

Sorbent Tube Selection Guide

To select a tube for a specific compound, refer to the SKC Sampling Guide on catalog pages 127-182 or search the on-line Sampling Guide at www.skcinc.com for methods and required sorbent tubes.

Cat. No.	Sorbent (coating)	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
226-18	Alumina	8 x 110	2	400/200	GS	F 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 ^o	XAD-2 (2-hydroxymethyl piperidine)	8 x 110	2	450/225	GS	W W W	B	20
226-28	Soda lime	7 x 110	2	600/200	GS	W W W G W	B	50
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 ^o	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®	6 x 70	2	30/15	GS	F W W	A	50
226-35-01*	Tenax	6 x 70	2	20/10	GO	W W W	A	50
226-35-02*	[Tenax Tenax	[6 x 130 6 x 130	[1 1	[35 17	GO	[W W W W	—	50 sets

* Limited shelf-life; contact SKC for more information † Anasorb C300 is equivalent to Hydrar and Carulite®
^o Limited shelf-life; refrigerator/freezer storage may be required. Contact SKC.

TUBE ENDS: GS: Glass Sealed GO: Glass Open SS: Stainless Steel Open
SEPARATORS: W: Glass Wool G: Glass Fiber Filter F: Foam T: PTFE Ring S: Screen N: Nylon 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.

the SKC Advantage!

✓ **Over 35 years of proven performance!** SKC produced the first commercial sorbent tubes over 35 years ago and offers the most advanced sorbent technology today.

✓ **Validation and reliability**
SKC tubes are specified and used by OSHA, NIOSH, and EPA researchers and by health and safety professionals around the globe at national and local levels for compliance and consulting.

✓ **Consistent mesh size**
Consistent mesh as specified in government methods maintains uniform back pressure and breakthrough volumes.

✓ **Large batch production**
Anasorb® CSC Lot 2000 charcoal will be available for many years.

✓ **Technical backup**
SKC technical experts provide fast, accurate answers to your questions.

✓ **Easy-off "hat" caps on specialty tubes**



For tube holders
and accessories
see pages 46-47

Anasorb

A Trademark of Quality only from SKC

In 1973, SKC made the first commercial sorbent tube. Since then, SKC has led the advancements in sorbent tube technology. To more easily identify SKC proprietary sorbents in air sampling methods and other technical areas, 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)

Tech Tips

► The approximate surface areas for 20/40-mesh SKC Anasorb 747 and Anasorb CSC sorbents are as follows:

- Anasorb 747 is 980 m²/gm

- Anasorb CSC is 1200 m²/gm

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

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

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Cat. No.	Sorbent (coating)	Size (mm) OD x L	Sections	Sorbent (mg)	Ends	Separators	Tube Cover	Qty.
226-35-03	Tenax	8 x 110	2	100/50	GS	W W W	B	50
226-35031	Tenax	8 x 110	2	100/50	GS	W W W	B	10
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	F W		
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
226-40 [◇]	Oxidizer	7 x 110	1	800	GS	W W	—	10 sets
	Molecular Sieve (triethanolamine) (2 tubes)	7 x 70 (2)	1	400 (2)	GS	L W W		
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	9000	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/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
226-59-01	Porapak®-N	6 x 70	2	88/44	GS	W W W	A	50
226-59-03	Porapak-Q	6 x 70	2	78/39	GS	W W W	A	50
226-59-04	Porapak-R	6 x 70	2	70/35	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
226-61A*	Silica Gel/Charcoal (Charcoal treated with sodium hydroxide)	10 x 210	3	750/1250/250	GS	W R W W	D	20
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.

◇ Limited shelf-life; refrigerator/freezer storage may be required. Contact SKC.

TUBE ENDS: GS: Glass Sealed GO: Glass Open SS: Stainless Steel Open

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Cat. No.	Sorbent (coating)	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		F W		
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)		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
226-104*	Chromosorb 102	8 x 70	2	100/50	GO	W W W	B	50
226-105	Chromosorb 102	6 x 70	1	100	GS	W W	C	50 sets
	Chromosorb 102	6 x 70	1	50		W W		
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
226-113	Anasorb 708	10 x 110	2	400/200	GS	W W W	C	50
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		W W		
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 [◇]	Silica Gel with ultra-low background (2,4-dinitrophenylhydrazine) <i>See below for more information!</i>	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	Silica Gel with ultra-low background (2,4-dinitrophenylhydrazine) <i>See below for more information!</i>	7 x 110	2	300/150	GS	W W W	B	20
226-120 [◇]	Silica Gel with ultra-low background (2,4-dinitrophenylhydrazine) with built-in ozone scrubber <i>See below for more information!</i>	8 x 115	3	150/ 300/150	GS	W W W W	D	20

* Limited shelf-life; contact SKC for more information ◇ Limited shelf-life; refrigerator/freezer storage may be required. Contact SKC.

TUBE ENDS: GS: Glass Sealed GO: Glass Open SS: Stainless Steel Open

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High-purity Formaldehyde Tubes

The improved high-purity formaldehyde tubes (Cat. Nos. 226-119, 226-119-7, and 226-120) contain high-purity silica gel sorbent treated with 2,4-dinitrophenylhydrazine (DNPH) to collect very low levels of formaldehyde. The sorbent background level on the front section of the tube is < 0.030 µg. These tubes are ideal for ambient and indoor air studies where formaldehyde levels can be very low. *See tube details and ordering information above.*



*For tube holders
and accessories
see pages 46-47*

Data Interpretation Formaldehyde

► **LEED Green Buildings**
Formaldehyde Indoor Air
Maximum Concentration:
27 ppb

*See formaldehyde sorbent tube
Cat. No. 226-119 or 226-120
at left.*

Source: LEED® for New Construction Rating
System v.3 (U.S. Green Building Council,
<http://www.usgbc.org>)

Sorbent Tube Selection Guide

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Cat. No.	Sorbent (coating)	Size (mm) OD x L	Sections	Sorbent (mg)	Ends	Separators	Tube Cover	Qty.
226-124*	PUF/Tenax/PUF	22 x 100	3	3cm/750mg/3cm	GO	—	P	ea
226-125*	Glass Beads (2,4,6-trichlorophenol) Silica Gel	7 x 110 8 x 110	1	2 gm 520/260	GS	W W W W W	D	20 sets
			2					
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	50mm /10gm/ 25mm	GO	—	—	ea
226-131*	PUF	65 x 125	1	75 mm	GO	—	—	ea
226-133*	Anasorb 747	16 x 125	1	5 gm	GO	W W	—	ea
226-134*	Tenax TA	16 x 125	1	1.6 gm	GO	W W	—	ea
226-142*	Carbon Beads/PTFE Filter (Carbon beads coated with potassium hydroxide)	16→8 x 85	2	100/50	GO	W W W T T	—	5
226-143*	PUF/XAD-2/PUF	22 x 100	3	3cm/1500mg/ 3cm	GO	—	P	ea
226-151 [◇]	Charcoal (Proprietary coating)	6 x 70	2	100/50	GS	W W W	A	20
226-153 [◇]	XAD-2 (di-n-butylamine)	8 x 110	2	400/200	GS	W W W	B	20
226-154	Anasorb 747	6 x 70	1	200	GS	W W	A	50
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
226-171*	Anasorb 747/Tenax TA	16 x 125	2	52 gm/1.2 gm	GO	W W	—	ea
226-175	XAD-4	8 x 150	2	400/200	GS	W W W	—	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	—	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	400/800/400	GS	W W W W	C	50
226-183	Silica Gel (specially washed and baked)/Glass Fiber Filter	7 x 110 7 x 110	1	600 600	GS	W G W W G W	D	20 sets
			1					

* Limited shelf-life; contact SKC for more information

‡ Tubes are chemically conditioned before shipping; use within 30 days or recondition, restocking fee applies.

◇ Limited shelf-life; refrigerator/freezer storage may be required. Contact SKC.

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For tube holders and accessories see pages 46-47

Custom Sorbent Tubes



SKC is here to help you with your special applications. SKC will manufacture the custom sorbent tubes you need. Custom tubes include:

- Sorbent tubes for solvent extraction
- Sorbent tubes for thermal desorption
- Multi-bed screening tubes
- High and low-volume PUF tubes
- OVS tubes
- VOST traps



Visit SKC today at www.skinc.com/tubes.asp

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226-186 [◇]	Oxidizer	7 x 110	1	800	GS	W W	B	20
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	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
226-330 [†]	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
226-359 ^{§†}	Anasorb GCB1	1/4 x 3-1/2 in	1	270	GO	W W	N/A	ea
226-360 ^{§†}	Tenax TA	1/4 x 3-1/2 in	1	250	GO	W W	N/A	ea
226-361 ^{§†}	Chromosorb 106	1/4 x 3-1/2 in	1	220	GO	W W	N/A	ea
226-362 ^{§†}	Carbograph 5 TD	1/4 x 3-1/2 in	1	450	SS	S W W S	N/A	ea

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§ Each tube has a flow direction arrow and unique number. ◇ Limited shelf-life; refrigerator/freezer storage may be required. Contact SKC.

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New!

Sorbent Tube and Pre-filter for Sampling Peroxyacetic Acid (PAA)

Use of peroxyacetic acid or paracetic acid (PAA) as a disinfectant is increasing in the food and medical industries; some are using it as a glutaraldehyde alternative. PAA occurs from a reaction between acetic acid (AA) and hydrogen peroxide (HP) and coexists with both in atmospheres; therefore, PAA is difficult to sample. Based on a method published in the *Annals of Occupational Hygiene* (Vol. 48, No. 8, pages 715-721, 2004), SKC now offers a two-part sampling device: (1) A filter cassette containing a quartz pre-filter coated with titanium oxysulfate hydrate for hydrogen peroxide (SKC Cat. No. 225-9030) and (2) A sorbent tube containing silica gel coated with methyl p-tolylsulfoxide (MTSO) for PAA (SKC Cat. No. 226-193, see above). Analysis is by molecular absorption spectrometry for HP and liquid chromatography with UV detection for PAA.



For Thermal
Desorption Tubes,
conditioned and
unconditioned,
see page 41



OVS Tube Holder

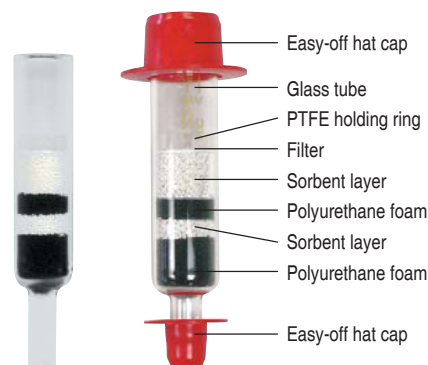
OSHA Versatile Sampler Tubes are typically used at a flow rate of 1.0 L/min provided by a personal sample pump. The special OVS Tube Holder is designed to accommodate the 13-mm diameter of SKC OVS Tubes, provide a convenient clip to attach the tube in the breathing zone, and protect the tube during sampling.

OVS Tube Holder includes fitting with durable protective cover, 0.9 meter (3 feet) of tubing, and collar clip
Do not use an Adjustable Low Flow Holder

Cat. No.224-29V

OSHA Versatile Sampler (OVS) Tubes For Sampling Pesticides, Explosives, and Glycols

- Sorbent and filter combined in one tube
- Collect aerosols and vapors simultaneously
- Low backgrounds ensure sample integrity
- Meet OSHA and NIOSH method design specifications
- Eliminate the need for cumbersome filter and tube sampling trains
- Available with a variety of sorbents
- Easy-off hat caps



OSHA originally designed OSHA Versatile Sampler Tubes to overcome the inconveniences of earlier methods. SKC OVS Tubes contain a filter to trap aerosols and a two-section sorbent bed to adsorb vapors in one specially constructed glass tube that eliminates cumbersome filter and tube sampling trains. 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 by gas chromatography (GC) or high-performance liquid chromatography (HPLC) with detector.

Available with a variety of sorbent and filter combinations, SKC OVS Tubes are truly versatile for sampling applications and methods including pesticides such as DDVP (dichlorvos), carbaryl (Sevin®), chlorpyrifos (Dursban®), Diazinon®, malathion, and parathion; explosives such as TNT and DNT; alcohols such as glycols; and biocides.

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	10
			226-58A	50
Explosives (trinitrotoluene [TNT] and dinitrotoluene [DNT]) — OSHA 44				
Phthalate esters — OSHA 104				
Acrylates and Benzophenone — Non-agency method [†]	Tenax (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 0.9 meter (3 feet) of tubing and collar clip, see details at left			224-29V	ea
OVS Adapter Kit includes tubing and adapter for calibration of OVS tubes			224-31	ea

* Methyl tin mercaptide, stannous-2-ethyl hexanoate, butyltin trichloride † See Ref. 39 on page 197. ‡ See Ref. 55 on page 197.

Thermal Desorption Sorbent Tubes For Sub-ppb VOC Measurements

SKC offers single and multiple-bed thermal desorption tubes that meet the requirements of EPA Method TO-17 for the determination of VOCs in ambient air. All SKC thermal desorption tubes are sealed with PTFE end caps and marked with a permanent serial number. SKC thermal desorption tubes are available conditioned or unconditioned. Glass transport tubes and Swagelok® fittings are available as accessory items.

Perkin Elmer or Markes Intl. Thermal Desorber Tubes

Available in **glass or stainless steel**, these tubes measure 6.35-mm OD x 88.9-mm length (1/4-inch OD x 3 1/2-inch length).

Applications	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	226-359	226-359-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	226-361	226-361-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
—	Carbograph 5 TD	226-362	226-362-UP	—	—

* Anasorb GCB1 is equivalent to Carbo-pack B; Anasorb GCB2 is equivalent to Carbo-pack C.

Accessories

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

SKC Passive Alternative for EPA Method TO-17

SKC ULTRA III Passive Samplers provide a passive alternative to single sorbent bed thermal desorption tubes for EPA TO-17 sampling for VOCs and SVOCs. See pages 70-71 for more information.



Sorbent	Active Thermal Desorption Tube (SS) Cat. No.	Active Thermal Desorption Tube (Glass) Cat. No.	ULTRA III Passive Alternative Cat. No.†
Anasorb GCB1*	226-356	226-359	690-101
Tenax TA	226-357	226-360	690-104
	226-340	226-339	690-104
Chromosorb 106	226-358	226-361	690-103
Carbograph 5 TD	226-362	—	690-102

† ULTRA III Samplers are prefilled with sample and blank/correction sorbent; see details on pages 70-71.

* Anasorb GCB1 is equivalent to Carbo-pack B; Anasorb GCB2 is equivalent to Carbo-pack C.



Data Interpretation Total VOCs

▶ **LEED Green Buildings**
 Total VOCs in Indoor Air
 Maximum Concentration:
 500 µg/m³

Source: LEED for New Construction Rating System v.3 (U.S. Green Building Council, <http://www.usgbc.org>)

ABOUT

Repacking Service and Replacement Parts

Repacking service for Low-volume PUF Tubes includes cleaning the glass, packing it with new sorbent/PUF, and inserting it into cleaned storage bottle. Contact SKC for an RA number and decontamination form.

Repack 226-92

New PUF packed into cleaned original glass and inserted into cleaned storage bottle

Cat. No.P22692R

Replacement PUFs for 226-92

Uncleaned, 76-mm length, pk/20

Cat. No.P22692

Repack 226-143

New PUF/sorbent packed into cleaned original glass and inserted into cleaned storage bottle

Cat. No.P226143R

Repack 226-126

New PUF/filter packed into cleaned original glass and inserted into cleaned storage bottle

Cat. No.P226126R

Repack 226-124

New PUF/sorbent packed into cleaned original glass and inserted into cleaned storage bottle

Cat. No.P226124BV

24-hour Sampling



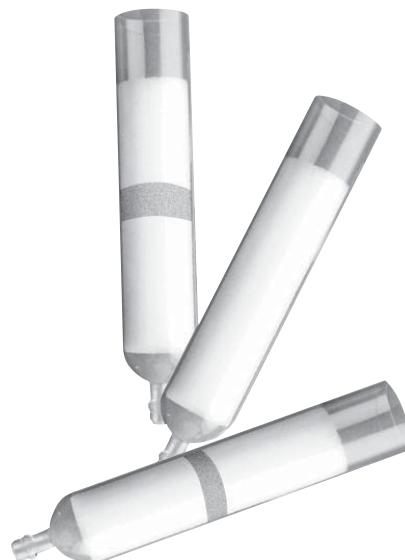
Use Low-volume PUF Tubes with the Leland Legacy Sample Pump at 5 L/min see pages 22-23

Low-volume PUF Tubes

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

- For measurements up to 24 hours
- Custom PUF/sorbent combinations available
- Precleaned and ready to use
- Meet specifications of EPA TO-10A, EPA IP-8, ASTM D4861, and ASTM D4947
- Can be repacked and recertified

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



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 pesticides 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 8-19 and 22-23 for sample pump information.

Precleaned and ready to use, SKC Low-volume PUF Tubes are convenient and can be repacked and recertified to save money and recycle glass.

Low-volume PUF Tubes

Methods	Compounds	Sorbent (Amount)	Cat. No.
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		
ASTM D4947	Chlordane and heptachlor residues		226-92
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
		PUF/XAD-2/PUF (30 mm/1500 mg/30 mm)	226-143
		PUF/glass fiber filter (76 mm)	226-126
Accessories			
Tube Holder for Low-volume PUF Tubes, see p. 46 for details			224-29P
Multi-purpose Calibration Jar, see p. 88 for details			225-111

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 of 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 and EPA IP-7, TO-4A, TO-9A, and TO-13A
- Packed with precleaned PUF for low background



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

High-volume PUF Tubes

Methods	Compounds	Sorbent (Amount)	Cat. No.
EPA 600/8-80-038	Organochlorine pesticides, PCBs	PUF/XAD-2/PUF (50 mm/10 gm/25 mm)	226-129
Non-agency [‡]	Nonpolar organic compounds		
EPA IP-7, TO-4A, TO-9A, TO-13A	Organochlorine pesticides, dioxins and furans, PCBs, PAHs	PUF (75 mm)	226-131
ASTM D6209	Polycyclic aromatic hydrocarbons		

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 197.

Repacking Service and Replacement Parts

Repacking service for High-volume PUF Tubes includes cleaning the glass, packing it with new sorbent and/or PUF, and inserting it into a cleaned storage bottle. **Contact SKC for an RA number and decontamination form.**

Description	Cat. No.	Qty.
Repack Cat. No. 226-129 includes new PUF/sorbent packed into cleaned original glass and inserted into cleaned storage bottle	P226129R	ea
Replacement PUFs for Cat. No. 226-129 , uncleaned	25-mm length	P226129A 10
	50-mm length	P226129B 10
Repack Cat. No. 226-131 includes new PUF packed into cleaned original glass and inserted into cleaned storage bottle	P226131R	ea
Replacement PUFs for Cat. No. 226-131 , 75-mm length	Uncleaned	P226131 10
	Cleaned	P226131C 10
Glass Cartridge with support screens for either Cat. No. 226-129 or 226-131	P226129C	ea

Quartz Filters for High-volume PUF Sampling

Tissuquartz filters can be used with the High-volume PUF Tubes listed above for ASTM D6209 and EPA 600/8-80-038, IP-7, TO-4A, TO-9A, and TO-13A at temperatures up to 1093 C (2000 F).

Description	Cat. No.	Qty.
Tissuquartz , high-purity microfibers, 432- μ m thickness, 102-mm diameter	225-1821	25

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 — www.skcinc.com/custom/9560.pdf.

Screening Tubes Multiple Beds of Different Sorbents

SKC Screening Tubes contain multiple beds of different types of sorbents to efficiently trap various classes of compounds simultaneously. All collected compounds are thermally desorbed and analyzed by GC. SKC Screening Tubes eliminate the need for multiple samples, saving you time and money. Use SKC Screening Tubes for hazardous waste, IAQ, odor, and Hazmat applications.

Methods	Sorbent (Amount)	Description	Desorber	Conditioned Cat. No.	Unconditioned Cat. No.
EPA IP-1B, NIOSH 2549	GCB2*/GCB1*/Carbosieve S-111 (250 mg/150 mg/100 mg)	Glass, open 6-mm OD x 115-mm L	Dynatherm	226-330†	226-330-UP

† Limited shelf-life; contact SKC for more information

* Anasorb GCB1 is equivalent to Carbo-pack B; Anasorb GCB2 is equivalent to Carbo-pack C.

Traps for Volatile Organic Sampling Trains (VOSTs)

Volatile organic sampling trains (VOSTs) are specified by U.S. EPA Method 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*).



Application	Sorbent (gm)	Description	Cat. No.
EPA 0031	Tenax TA, 35/60 mesh (1.6)	Glass open, 16-mm OD x 125-mm L	226-134**
EPA 0031	Anasorb 747, 20/40 mesh (5)	Glass open, 16-mm OD x 125-mm L	226-133**

** Limited shelf-life

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

Custom Sorbent Samplers from SKC

For in-house methods or SOPs

SKC can make the media you need at competitive prices!

- PUF, PUF/sorbent, and PUF/filter cartridges
- Multi-bed sorbent tubes
- Sorbent repacks or refills
- Tubes for thermal or solvent desorption
- Glass or stainless steel construction
- Mercury Emission Testing (MET) traps

Go to www.skcltd.com/custom/custom.asp to configure your tubes today!



For Sample Pumps,
see pages 5-23

