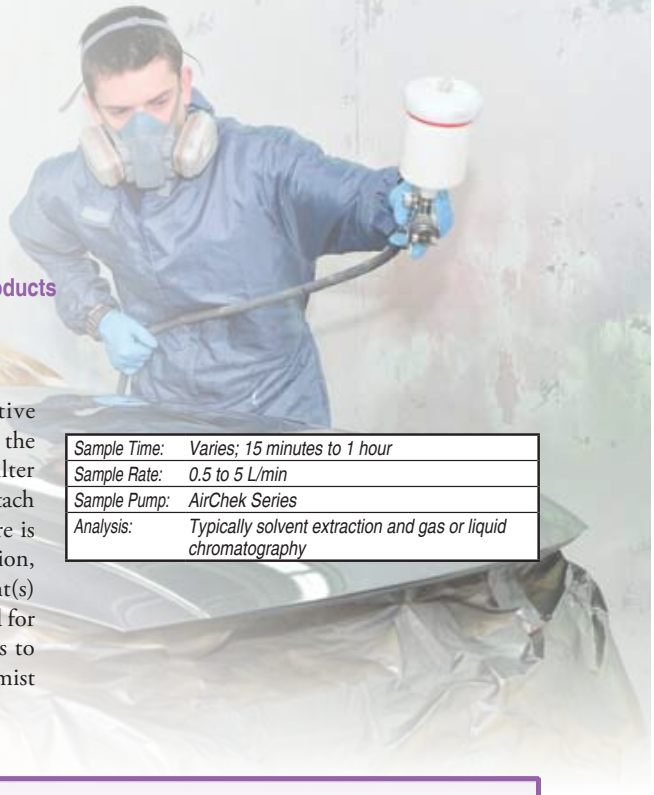
SKC Chemically Coated Filters

Convenient Alternative to Impinger Wet Chemistry Methods

- **Meet agency method specifications**
- **Economical**
- **Ready to use**
  - Preloaded into cassettes with end plugs and shrink bands
- **Time-saving**
- **Easy personal sampling**
- **Small package sizes for short shelf-life products**
- **Custom coated filters are available**



Sample Time:	*Varies; 15 minutes to 1 hour*
Sample Rate:	*0.5 to 5 L/min*
Sample Pump:	*AirChek Series*
Analysis:	*Typically solvent extraction and gas or liquid chromatography*

SKC Coated Filters make sampling reactive compounds fast, easy, and safe. Simply unplug the lightweight cassette, insert it into an SKC Filter Cassette Holder, clip to a worker's collar, and attach the cassette to a personal sample pump. There is no broken glass or splashing reagent. In addition, most filter coatings derivatize the contaminant(s) of interest, producing a more stable compound for storage and analysis. Use SKC Coated Filters to collect compounds that exist as an aerosol or mist or for some higher boiling vapors.

ABOUT

Certificates of Conformance

SKC provides online Certificates of Conformance for SKC-manufactured coated filters. Visit www.skcinc.com and search "conformance" to view certificates.

ABOUT

OSHA NEP for Isocyanates

In 2013, OSHA announced a three-year National Emphasis Program (NEP) to protect workers from the serious health effects of occupational exposure to isocyanates. Workers are most commonly exposed to these highly reactive, low molecular weight chemicals while manufacturing foams, fibers, coatings, and elastomers. Isocyanate exposure can cause occupational asthma, pneumonitis, irritation of the skin and mucous membranes, cancer, and death. Respiratory illnesses also can be caused by isocyanate exposure to the skin. Visit www.osha.gov/OshDoc/Directive_pdf/CPL_03-00-017.pdf for more information.

Custom Coated Filters

Made to Your Specifications

Choose from quality filter materials

- Glass fiber
- Mixed cellulose ester (MCE)
- Polyvinyl chloride (PVC)
- PTFE
- Other materials available

Specify filter pore size and diameter

Choose from a variety of support materials

Strict QC ensures consistent, accurate loading of specified coating

Supplied as filters only or preloaded in cassettes for ready use

- Preloaded cassettes are available with shrink bands

Contact your SKC representative today or visit www.skcinc.com/catalog/infopage.php?id=2900.

Chemically Coated Filter Selection Guide

Chemical	Method ∞	Preloaded Filter; Coating (in 37-mm cassettes)	Cat. No.*	Qty.
Acetic anhydride	OSHA 82	2 Glass filters; 1-(2-pyridyl) piperazine §	225-9009 §	10
Acetic anhydride	OSHA 102	2 Glass filters; veratrylamine and di-n-octyl phthalate	225-9010 †	10
4-Aminobiphenyl	OSHA 93	2 Glass filters; sulfuric acid	225-9004	10
Aniline	NIOSH 2017 ¥	2 Glass filters; sulfuric acid	225-9004 ¥	10
Arsenic, volatile compounds	OSHA ID-105	1 MCE filter and cellulose pad; sodium carbonate	225-9001	10
Benzidine	OSHA 65	2 Glass 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 filters; 2,4-dinitrophenylhydrazine and phosphoric acids §	225-9019 §	10
o-Dianisidine	OSHA 71	2 Glass filters; sulfuric acid	225-9004	10
3,3'-Dichlorobenzidine	OSHA 65	2 Glass filters; sulfuric acid	225-9004	10
Diisocyanates (HDI; 2,6-TDI; 2,4-TDI)	ASTM D5836 Δ OSHA 42 ‡	1 Glass filter and cellulose support; 1-(2-pyridyl)piperazine ‡§	225-9013 §† 225-9002 ‡§	10 10
Diphenylamine	OSHA 78	2 Glass filters; sulfuric acid	225-9004	10
Fluorides	OSHA ID-110 NIOSH 7902 ASTM D4765	1 MCE filter and cellulose 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 filters; 2,4-dinitrophenylhydrazine and phosphoric acid §	225-9003 §	10
Hydrazine	OSHA 108	2 Glass 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; 1 coated with sodium carbonate, 1 uncoated	225-9032	10
Hydrogen chloride	NIOSH 7907	2 Quartz filters; 1 coated with sodium carbonate, 1 uncoated	225-9032	10
Hydrogen peroxide	OSHA 1019 NON 57 •	2 **25-mm** Quartz filters; titanium oxysulfate hydrate **(in 25-mm cassette)**	225-9030 •	10
Isocyanates	ASTM Σ	1 PTFE filter; 1 glass filter impregnated with MAMA (ISO-CHEK Sampling System, *see p. 66)*	225-9022 Σ 225-9022A Σ	12 36
Isocyanates (HDI; 2,6-TDI; 2,4-TDI)	ASTM D5836 Δ OSHA 42 ‡	1 Glass 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 filter; MAMA **(in 13-mm Swinnex holder)** §	225-9029 §▼	5
Isocyanates, organic	MDHS 25/3 (U.K.)	1 **25-mm** A/E glass filter; methoxyphenyl piperazine ◊§	Special order	5
n-Isopropylaniline	OSHA 78	2 Glass filters; sulfuric acid	225-9004	10
Maleic anhydride	OSHA 86	2 Glass filters; veratrylamine §	225-9021 §	10
Maleic anhydride	■	1 **25-mm** Glass filter; veratrylamine ◊§	225-9028 ◊§	10
Mercaptans (methyl-, ethyl-, n-butyl-, phenyl-)	NIOSH 2542 OSHA 26	1 Glass filter; mercuric acetate §	225-9007 §	10
4,4'-Methylene bis (2-chloroaniline) (MOCA)	OSHA 71	2 Glass filters; sulfuric acid	225-9004	10
Methylene bisphenyl (MDI)	OSHA 47 ‡	1 Glass filter and cellulose support; 1-(2-pyridyl)piperazine ‡§	225-9013 §† 225-9002 ‡§	10 10
4,4'-Methylenedianiline	OSHA 57 Ω NIOSH 5029	2 Glass filters; sulfuric acid	225-9004	10
1-Naphthylamine, 2-naphthylamine	OSHA 93	2 Glass filters; sulfuric acid	225-9004	10
Nitric acid	NIOSH 7907	2 Quartz filters; 1 coated with sodium carbonate, 1 uncoated	225-9032	10
Nitrobenzene	NIOSH 2017 ¥	2 Glass filters; sulfuric acid	225-9004 ¥	10
Ozone	OSHA ID-214	2 Glass filters; nitrite-impregnated §	225-9014 §	10
Phenylenediamine (o-, m-, p-)	OSHA 87	2 Glass filters; sulfuric acid	225-9004	10
Phosphine	OSHA 1003	1 Glass filter; 1 polyester filter coated with mercuric chloride §	225-9018 †§	10
Phosphoric acid	NIOSH 7908	1 Quartz filter ♠	225-9033	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 ♠	225-9033	10
2,4-Toluenediamine	OSHA 65	2 Glass filters; sulfuric acid	225-9004	10
2,6-Toluenediamine	OSHA 65	2 Glass filters; sulfuric acid	225-9004	10
o-Tolidine	OSHA 71	2 Glass filters; sulfuric acid	225-9004	10
o-Toluidine	NIOSH 2017 ¥	2 Glass filters; sulfuric acid	225-9004 ¥	10
Toluidine (o-, m-, p-)	OSHA 73	2 Glass filters; sulfuric acid	225-9004	10
1,3,5-Triglycidyl isocyanurate (TGI)	OSHA PV2055	1 Glass filter; hydrobromic acid	225-9027	10
Valeraldehyde	OSHA 85	3 Glass filters; 2,4-dinitrophenylhydrazine and phosphoric acid §	225-9020 §	10
m-Xylenediamine (m-XDA, p-XDA)	OSHA 105	2 Glass 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*
◊ *Filters only; not preloaded in cassettes*
§ *Storage below 4 C (39.2 F) required*
¥ *Also requires Sorbent Tube Cat. No. 226-15, see page 38*
Ω *OSHA 57 is an update of NIOSH 5029, which called for a single filter.*
‡ *See Tech Tips on page 98.*
∑ *Meets multiple ASTM methods, see page 66*
\# *Collects both vapor and aerosol phases of fluorides. Patented in Canada by IRSST (Institut de recherche Robert-Sauvé en santé et en sécurité du travail du Québec), Canada Patent No. 1,299,114*
∞ *The methods listed are the most widely used. Additional methods may be listed in the Sampling Guide. See pages 143-211.*
● *Also requires Sorbent Tube Cat. No. 226-193-UC or 226-199-UC for simultaneous, separate sampling of peracetic acid, see page 42*
▼ *Also requires Impinger Cat. No. 225-36-1, see page 67*
■ *For inhalable TLV; analysis by OSHA 86*
♠ *A coated filter is not needed for this method as sulfuric acid and phosphoric acid are non-volatile acids and are present in the air as an aerosol.*

ISO-CHEK

Simultaneous and Separate Collection of Isocyanate Phases

the ISO-CHEK Advantage!

- ☑ **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 efficiently captures aerosol phase isocyanates compared to denuder collectors.**
- ☑ **No handling precautions**
  No broken glass or splashing impinger liquid

Standard of Good Practice

Store and prepare sampling media in solvent-free environments.

ABOUT ISO-CHEK Development

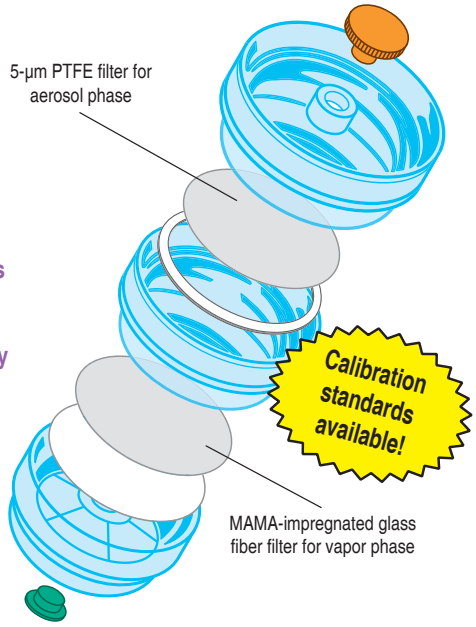
ISO-CHEK was developed and patented by IRSST (Institut de recherche Robert-Sauvé en santé et en sécurité du travail du Québec).

More Information

www.skcinc.com

Search "1869"

- **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**
  - See laboratory list at www.skcinc.com



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

Suitable for most isocyanates, the patented[#] 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 225-9023A	4 10
ISO-CHEK Cassettes,* preloaded clear cassettes for isocyanates, *requires Derivatizing Solution; see below*	225-9022 225-9022A	12 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-HMDI, 1 gram	225-9056	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

 # U.S. Patent No. 4,961,916; see About at left
** Limited shelf-life*
† Hazmat shipping charges for air shipments only, ground shipments exempt
‡ Limited shelf-life, freezer storage recommended; refrigerated shipping not required

Glass Midget Impingers

Collection of Airborne Hazards into Liquids

SKC glass impingers feature graduations that are accurate to within ± 0.5 ml for each increment. Serial numbers on both sections assist with sample identification and proper part matching.

Standard Midget Impinger has a 25-ml capacity with graduations in 5-ml increments. The nozzle is precisely placed to ensure proper collection.

Special Midget Impinger with Fritted Nozzle is a modified standard midget impinger with a special fritted nozzle to increase contact between the air sample and the liquid. Many NIOSH and OSHA procedures call for this type of bubbler impinger.

Spill-resistant Midget Impinger features a special outlet side arm that extends midway down with sufficient capacity above to handle all liquid in the standard or fritted impinger.

Glass Midget Impinger	Cat. No.
Standard Midget, 25 ml, standard nozzle	225-36-1
Special Midget, 25 ml, fritted nozzle, 170 to 220-micron frit	225-36-2
Spill-resistant Midget, 25 ml, standard nozzle	225-36-4
Spill-resistant Midget, 25 ml, fritted nozzle, 170 to 220-micron frit	225-36-5
Glass Midget Impinger Accessories	
Trap for Midget Impingers, glass trap for area sampling, can be used with or without sorbent, *see photo at right*	225-22
In-line Plastic Traps with sorbent to remove vapors, pk/3	225-22-01
Replacement Trap Sorbent, 200 grams, to remove vapors, for use in Cat. Nos. 225-22 and 225-22-01	225-22-02
Holster, thick vinyl fabric with a clip for attachment to clothing	225-20*
Holders,* for attaching to air sample pump	
Single,* stainless steel, for 1 impinger or 1 trap	225-20-01
Double,* stainless steel, for 2 impingers or impinger and trap	225-20-02

* *Not suitable for PFA impingers*

Tech Tips

▶ *Use a trap with impingers to prevent impinger liquid from being drawn into the sample pump. Solid sorbents may be added to the trap when using a volatile liquid to protect the pump chamber from vapors. See Cat. Nos. 225-22 and 225-22-01.*

Glass Trap shown with Impinger and PCXR8 Sample Pump

PFA Midget Impingers

Savillex PFA (fluoropolymer) 60-ml impingers are unbreakable, inert to virtually all chemicals, and perform well in high-temperature and cryogenic applications. Available in two different port configurations, the transfer caps and ferrule nuts provide a leak-tight seal.

PFA Midget Impinger	Cat. No.
Impinger with 1-piece Molded Transfer Cap, 60-ml capacity, with a 6.35-mm (1/4-inch) vertical port and a 6.35-mm (1/4-inch) side port for horizontal connections; includes ferrule nuts	225-0020
Impinger with Port Transfer Cap, 60-ml capacity, with 2 vertical 6.35-mm (1/4-inch) ports for close assembly of sampling train; includes ferrule nuts	225-0021
PFA Midget Impinger Accessories	
Single Holder for PFA Impinger,† stainless steel, attaches to sample pump	225-0026
Holster for PFA Impinger,† vinyl, with clip, for attaching to clothing	225-0027
In-line Plastic Traps with sorbent to remove vapors, pk/3	225-22-01
Replacement Trap Sorbent, 200 grams, to remove vapors, for use in Cat. Nos. 225-22 and 225-22-01	225-22-02
180-degree PFA Tube Bend, 6.35-mm diameter x 203.2-mm length (1/4-inch diameter x 8-inch length), used to connect 2 PFA impingers, *for use with Cat. No. 225-0021 only*	225-0022
90-degree PFA Tube Bend, 6.35-mm diameter x 152.4-mm length (1/4-inch diameter x 6-inch length), used to connect 2 PFA impingers, *for use with Cat. No. 225-0021 only*	225-0023

† *Not suitable for glass impingers*

Cat. No. 225-0021

Cat. No. 225-0020