



**THE NEXT GENERATION OF SKC**  
**SAMPLE BAGS**

High-performance materials for target compounds





**SKC — A Name That Stands for Over 50 Years of Quality Sampling Equipment and Media**  
Since 1962, SKC has manufactured quality air sampling equipment and media for occupational and environmental health and safety professionals worldwide. SKC quality products include:

- Sample pumps
- Sorbent tubes
- Sample bags
- Passive samplers
- Size-selective samplers
- Filters



## SKC Sample Bags

SKC, the world leader in sampling technologies, produced its first sample bag in the late 1970s. The bag was made of Tedlar® film and soon became the classic sample bag for VOCs. Over the last 30 years, SKC Tedlar bags have been the number one choice of professionals. SKC also introduced new high-performance materials — SamplePro® FlexFilm and FlexFoil® — the next generation of sample bags. These materials provide new standards of performance for storage stability and background in bag sampling applications.

### A Word About Fittings

SKC sample bag fittings are not "off-the-shelf" industrial fittings but are designed specifically for air sampling. SKC quality fittings are offered in a choice of materials including stainless steel, polypropylene, and PTFE that efficiently combine the hose/valve and septum into one lightweight fitting. Dual stainless steel fittings are also available.



### SKC Bag Materials and Construction

SKC manufactures its sample bags out of clean top-grade films including SamplePro FlexFilm (SKC proprietary film), FlexFoil, Tedlar, and FluoroFilm FEP. Seams are strong, evenly sealed, and leak tested.



### SKC Bag Availability and Price

SKC offers the largest selection of bag materials and sizes. Bags are stocked for immediate delivery. SKC maintains the lowest bag prices.

### SKC — The Future in Sample Bags

SKC has been manufacturing quality sample bags for over 30 years and continues to actively research sample bag materials and applications to ensure that the bag you need is available when you need it. OEHS professionals rely on SKC.



## Target the **Right Bag Material** for Your Application

### Tedlar

- Made of clean top-grade Tedlar film for sample integrity and valid data
- Resists gas permeation both into and out of the bag
- Classic bag for VOCs referenced in many EPA methods
- Good stability for some sulfur compounds, including hydrogen sulfide

Pages 4-5

### SamplePro FlexFilm

- Best alternative to Tedlar for performance and economy
- Lower total VOC background than Tedlar
- Good stability for a wide variety of VOCs
- Good stability for CO, CO<sub>2</sub>, methane, and SF<sub>6</sub>
- Acceptable stability for some sulfur compounds (*see table on page 6*)

Pages 6-7

A high background of hydrogen sulfide and carbonyl sulfide make SamplePro FlexFilm unsuitable for sampling these specific compounds. FlexFilm bags should not be rolled or creased during transport and storage. Store bags flat to avoid damage to FlexFilm material.

### FlexFoil PLUS

- All the benefits of Standard FlexFoil — PLUS detection and good storage stability for low ppm to high ppb level VOCs
- Specially cleaned for low VOC and sulfur background

Pages 8-9

### Standard FlexFoil

- The only bag that effectively holds hydrogen sulfide for 48 hours!
- Good stability for low molecular weight compounds such as CO, CO<sub>2</sub>, methane, hydrogen, and SF<sub>6</sub>
- Good 48-hour stability for hydrogen sulfide, hydrogen, carbonyl sulfide, and methyl and ethyl mercaptan
- Light and moisture-proof

Page 10

Moderate to high VOC background

### FluoroFilm FEP

- Very low VOC and sulfur background
- Inert and mechanically strong

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FluoroFilm FEP exhibits poor storage stability for most VOCs and sulfur compounds. Analysis within 24 hours or less is necessary for many compounds.

# Tedlar Air Sample Bags

Referenced in Many EPA Methods



- ▶ Quality DuPont Tedlar film for sample integrity and valid data
- ▶ Good stability for VOCs and some sulfur compounds, including hydrogen sulfide
- ▶ Good stability for carbon monoxide, carbon dioxide, methane, and sulfur hexafluoride
- ▶ Choice of fittings
  - **Single combined polypropylene** hose/valve and septum for economy and light weight
    - Single lightweight fitting provides easy bag handling
  - **Dual stainless steel** for complete sampling flexibility
    - Reliable, inert stainless steel fitting construction prevents leakage
    - Bags are configured with one hose/valve fitting and one septum fitting
- ▶ Stocked in a variety of sizes; custom bags available
- ▶ Bag available for EPA TCLP method
- ▶ Breath-gas analysis bags for end-exhaled air determined BEIs (Biological Exposure Indices) and medical applications

SKC Tedlar bags made of classic DuPont Tedlar film are an industry standard. The popular SKC all-in-one polypropylene fitting makes bags lighter weight and easier to handle. SKC also offers Tedlar bags with dual stainless steel fittings.

## Stability of VOCs in Tedlar Bags

Acceptability criteria:  $\geq 80\%$  recovery at  $\geq 2$  days based on EPA Method 0040 as tested in SKC Laboratories

Compound	% Recovery	
	Day 1	Day 2
Acetone	99.0	95.0
Acetonitrile	74.0	66.0
Acrylonitrile	90.0	80.0
Allyl chloride	102.0	94.0
Benzene	104.0	98.0
Bromoethane	99.0	100.0
1,3-Butadiene	99.0	95.0
Butane	98.0	94.0
Butyl acetate	104.0	102.0
Carbon tetrachloride	104.0	102.0
Chloroform	98.0	95.0
1,2-Dichloroethane	100.0	97.0
Dichloropropane	105.0	101.0
Ethyl acetate	98.0	96.0
Ethylene	100.0	102.0
Heptane	100.0	100.0

Compound	% Recovery	
	Day 1	Day 2
Hexane	101.0	101.0
Isooctane	100.0	97.0
Isopropyl alcohol	101.0	99.0
Methyl ethyl ketone	99.0	98.0
Methyl-t-butyl ether	101.0	101.0
Methylene chloride	102.0	97.0
Octane	100.0	97.0
Perchloroethylene	105.0	94.0
Propylene	103.0	104.0
Propylene oxide	96.0	95.0
Tetrahydrofuran	103.0	100.0
Toluene	96.0	92.0
1,1,1-Trichloroethane	104.0	101.0
Trichloroethylene	104.0	103.0
Vinylidene chloride	102.0	100.0
p-Xylene	89.0	83.0

## Stability of Nitrogen Dioxide in Tedlar Bags

Compound	% Recovery	
	Day 1	Day 2
Nitrogen dioxide	54.5	36.4




Select from all-in-one polypropylene fitting or dual stainless steel fittings or breath-gas fitting.



For bag sampling pumps, see page 16.



### Tedlar Bags with Single Polypropylene Fitting

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
0.5	232-02 232-02A	10 ea	
0.7 <i>Fits Vac-U-Tube Cat. No. 231-945</i>	232-945A	10	
1 <i>Fits small Vac-U-Chamber Cat. No. 231-940</i>	232-01 232-01A	10 ea	
3	232-03 232-03A	10 ea	
5	232-05 232-05A	10 ea	
8 <i>Fits large Vac-U-Chamber Cat. No. 231-939</i>	232-939	10	
10 <i>Fits extra-large Vac-U-Chamber Cat. No. 231-944</i>	232-10	10	
25 <i>Fits jumbo Vac-U-Chamber Cat. No. 231-946</i>	232-25	5	
50	232-50	5	
75	232-75	5	
100	232-100	3	
Replacement Septa	232-01-RS	10	

### Performance Profile

#### Background

Moderately low VOC

#### Stability

Good for VOCs, some sulfur compounds (including H<sub>2</sub>S), CO, CO<sub>2</sub>, methane, and SF<sub>6</sub>

#### Thickness

2 mil

#### Sample Pump


Grab Air, Twin Port Pocket Pump, or Vac-U-Tube Hand Pump, see pp. 13 and 16

#### Analysis


Multiple

www.skcinc.com


### Tedlar Bags with Dual Stainless Steel Fittings

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
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 Single Stainless Steel Septum Fitting (attaches to ZHE)

Description	Cat. No.	Qty.	Fitting
Tedlar Sample Bag, 1 liter, with single stainless steel septum fitting suitable for attaching directly to Zero Headspace Extractor (ZHE) with stainless steel adapter, <i>required</i>	231-01-TCLP	10	
Stainless Steel Adapter, for use with ZHE, <i>required</i>	231-01-ZHE	ea	

### Tedlar Bag with Breath-gas Analysis Fitting

Description	Cat. No.	Qty.	Fitting
Tedlar Sample Bags, 1 liter, each with stainless steel fitting and individually packaged clean mouthpiece <i>See page 9 for details.</i>	249-01	5	

**New!**



#### More Information

SKC Bag Stability Report -  
[www.skcinc.com/instructions/1805.pdf](http://www.skcinc.com/instructions/1805.pdf)

# SamplePro FlexFilm Air Sample Bags

Economical Alternative for VOCs



## Performance Profile

### Background

Low VOC (lower total VOC than Tedlar)

### Stability

Good for VOC, CO, CO<sub>2</sub>, methane, and SF<sub>6</sub>

Acceptable for some sulfur compounds

### Thickness

3 mil

### Sample Pump

Grab Air, Twin Port Pocket Pump, or Vac-U-Tube Hand Pump, see pp. 13 and 16

Also see the Vac-U-Chamber on p. 14

www.skcinc.com

► Best alternative to Tedlar for performance and economy

► Lower total VOC background than Tedlar

► Superior storage stability for organic vapors

- See 2-day storage stability data below

► Minimal adsorption

► Choice of fittings

- Single combined polypropylene hose/valve and septum for economy and light weight
- Dual stainless steel for sampling flexibility

► Stocked in a variety of sizes; custom bags available

► Breath-gas analysis bags are available in FlexFilm

SKC **SamplePro** FlexFilm bags are constructed of 3-mil SKC proprietary material ideally suited for collecting air samples of VOCs. Manufactured exclusively for SKC, FlexFilm features lower total VOC background than Tedlar and shows the same sample stability for VOCs as seen with Tedlar. When combined with SKC quality fittings, the result is an economical sample bag with lower background levels and superior storage stability for collected compounds.

## Storage Stability of Collected Compounds in FlexFilm Bags\*

Acceptability criteria: ≥ 80% recovery at ≥ 2 days based on EPA Method 0040 as tested in SKC Laboratories

Compound	% Recovery	
	Day 1	Day 2
Acetone	96.7	88.9
Acetonitrile	69.0	55.1
Acrylonitrile	76.1	62.2
Allyl chloride	95.6	91.9
Ammonia	18.0	10.0
Benzene	96.0	95.2
Bromoethane	95.2	90.9
1,3-Butadiene	80.0	86.0
Butane	91.0	96.0
Butyl acetate	85.1	91.8
n-Butyl mercaptan	69.5	50.0
tert-Butyl mercaptan	92.5	92.5
Carbon dioxide	100.0	90.0
Carbon disulfide	80.0	74.1
Carbon monoxide	100.0	100.0
Carbon tetrachloride	101.0	94.3
Carbonyl sulfide	126.0 <sup>‡</sup>	135.0 <sup>‡</sup>
Chloroform	98.7	95.9
1,2-Dichloroethane	91.5	82.9
Dichloropropane	86.2	76.7
Diethyl disulfide	68.2	54.1
Diethyl sulfide	88.2	83.9
Dimethyl disulfide	77.3	69.3
Dimethyl sulfide	90.9	89.8
2,5-Dimethylthiophene	68.6	54.7
Ethyl acetate	94.9	95.4
Ethyl mercaptan	81.3	76.9
Ethyl methyl sulfide	88.2	83.9
Ethylene	104.0	100.0
2-Ethylthiophene	72.2	60.0

Compound	% Recovery	
	Day 1	Day 2
Heptane	96.7	106.0
Hexane	99.0	98.9
Hydrogen sulfide	7.8 <sup>‡</sup>	2.2 <sup>‡</sup>
Isobutyl mercaptan	81.3	69.2
Isooctane	100.0	97.9
Isopropyl alcohol	99.1	91.7
Isopropyl mercaptan	89.3	86.0
Methane	95.8	92.5
Methyl ethyl ketone (2-butanone)	96.2	95.8
Methyl mercaptan	78.9 <sup>‡</sup>	67.8 <sup>‡</sup>
Methyl tert-butyl ether	99.2	99.1
Methylene chloride	93.2	87.2
3-Methylthiophene	75.9	65.5
Nitrogen dioxide	9.75	0.0
Octane	104.0	98.7
Perchloroethylene	94.8	84.9
Propylene	100.0	99.0
Propylene oxide	93.3	90.1
n-Propyl mercaptan	80.0	70.0
Sulfur hexafluoride	104.0	99.8
Tetrahydrofuran	96.7	93.6
Tetrahydrothiophene	79.6	70.5
Thiophene	81.6	75.9
Toluene	107.0	92.9
1,1,1-Trichloroethane	94.9	93.6
Trichloroethylene	92.4	82.9
Vinylidene chloride	95.6	91.8
p-Xylene	85.9	82.7

\* Bags stored at ambient temperatures during study

‡ Blank corrected

Select from all-in-one polypropylene fitting or dual stainless steel fittings or breath-gas fitting.

## FlexFilm and Sulfur Compounds


SamplePro FlexFilm bags provide acceptable storage stability for some sulfur compounds (see table at right).




For bag sampling pumps, see page 16.




## SamplePro FlexFilm Bags with Single Polypropylene Fitting

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
0.5	236-006	10	
1 <i>Fits small Vac-U-Chamber Cat. No. 231-940</i>	236-001	10	
	236-001A	ea	
3	236-002	10	
	236-002A	ea	
5	236-005	10	
	236-005A	ea	
8 <i>Fits large Vac-U-Chamber Cat. No. 231-939</i>	236-004	10	
	236-003	10	
10 <i>Fits extra-large Vac-U-Chamber Cat. No. 231-944</i>	236-003A	ea	
	236-007	5	
<i>Fits jumbo Vac-U-Chamber Cat. No. 231-946</i>			
40	236-040	5	
80	236-080	5	
Replacement Septa	236-01-RS	10	

## SamplePro FlexFilm Bags with Dual Stainless Steel Fittings

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
0.5	237-02	10	
	237-02A	ea	
1	237-01	10	
	237-01A	ea	
3	237-03	10	
	237-03A	ea	
5	237-05	10	
	237-05A	ea	
10	237-08	10	
25	237-25	5	
40	237-40	5	
80	237-80	5	
Replacement Septa	231-9-04	10	

## SamplePro FlexFilm Bag with Breath-gas Analysis Fitting

Description	Cat. No.	Qty.	Fitting
SamplePro FlexFilm Sample Bags, 1 liter, each with stainless steel fitting and individually packaged clean mouthpiece <i>See page 9 for details.</i>	259-01	5	

**New!**

## The Unique Properties of SamplePro FlexFilm

Water Vapor Transmission:	13.5 gm x d
Oxygen Permeability:	52.5 cc/m <sup>2</sup> x d
Carbon Dioxide Permeability:	171 cc/m <sup>2</sup> x d
Material Thickness:	3 mil
Temperature Resistance:	140 F (60 C)

Need bags for special applications?  
See [www.skcinc.com/bags.asp](http://www.skcinc.com/bags.asp).

## Tech Tips

- ▶ SamplePro FlexFilm bags have a maximum operating temperature of 140 F (60 C).
- ▶ Bags are designed for single use only.
- ▶ Store bags flat. Rolling or creasing bags during storage can affect performance.
- ▶ Do not ship bags by air unless the cargo cabin is pressurized. Check appropriate regulations.
- ▶ Inflate bags only to 80%.

## SamplePro FlexFilm as Alternative to Tedlar

An AIHce 2010 poster showed SKC SamplePro FlexFilm bags to be an ideal alternative to Tedlar.

- Fourteen compounds tested in FlexFilm showed recoveries of > 80% after two days of ambient storage; the same compounds showed very similar results in Tedlar (*see page 4*).
- A side-by-side Tedlar and FlexFilm background study showed FlexFilm has three times lower VOC background than Tedlar.
- FlexFilm exhibits higher levels of hydrogen sulfide and carbonyl sulfide background than Tedlar.

See FlexFilm storage stability data on page 6 and FlexFilm Evaluation Poster at [www.skcinc.com/instructions/SKC\\_Bag\\_Poster.pdf](http://www.skcinc.com/instructions/SKC_Bag_Poster.pdf).



## More Information

SKC Bag Stability Report -  
[www.skcinc.com/instructions/1805.pdf](http://www.skcinc.com/instructions/1805.pdf)

# FlexFoil PLUS Gas Sample Bags

Specially Cleaned for Low ppm to High ppb Level VOCs



## Performance Profile

### Background

Low VOC and sulfur  
(specially cleaned)

### Stability

Good for low ppm to  
high ppb-level VOCs

Good for CO, CO<sub>2</sub>, methane,  
hydrogen, and SF<sub>6</sub>

Good 48-hour stability for  
hydrogen sulfide, hydrogen,  
carbonyl sulfide, and methyl and  
ethyl mercaptan

### Thickness

4 ply (5 mil)

### Sample Pump

Grab Air or Twin Port Pocket  
Pump, see p. 16. Also see the  
Vac-U-Chamber on p. 14

www.skinc.com

- ▶ All the benefits of Standard FlexFoil — PLUS detection and good storage stability for low ppm to high ppb level VOCs
- ▶ Low VOC and sulfur backgrounds
- ▶ Good stability for low molecular weight compounds such as CO, CO<sub>2</sub>, methane, hydrogen, and SF<sub>6</sub>
- ▶ Good 48-hour stability for hydrogen sulfide, hydrogen, carbonyl sulfide, and methyl and ethyl mercaptan
- ▶ Strong, flexible, evenly sealed 4-ply (5-mil) material
- ▶ Light 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
- ▶ Breath-gas analysis bags are available in FlexFoil PLUS

## Storage Stability of Collected Compounds in FlexFoil PLUS Bags<sup>§</sup>

Acceptability criteria: ≥ 80% recovery at ≥ 2 days based on EPA Method 0040 as tested in SKC Laboratories

Compound	% Recovery	
	Day 1	Day 2
Acetone	99.0	97.8
Acetonitrile	94.2	84.5
Acrylonitrile	98.2	99.5
Allyl chloride	98.5	95.6
Ammonia	16.0	8.0
Benzene	93.1	98.2
Bromoethane	95.2	98.0
1,3-Butadiene	89.0	92.0
Butane	86.0	88.0
Butyl acetate	88.1	88.7
n-Butyl mercaptan <sup>‡</sup>	47.8	50.0
tert-Butyl mercaptan	91.4	98.8
Carbon dioxide	99.0	100.0
Carbon disulfide <sup>‡</sup>	58.9	54.4
Carbon monoxide	100.0	100.0
Carbon tetrachloride	99.1	95.0
Carbonyl sulfide	98.9*	108.0*
Chloroform	96.2	97.1
1,2-Dichloroethane	92.0	88.0
Dichloropropane	99.3	98.5
Diethyl disulfide <sup>‡</sup>	11.1	12.2
Diethyl sulfide <sup>‡</sup>	25.6	13.3
Dimethyl disulfide <sup>‡</sup>	42.2	44.4
Dimethyl sulfide	81.4	74.4
2,5-Dimethylthiophene <sup>‡</sup>	14.0	15.5
Ethyl acetate	100.0	97.3
Ethyl mercaptan	92.1	97.8
Ethyl methyl sulfide <sup>‡</sup>	52.2	40.0
Ethylene	108.0	94.0
2-Ethylthiophene <sup>‡</sup>	17.8	17.8

Compound	% Recovery	
	Day 1	Day 2
Heptane	99.2	101.0
Hexane	95.8	99.4
Hydrogen	100.0	100.0
Hydrogen sulfide	104.0	102.0
Isobutyl mercaptan <sup>‡</sup>	62.2	64.4
Isooctane	87.5	86.1
Isopropyl alcohol	101.0	100.0
Isopropyl mercaptan	92.9	98.8
Methane	99.0	100.0
Methyl ethyl ketone (2-butanone)	96.5	101.0
Methyl mercaptan	93.4	102.0
Methylene chloride	98.7	101.0
3-Methylthiophene <sup>‡</sup>	32.0	32.0
Methyl tert-butyl ether	92.0	88.0
Nitrogen dioxide	0.0	0.0
Octane	98.4	93.1
Perchloroethylene	85.3	82.4
n-Propyl mercaptan	77.8	82.2
Propylene	98.6	97.9
Propylene oxide	102.0	101.0
Sulfur hexafluoride	98.1	93.2
Tetrahydrofuran	101.0	99.3
Tetrahydrothiophene <sup>‡</sup>	0.0	0.0
Thiophene <sup>‡</sup>	61.1	62.2
Toluene	90.5	91.5
1,1,1-Trichloroethane	86.5	84.6
Trichloroethylene	93.7	94.6
Vinylidene chloride	98.3	99.5
p-Xylene	97.0	89.0

<sup>‡</sup> Sample degradation begins within 3 hours; compound should be analyzed as soon as possible or use alternative method.

<sup>§</sup> Polypropylene and stainless steel fittings were used in this study.

\* Blank corrected



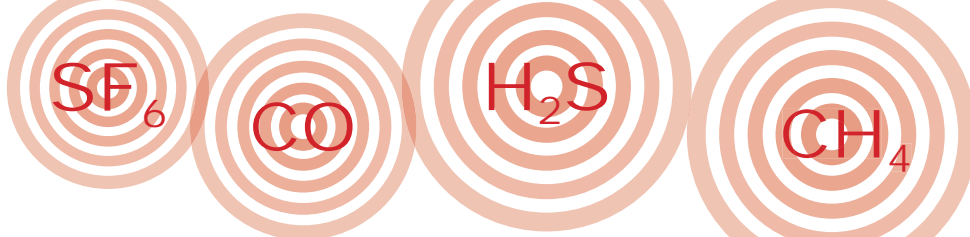
Select from all-in-one polypropylene  
or stainless steel fitting or  
breath-gas fitting.




## More Information

SKC Bag Stability Report –  
[www.skinc.com/instructions/1805.pdf](http://www.skinc.com/instructions/1805.pdf)






### 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	
<b>Replacement Septa</b>	<b>236-01-RS</b>	<b>10</b>	

### 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	
<b>Replacement Septa</b>	<b>233-01-RS</b>	<b>10</b>	

## ABOUT

### FlexFoil Bag Applications

- Biogas and landfill gas (LFG) sampling
- CO<sub>2</sub> - OSHA Method ID-172
- CO<sub>2</sub> - NIOSH 6603
- CO - OSHA ID-210\*
- Sulfur compounds
- VOCs\* (**FlexFoil PLUS only**)
- Pollution level monitoring
- Site sampling/mobile surveys
- Breath analysis\* (**FlexFoil PLUS only**)
- Calibration gas transfer
- Calibration mixtures
- Leak/spill exposure assessment
- Indoor air studies (CO, CO<sub>2</sub>, SF<sub>6</sub>)

# Method specifies 5-layer foil bags. SKC 4-ply FlexFoil PLUS bags hold 100 ppm CO for 5 days without loss. See [www.skinc.com/instructions/1706.pdf](http://www.skinc.com/instructions/1706.pdf).


\* Use FlexFoil PLUS sample bags when sampling VOCs. FlexFoil PLUS is specially cleaned for low-level (ppb) VOC detection and ideal for breath-gas analysis.

### Breath-gas Analysis Bags

SKC Breath-gas Analysis Bags are ideal for collecting samples of human breath to be analyzed for volatile organic compounds (VOCs) or volatile sulfur compounds (VSCs), possible biomarkers for some diseases. Each sample bag contains a specially designed stainless steel low-resistance fitting with disposable plastic mouthpiece that facilitates collecting human breath samples and removing the sample for gas chromatography (GC) analysis. **SKC Breath-gas Analysis Bags are offered in Tedlar (page 5), FlexFoil PLUS (below), and SamplePro FlexFilm (page 7).** See [www.skinc.com/instructions/1805.pdf](http://www.skinc.com/instructions/1805.pdf) for information on bag material stability.



### FlexFoil PLUS Bag with Breath-gas Analysis Fitting

Description	Cat. No.	Qty.	Fitting
FlexFoil PLUS Sample Bags, 1 liter, each with stainless steel fitting and individually packaged clean mouthpiece	269-01	5	

**New!**

### Select a Fitting

SKC sample bags are stocked with a choice of fittings to meet your applications. SKC bag fittings are not “off-the-shelf” industrial fittings but are designed specifically for air sampling. Choose from SKC quality fittings including dual stainless steel, all-in-one single polypropylene, stainless steel, or PTFE fittings that combine the hose/valve and septum into one lightweight fitting.



*For bag sampling pumps, see page 16.*



# Standard FlexFoil Gas Sample Bags

Superior Bag for Sulfur Compounds and Low Molecular Weight Gases

## Performance Profile

### Background

Moderate to high VOC and low sulfur

### Stability

Good for CO, CO<sub>2</sub>, methane, hydrogen, and SF<sub>6</sub>  
 Good 48-hour stability for hydrogen sulfide, hydrogen, carbonyl sulfide, and methyl and ethyl mercaptan

### Thickness

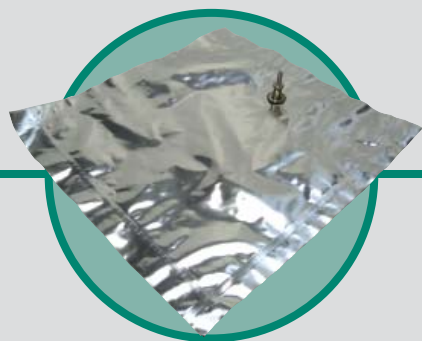
4 ply (5 mil)

### Sample Pump

Grab Air or Twin Port Pocket Pump, see p. 16. Also see the Vac-U-Chamber on p. 14

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- Effectively retain hydrogen sulfide for 48 hours!
- Good stability for low molecular weight compounds such as CO, CO<sub>2</sub>, methane, hydrogen, and SF<sub>6</sub>
- Good 48-hour stability for hydrogen sulfide, hydrogen, carbonyl sulfide, and methyl and ethyl mercaptan
- Strong, flexible, evenly sealed 4-ply (5-mil) material
- Light and moisture-proof
  - 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




Select from all-in-one polypropylene or stainless steel fitting.

SKC Standard FlexFoil sample bags are the economical choice for sampling sulfur compounds and low molecular weight gases. The strong, evenly-sealed 4-ply (5-mil) material even retains hydrogen sulfide for 48 hours! SKC's quality all-in-one hose/valve and septum fitting design is available in polypropylene or stainless steel for Standard FlexFoil sample bags.

## 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 -  
[www.skinc.com/instructions/1805.pdf](http://www.skinc.com/instructions/1805.pdf)

# FluoroFilm FEP Air Sample Bags

For Low-level Sampling with Analysis in < 1 Day

VOCs

## Performance Profile

### Background

Very low VOC and low sulfur

### Stability

Good up to 24 hours for some VOCs and low molecular weight gases

### Thickness

2 mil

### Sample Pump

Grab Air or Twin Port Pocket Pump, see p. 16

www.skcinc.com

- ▶ FluoroFilm FEP (fluorinated ethylene propylene) is the most chemically inert of all bag materials
- ▶ Very low VOC and sulfur background
- ▶ Choice of all-in-one PTFE or stainless steel hose/valve and septum fittings
- ▶ Mechanically strong 2-mil FEP — resists impact and tearing
- ▶ Custom bags available

## Storage Stability of Collected Compounds in FluoroFilm FEP Bags

Acceptability criteria: ≥ 80% recovery at ≥ 2 days based on EPA Method 0040 as tested in SKC Laboratories

Compound	% Recovery	
	Day 1	Day 2
Acetone	89.0	85.0
Acetonitrile	65.0	42.0
Acrylonitrile	77.0	59.0
Allyl chloride	92.0	89.0
Ammonia	59.0	28.0
Benzene	93.0	79.0
Bromoethane	88.0	86.0
1,3-Butadiene	84.0	73.0
Butane	91.0	96.0
Butyl acetate	72.0	66.0
n-Butyl mercaptan	74.5	60.2
tert-Butyl mercaptan	86.0	78.0
Carbon dioxide	90.0	50.0
Carbon disulfide	58.3*	35.6*
Carbon monoxide	90.0	50.0
Carbon tetrachloride	95.0	91.0
Carbonyl sulfide	82.9*	71.2*
Chloroform	96.0	93.0
1,2-Dichloroethane	89.0	79.0
Dichloropropane	90.0	86.0
Diethyl disulfide	62.9	49.5
Diethyl sulfide	78.0	66.0
Dimethyl disulfide	74.0	62.0
Dimethyl sulfide	77.0	69.0
2,5-Dimethylthiophene	60.0	45.3
Ethyl acetate	94.0	94.0
Ethyl mercaptan	78.0	65.0
Ethyl methyl sulfide	77.0	68.0
Ethylene	99.0	94.0

Compound	% Recovery	
	Day 1	Day 2
2-Ethylthiophene	65.0	53.0
Heptane	88.0	87.0
Hexane	98.0	95.0
Hydrogen sulfide	72.2	47.8
Isobutyl mercaptan	83.0	67.0
Isooctane	97.0	96.0
Isopropyl alcohol	102.0	98.0
Isopropyl mercaptan	84.0	74.0
Methane	84.1	71.5
Methyl ethyl ketone (2-butanone)	90.0	83.0
Methyl mercaptan	74.0	57.0
Methyl tert-butyl ether	99.0	97.0
Methylene chloride	84.0	77.0
3-Methylthiophene	67.0	53.0
Octane	91.0	84.0
Perchloroethylene	81.0	69.0
n-Propyl mercaptan	79.0	66.0
Propylene	97.0	91.0
Propylene oxide	94.0	89.0
Sulfur hexafluoride	96.4	92.8
Tetrahydrofuran	90.0	88.0
Tetrahydrothiophene	71.0	56.0
Thiophene	76.0	64.0
Toluene	81.0	74.0
1,1,1-Trichloroethane	100.0	97.0
Trichloroethylene	80.0	69.0
Vinylidene chloride	96.0	92.0
p-Xylene	76.0	65.0


\* Blank corrected

Select from all-in-one PTFE or stainless steel fitting.


## Tech Tips

- ▶ Use only PTFE tubing for bag sampling to prevent sample loss through adsorption to the tubing's inner surface. See page 13 for tubing
- ▶ The chemical properties of FluoroFilm FEP bags necessitate rapid analysis for reliable results.

## FluoroFilm FEP Bags with Single Stainless Steel Fitting

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
0.5	243-02	5	
1	243-01	5	
3	243-03	5	
Replacement Septa	233-01-RS	10	

## FluoroFilm FEP Bags with Single PTFE Fitting

Maximum Capacity (liter)	Cat. No.	Qty.	Fitting
0.5	240-02	5	
1	240-01	5	
3	240-03	5	
Replacement Septa	233-01-RS	10	

# SKC CUSTOM AIR SAMPLE BAGS

# SAMPLE BAGS MADE YOUR WAY!

## Special bag sizes

SKC manufactures single or multiple-cell sample bags up to 100 liters for your applications.

## Quality fittings for your application

SKC offers fittings designed specifically for air sampling in the following configurations and materials:

- All-in-one Stainless Steel
- Dual Stainless Steel
- All-in-one Polypropylene
- All-in-one PTFE
- Combination

## Choice of bag material

SKC manufactures its bags from ultra-clean top-grade materials with strong evenly sealed seams. Choose from the following bag materials:

- FluoroFilm FEP (2 mil)
- SamplePro FlexFilm (3 mil)
- Tedlar (2 mil)
- 4-ply Standard FlexFoil (5 mil)
- 4-ply FlexFoil PLUS (5 mil)

## SKC will create the bags you need!

Select the film, fitting, and bag dimensions at [www.skcinc.com/catalog/infopage.php?id=2900](http://www.skcinc.com/catalog/infopage.php?id=2900) and send the form to your SKC representative. SKC will take it from there!



Indoor air



Biogas/landfill gas/Superfund sites



Soil vapor



Beverage testing



Stack emissions



Worker exposure



Material testing

**SKC custom sample bags are proven performers!**

Contact SKC today for your custom sample bags!  
[www.skcinc.com/catalog/infopage.php?id=2900](http://www.skcinc.com/catalog/infopage.php?id=2900)

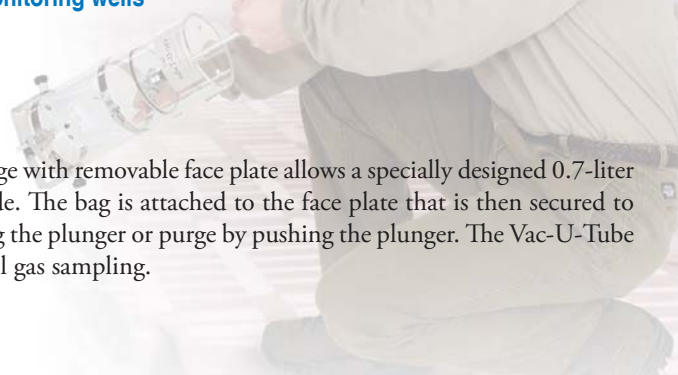
## Vac-U-Tube

For Quick Bag Samples Without a Pump

- ▶ No electronic pump required
- ▶ Setup takes less than 20 seconds
- ▶ Convenient for testing monitoring wells



The Vac-U-Tube acrylic syringe with removable face plate allows a specially designed 0.7-liter sample bag to be placed inside. The bag is attached to the face plate that is then secured to the syringe. Sample by pulling the plunger or purge by pushing the plunger. The Vac-U-Tube can be used for headspace soil gas sampling.

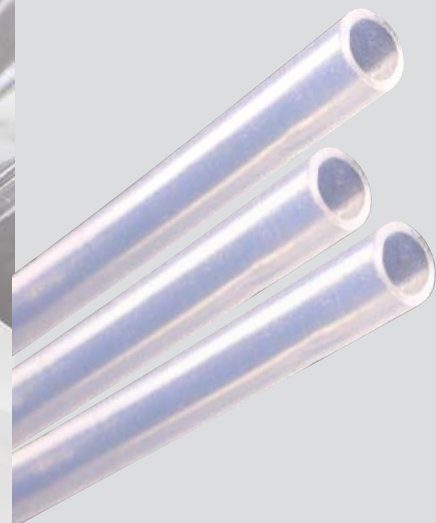


Description	Cat. No.	Qty.
<b>Vac-U-Tube</b> includes carry case, requires either sample bag below (not included)	231-945	ea
<b>Vac-U-Tube Bag</b> , 0.7-liter	Tedlar	232-945A 10
	SamplePro FlexFilm	236-945A 10

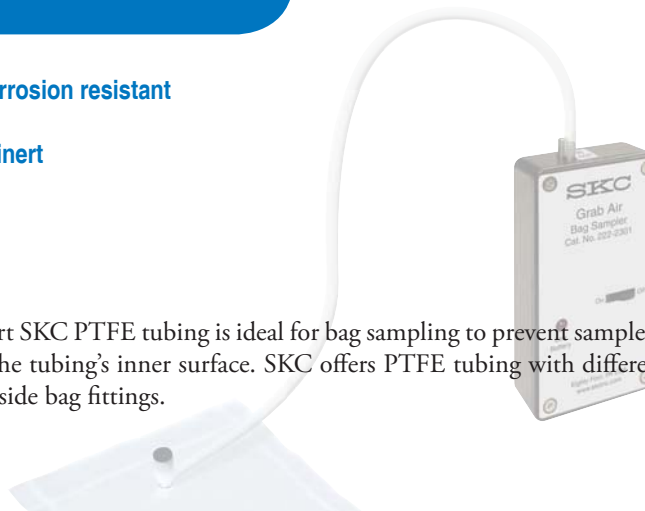
## PTFE Tubing

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.



PTFE Tubing	Cat. No.	Length (feet)
<b>Fits over all SKC bag fittings and Grab Air pump exhaust</b>		
3/16-inch ID, 1/4-inch OD	231-9-23	10
<b>Fits inside bag fitting</b>		
1/16-inch ID, 1/8-inch OD	231-9-21	10
<b>Fits Vac-U-Chamber sample inlet</b>		
1/4-inch ID, 5/16-inch OD	231-937	10
	231-924	50
<b>Twin Port Pocket Pump Tubing Adapter Kit</b>		
Includes two lengths of silicone tubing: 1/8-inch ID, 1/4-inch OD for bag fitting and 3/16-inch ID, 3/8-inch OD for pump fitting; use with PTFE tubing Cat. No. 231-9-23 above	231-926	

### Tech Tip

- ▶ Use only PTFE tubing for bag sampling to prevent sample loss through adsorption to the tubing's inner surface.

# 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

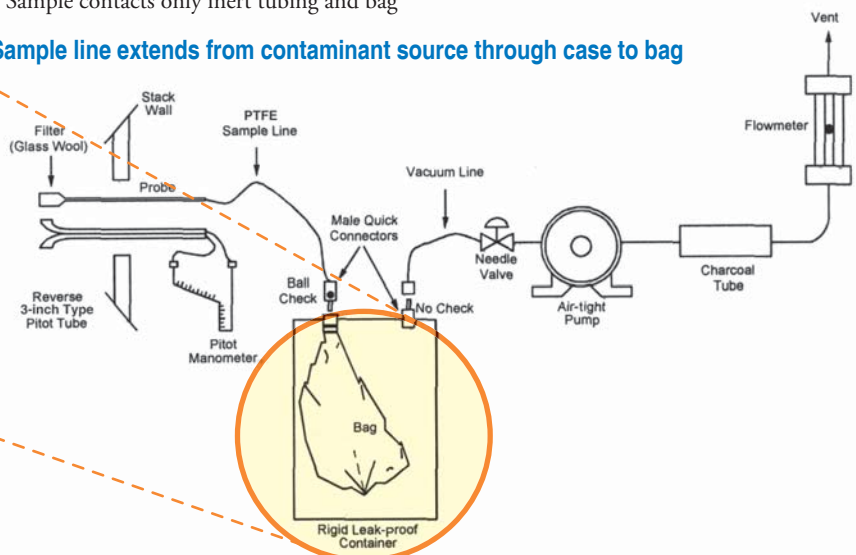
### Four sizes available

- Small for sample volumes up to 1 liter
- Large for sample volumes up to 8 liters
- Extra-large for sample volumes up to 10 liters
- Jumbo for sample volumes up to 25 liters

### Protects sample and pump from contamination

- Sample does not pass through the pump
- Sample contacts only inert tubing and bag

### Sample line extends from contaminant source through case to bag



Integrated Bag Sampling Train

### Applications

- U.S. EPA Method 18 (VOCs — industrial sources)
- U.S. EPA 0040 (POHCs — stationary sources)
- Soil gas/vapor sampling
  - U.S. EPA SOP 2042
  - ASTM D5314-92
- Indoor air remediation system monitoring petroleum constituents (U.S. EPA SOPs 2102, 2103, and 2104)
- Groundwater testing
- Stack sampling
- Ventilation studies
- Hazmat testing

### Small Vac-U-Chamber

Description	Cat. No.
<b>Complete Vac-U-Chamber Kit</b> includes Standard XR5000 sample pump, single charger, small Vac-U-Chamber, and 10 Tedlar sample bags Cat. No. 232-01	<b>100-240 V</b> 210-4124
<b>Small Vac-U-Chamber only</b> with polypropylene fittings (supplied without pump), suitable for use with SKC 1-liter sample bags below	231-940
<b>1-liter Sample Bags</b> with single polypropylene fitting, for use with small Vac-U-Chamber Cat. No. 231-940, pk/10	Tedlar 232-01 SamplePro FlexFilm 236-001 FlexFoil PLUS 252-01 Standard FlexFoil 262-01

### Large Vac-U-Chamber

Description	Cat. No.
<b>Complete Vac-U-Chamber Kit</b> includes Standard XR5000 sample pump, single charger, large Vac-U-Chamber, and 10 Tedlar sample bags Cat. No. 232-939	<b>100-240 V</b> 210-4115
<b>Large Vac-U-Chamber only</b> with stainless steel fittings (supplied without pump), suitable for use with SKC 8-liter sample bags below	231-939
<b>8-liter Sample Bags</b> with single polypropylene fitting, for use with large Vac-U-Chamber Cat. No. 231-939, pk/10	Tedlar 232-939 SamplePro FlexFilm 236-004 FlexFoil PLUS 252-08 Standard FlexFoil 262-08



### Performance Profile

**Sampling Media**  
1, 8, 10, or 25-liter bag

**Sampling Rate**  
User selectable

**Sample Time**  
Varies  
*Do not fill bag more than 80% of its maximum volume*

**Sample Pump**  
AirChek XR5000 or  
Universal XR — 1 to 5 L/min

**Analysis**  
Varies

[www.skcinc.com](http://www.skcinc.com)

### Extra-large Vac-U-Chamber

Description	Cat. No.
<b>Extra-large Vac-U-Chamber only</b> with stainless steel fittings (supplied without pump), suitable for use with SKC 10-liter sample bags below	<b>231-944</b>
<b>10-liter Sample Bags</b> with single polypropylene fitting, for use with extra-large Vac-U-Chamber Cat. No. 231-944, pk/10	<b>Tedlar</b> 232-10
	<b>SamplePro FlexFilm</b> 236-003
	<b>FlexFoil PLUS</b> 252-10
	<b>Standard FlexFoil</b> 262-10

### Jumbo Vac-U-Chamber

Description	Cat. No.
<b>Jumbo Vac-U-Chamber only</b> with stainless steel fittings (supplied without pump), suitable for use with SKC 25-liter sample bags below	<b>231-946</b>
<b>25-liter Sample Bags</b> with single polypropylene fitting, for use with jumbo Vac-U-Chamber Cat. No. 231-946, pk/5	<b>Tedlar</b> 232-25
	<b>SamplePro FlexFilm</b> 236-007
	<b>FlexFoil PLUS</b> 252-25
	<b>Standard FlexFoil</b> 262-25

## Twin Port Pocket Pump — 20 to 225 ml/min

### Programmable Sample Bag Pump



CE

ATEX  
model available,  
see at right

- ▶ 12-hour run time with rechargeable NiMH battery
- ▶ Constant flows from 20 to 225 ml/min — suitable for other applications
- ▶ Simple 3-button operation or program with a PC using DataTrac Software accessory
- ▶ Continuous sample volume calculations

The twin port Pocket Pump® is ideal for bag sampling and other applications. Operate Pocket Pump from the simple 3-button integral keypad for quick grab samples. Or, program Pocket Pump from a PC using DataTrac® for Pocket Pump Software. Pocket Pump can be programmed for delayed start and timed runs.

Description	Cat. No.
<b>Twin Port Pocket Pump</b> with NiMH battery pack, <i>requires charger</i> Cat. No. 223-228 (115 V) or 223-229A (100-240 V); <i>for tubing, see Cat. Nos. 231-9-23 and 231-926 on p. 13</i>	210-1002A
<b>Twin Port Pocket Pump, ATEX-approved for intrinsic safety</b> with NiMH battery pack, <i>requires charger</i> Cat. No. 223-228 (115 V) or 223-229A (100-240 V); <i>requires tubing</i> Cat. Nos. 231-9-23 and 231-926 on p. 13 <i>for bag sampling</i>	210-1003MTX

## Grab Air Sample Pump — 1 L/min

### Economy Pump for Filling Bags



- ▶ 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.

Description	Cat. No.
<b>Grab Air Pump</b> with 9-volt alkaline battery; <i>for tubing, see</i> Cat. No. 231-9-23 on p. 13	222-2301
<b>Grab Air Hazmat Kit</b> includes pump as described above and ten 1-liter Tedlar bags with single polypropylene fitting Cat. No. 232-01	222-2111