

All testing results shown in this catalog were obtained in GL Sciences' laboratory, however, it is not to guarantee the same performance of each sampling bag shown in the catalog but to be considered as a reference.

Worldwide Ordering Information

To find your local distributor, please visit our website at

http://www.glsciences.com/products/contact.html

Simply select your country from the list and your local distributor information will be displayed.

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· We reserve the right to change specification to make improvements without notice.

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Smart Bag Air Sampling Bags



AIR

Sampling Products

Sampling Bags

Sampling bags are widely used as a handy sampling method for automobile interior materials/emissions, work environments, building materials and textiles.

Sampling bag method is an ideal method for the above mentioned applications as the sample gas can be directly injected to the gas chromatograph and convenient to collect samples using adsorbent products to enrich/concentrate the target compounds.

However, the composition of the target compounds can be changed depending on the materials of the sampling bags, which is caused by the adsorption or permeation of the target compounds to the materials of the sampling bag. In addition, background peaks derived from sampling bag materials can interfere the target compounds' peaks during the analysis. Therefore it is necessary to select optimal sampling bags depending on applications/methods.

GL Sciences is proud to introduce "Smart Bag" series of a new sampling bag, which were developed based on many of our experiences along with some other bag type to fulfill our customers requirement worldwide.

Please select the appropriate sampling bags from the following descriptions to achieve highly reliable test results.

Select the Appropriate Sampling Bag for your Application

Smart Bag PA

Smart Bag PA is made of vinyl alcohol series polymer film
 Superior resistance to solvents, heat and permeation
 Low background
 Operating temperature limit: 120 °C
 Film thinkness: 53 μ m
 Applications:Automobile interior materials, automobile emissions, diffusion gas from materials, inorganic gas etc.

Smart Bag 2F

○ Smart Bag 2F is made of polyvinylidene fluoride (PVDF) film ······ P.5-6

P.7

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- O Superior resistance to solvents and heat
- Operating temperature limit: 120 ℃
- \odot Film thinkness: 50 μ m
- Applications:Automobile interior materials, automobile emissions, diffusion gas from materials etc.

ANALYTIC-BARRIER™ Bag

- Good resistance to permeation
- Low background
- Operating temperature limit: 70 °C
- \bigcirc Film thinkness: 45 μ m

Applications: Automobile interior materials and inorganic gas etc.

Fluororesin Bag

- O Fluororesin Bag is made of ethylene-tetrafluoroethylene copolymer film
- O Good resistance to solvents and heat
- Operating temperature limit: 110 °C
- \bigcirc Film thinkness: 50 μ m

Applications:Organic solvents

Aluminum Bag

- Aluminum Bag is made of laminated film (from outer: nylon, polyethylene, alum foil and polyethylene)
- Good permeation resistance to inorganic gas, methane
- Operating temperature limit: 65 °C
- O Film thinkness: 130 μ m
- Applications:Inorganic gas

Polyester Bag

- O Polyester Bag is made of polyester film
- O Good permeation resistance to VOC
- O Film thinkness: 38 μ m
- Applications:volatile Organic Compound, odor analysis

Tedlar[®] Bag

- Polyvinyl fluoride (PVF)
- Operating temperature limit : 100 ℃
- \bigcirc Film thickness : 50 μ m
- Applications: Inorganic gas, organic solvents etc.

As shown above, GL Sciences has a wide variety of sampling bags to offer. It is extremely important to select the appropriate sampling bag depending on the target compound you are required to sample/collect to avoid any sampling error as much as possible. Please select the appropriate sampling bag to achieve highly reliable test results.



*Please inquire for the availability of Tedlar[®] Bags. Please note that GL Sciences is still capable of

Tedlar[®] is a registered trademark of E.I. du Pont

supplying the Tedlar® Bags upon request.

de Nemours & Co., Inc.

How to Choose a Sampling Bag

(Exa	ample) Sma	1 2 3 4 art Bag PA A A 10 * Shape A ,standard sleeve at one end (6 φ), 10 L Smart Bag PA
1	Material	Smart Bag PA / Smart Bag 2F / ANALYTIC-BARRIER Bag Fluororesin Bag / Aluminum Bag / Polyester Bag / Tedlar Bag
2	Shape	A C E Image: Sleeve or sleeve with mini valves O : M6 Connector
٩	Connector (PTFE) 6 Φ for up to 20 L 8 Φ for above 20 L	A Standard sleeve at one end AS 7 ϕ sleeve at one end AK 6 ϕ sleeve with mini valve at one end B M6 connector at one end C Standard sleeves at both ends CS 7 ϕ sleeve at both ends CK 6 ϕ sleeve with mini valve at both ends D M6 connectors at both ends E Standard sleeve at one end + M6 connector at the other end EK 6 ϕ sleeve with mini valve at one end + M6 connector at the other end AA8 8 ϕ sleeve at one end AA38 PTFE joint for 8 ϕ sleeve at one end + 8 ϕ sleeve with valve at the other end AAP8 PTFE joint for 8 ϕ sleeve at one end + 8 ϕ sleeve with valve at the other end
4	Volume Liter (L)	1 L, 2 L, 3 L, 5 L, 10 L Other sizes such as from 0.1 L to 500 L can be manufactured upon request. Please contact us for other sizes.



Shape:A





Shape:E

Sleeve with mini valve (Outer diameter 6 ϕ)

As the mini valve is installed to the standard sleeve (6 ϕ) sampling procedures can be operated very easily by opening/closing the valve. Note that 8 ϕ Sleeves can not be replaced with sleeve with mini valves.

Description	Cat.No.
Sleeve with mini valve (6 ϕ)	3008-39998

Sampling pump and other adsorbent material products are available.



For more details, please refer from $\text{P.9} \simeq \text{11}.$

Smart Bag PA

Smart Bag PA is made of vinyl alcohol series polymer film and delivers superior resistance to solvents, heat and adsorption with low background. Smart Bag PA also avoids the permeation of most gas. This feature enables a wide range of sampling from inorganic to organic gases.

Operating temperature limit: 120 °C

Blank Test

[Testing Procedure]

Put each *sampling bag (1L) filled up with nitrogen to a chamber at 60 °C . 1 hour later, collect the atmosphere inside of each bag with a gas tight micro syringe and inject it directly to a GC/MS.

* Please note that both bags were not flushed/cleaned with nitrogen.



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Tedlar® Bag

Smart Bag PA

Storage Stability of Organic solvent gas in Smart bag PA and Tedlar[®] Bag.

[Testing Procedure]

Constant amount of vaporized standards were introduced to each bag. Then nitrogen was added to each bag and were measured by a GC/FID.

[Standard Compound List]

Acetone, Methylethylketone, Methyl isobutyl ketone, Isopropyl alcohol, Isobutyl alcohol, 1-Butanol, Ethylbenzene, Cyclohexane, n-Hexane, o-Xylene, m-Xylene, Toluene, Dichloromethane, Methyl acetate, Ethyl acetate, Isobutyl acetate, n-Butyl acetate (50 ng/mL each)



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Storage Stability of Malodorous Compounds in Smart Bag PA and Tedlar[®] Bag

[Testing Procedure]

Arrange the concentration of each malodorous compounds as described below and fulfill a 5L Smart Bag PA and a 5 L Tedlar[®] Bag with the malodorous compounds together with nitrogen gas. Damping rate was calculated using a detecting tube at certain times.



Gas Permeability Test

[Testing Procedure]

Permeation rates of O₂ , N₂ , CH₄ and CO₂ were measured using a permeation rate measurement system on each sampling bag.



Smart Bag PA Ordering Guide

Sha	аре	AA	AAK	AB	CC	CCK	CE	CEK	EE	EEK
1 L	Cat.No.	3008-97101	3008-97201	3008-97301	3008-97401	3008-97501	3008-97601	3008-97701	3008-97801	3008-97901
2 L	Cat.No.	3008-97102	3008-97202	3008-97302	3008-97402	3008-97502	3008-97602	3008-97702	3008-97802	3008-97902
3 L	Cat.No.	3008-97103	3008-97203	3008-97303	3008-97403	3008-97503	3008-97603	3008-97703	3008-97803	3008-97903
5 L	Cat.No.	3008-97105	3008-97205	3008-97305	3008-97405	3008-97505	3008-97605	3008-97705	3008-97805	3008-97905
10 L	Cat.No.	3008-97110	3008-97210	3008-97310	3008-97410	3008-97510	3008-97610	3008-97710	3008-97810	3008-97910
20 L	Cat.No.	3008-97120	3008-97220	3008-97320	3008-97420	3008-97520	3008-97620	3008-97720	3008-97820	3008-97920
30 L	Cat.No.	3008-97130	3008-97230	3008-97330	3008-97430	3008-97530	3008-97630	3008-97730	3008-97830	3008-97930
50 L	Cat.No.	3008-97150	3008-97250	3008-97350	3008-97450	3008-97550	3008-97650	3008-97750	3008-97850	3008-97950

 $\ensuremath{\,\times\,}$ Other bag sizes available upon request.

Smart Bag 2F

Smart Bag 2F is made of polyvinylidene fluoride (PVDF) film and delivers superior resistance to solvents and heat. In addition, Smart Bag 2F is suitable for sampling gassy organics such as materials used indoors and work environments etc. Operating temperature limit: 120 °C

Blank Test

[Testing Procedure]

Put each *sampling bag (1L) filled up with nitrogen to a chamber at 60°C . 1 hour later, collect the atmosphere inside of each bag with a gas tight micro syringe and inject it directly to a GC/MS.

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Tedlar[®] Bag

* Please note that both bags were not flushed/cleaned with nitrogen.





Storage Stability of Organic Solvent gas in Smart Bag 2F and Tedlar[®] Bag

[Testing Procedure]

Constant amount of vaporized standards were introduced to each bag. Then nitrogen was added to each bag and were measured by a GC/FID.

[Standard Compound List]

Acetone, Methylethylketone, Methyl isobutyl ketone, Isopropyl alcohol, Isobutyl alcohol, 1-Butanol, Ethylbenzene, Cyclohexane, n-Hexane, o-Xylene, m-Xylene Toluene, Dichloromethane, Methyl acetate, Ethyl acetate, Isobutyl acetate, n-Butyl acetate (50 ng/mL each)

OTedlar[®] Bag

○ Smart Bag 2F





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Storage Stability of Malodorous Compounds in Smart Bag 2F and Tedlar[®]Bag

[Testing Procedure]

Arrange the concentration of each malodorous compounds as described below and fulfill a 5L Smart Bag 2F and a 5 L Tedlar[®] Bag together with nitrogen gas. Damping rate was calculated using a detecting tube at certain times.



Gas Permeability Test

[Testing Procedure]

Permeation rates of O₂ , N₂ , CH₄ and CO₂ were measured using a permeation rate measurement system on each sampling bag.



Smart Bag 2F Ordering Guide

Sha	аре	AA	AAK	AB	CC	ССК	CE	CEK	EE	EEK
1 L	Cat.No.	3008-98101	3008-98201	3008-98301	3008-98401	3008-98501	3008-98601	3008-98701	3008-98801	3008-98901
2 L	Cat.No.	3008-98102	3008-98202	3008-98302	3008-98402	3008-98502	3008-98602	3008-98702	3008-98802	3008-98902
3 L	Cat.No.	3008-98103	3008-98203	3008-98303	3008-98403	3008-98503	3008-98603	3008-98703	3008-98803	3008-98903
5 L	Cat.No.	3008-98105	3008-98205	3008-98305	3008-98405	3008-98505	3008-98605	3008-98705	3008-98805	3008-98905
10 L	Cat.No.	3008-98110	3008-98210	3008-98310	3008-98410	3008-98510	3008-98610	3008-98710	3008-98810	3008-98910
20 L	Cat.No.	3008-98120	3008-98220	3008-98320	3008-98420	3008-98520	3008-98620	3008-98720	3008-98820	3008-98920
30 L	Cat.No.	3008-98130	3008-98230	3008-98330	3008-98430	3008-98530	3008-98630	3008-98730	3008-98830	3008-98930
50 L	Cat.No.	3008-98150	3008-98250	3008-98350	3008-98450	3008-98550	3008-98650	3008-98750	3008-98850	3008-98950

* Other bag sizes available upon request.

ANALYTIC-BARRIER[™] Bag

 \bigcirc Good resistance to permeation

 \bigcirc Low background

 \bigcirc Operating temperature limit: 70 $^\circ C$

Applications: Automobile interior materials and inorganic gas etc.

Sha	аре	AA	AAK	AB	CC	ССК	CE	CEK	EE	EEK
1 L	Cat.No.	3008-99101	3008-99201	3008-99301	3008-99401	3008-99501	3008-99601	3008-99701	3008-99801	3008-99901
2 L	Cat.No.	3008-99102	3008-99202	3008-99302	3008-99402	3008-99502	3008-99602	3008-99702	3008-99802	3008-99902
3 L	Cat.No.	3008-99103	3008-99203	3008-99303	3008-99403	3008-99503	3008-99603	3008-99703	3008-99803	3008-99903
5 L	Cat.No.	3008-99105	3008-99205	3008-99305	3008-99405	3008-99505	3008-99605	3008-99705	3008-99805	3008-99905
10 L	Cat.No.	3008-99110	3008-99210	3008-99310	3008-99410	3008-99510	3008-99610	3008-99710	3008-99810	3008-99910
20 L	Cat.No.	3008-99120	3008-99220	3008-99320	3008-99420	3008-99520	3008-99620	3008-99720	3008-99820	3008-99920
30 L	Cat.No.	3008-99130	3008-99230	3008-99330	3008-99430	3008-99530	3008-99630	3008-99730	3008-99830	3008-99930
50 L	Cat.No.	3008-99150	3008-99250	3008-99350	3008-99450	3008-99550	3008-99650	3008-99750	3008-99850	3008-99950

* Other bag sizes available upon request.

Fluororesin Bag

O Fluororesin Bag is made of ethylene-tetrafluoroethylene copolymer film

 \bigcirc Good resistance to solvents and heat

 \odot Operating temperature limit: -70 °C~ 110 °C

Applications:Organic solvents

Shape		AA	AB	CC	CD	CE
1 L	1 L Cat.No.		3008-21201	3008-23301	3008-23401	3008-23501
2 L	Cat.No.	3008-21102	3008-21202	3008-23302	3008-23402	3008-23502
3 L	Cat.No.	3008-21103	3008-21203	3008-23303	3008-23403	3008-23503
5 L	Cat.No.	3008-21105	3008-21205	3008-23305	3008-23405	3008-23505
10 L	Cat.No.	3008-21110	3008-21210	3008-23310	3008-23410	3008-23510

* Other bag sizes available upon request.

Aluminum Bag

O Aluminum Bag is made of laminated film (from outer: nylon, polyethylene, aluminum foil and polyethylene)

O Good permeation resistance to inorganic gas, methane

O Adsorbs high-boiling organic solvents, which generates background for organic compounds

○ Operating temperature limit: 65 ℃

Applications:Inorganic gas

Sha	Shape		AAK	ССК	CEK
1 L	Cat.No.	3008-26101	3008-26201	3008-26301	3008-26401
2 L	Cat.No.	3008-26102	3008-26202	3008-26302	3008-26402
3 L	Cat.No.	3008-26103	3008-26103	3008-26303	3008-26403
5 L	Cat.No.	3008-26105	3008-26105	3008-26305	3008-26405
10 L	Cat.No.	3008-26110	3008-16110	3008-26310	3008-26410

* Other bag sizes available upon reguest.

Polyester Bag

 \bigcirc Polyester Bag is made of polyester film

○ Good permeation resistance to Valatile Organic Compound

O Compatible with sampling of malodorous compounds at boundary lines for environmental analysis

Applications: Valatitle Organic Compound, odor analysis

Description	Cat.No.
Polyester Bag 20 L 8 ϕ sleeve, 10 pcs	3008-62000

* Other bag sizes available upon request.

Custom Size Sampling Bags

Many of Our experiences in this industry enables providing custom size sampling bags from 0.1 L \sim 500 L upon request. Feel free to contact us for your custom size sampling bags. When ordering, please don't forget to select your preferred bag material, shape and connector type. For more details, please refer to P.2.



Custom size 300 L sampling bag

GL Sciences' sampling bags have proven outstanding performance across various industries



Automobile interior materials



Automobile emissions



Environmental air



Work Environment



Odor-fighting fibers



Soil gas

····· etc

Sampling Pump/Sampling Kit

SP208-20Dual II / SP208-100Dual II / SP208-1000Dual II

- Employs two flow lines and two pumps for collection and each system independently integrates the suction volume
 The 20 mL type provides a high level of accuracy at extremely low flow rates and the 100 mL type provides it at low flow rates, and is optimal for heating desorption, while the 1000 mL type enables collection in collection cartridges
- such as formaldehyde and VOCs whose resistance varies greatly.
 The pump adjusts the flow rate when the collection material or cartridge resistance change, maintaining a stable flow and suction. In particular, this function provides lower noise and power consumption by reducing the pump motor rotation speed when the resistance and suction load are low.
- Offering multi-functions such as suction start/end time setting and data log function



 Description
 Suction Flow Rate Range
 Cat.No.

 SP208-20Dual II (DC12V AC100-240V 50/60Hz)
 2 ~ 20 mL/min
 2702-17585

 SP208-100Dual II (DC12V AC100-240V 50/60Hz)
 10 ~ 100 mL/min
 2702-17576

 SP208-100Dual II (DC12V AC100-240V 50/60Hz)
 100 ~ 1000 mL/min
 2702-17581

 Piping Kit for SP208 Dual II
 3001-11541

* Not UL Listed. Not CE marked.



TVOC Sampling Kit

- The kit includes a pump, but with the compact design, it enables to carry this kit very easily
 The pump included in this kit is a multifunction pump which offers flow control valve, flow
 - meter and timer function battery (optional product)
- The gas contact materials are all glass and PTFE except for the sampling bag

Description	Cat.No.
TVOC Sampling Kit	3008-81030
Battery for SP205 (Optional Product)	2702-35250
Battery Charger for SP205 (Optional Product, DC12V AC100V-0.3A)	2702-35251

* The sampling pump SP205 included in the TVOC Sampling Kit is Not UL Listed and Not CE marked.

InertSep[™] mini AERO series

Aldehyde, Ketone Sampling InertSep™ mini AERO DNPH



The adsorbent material is spherical silica-gels coated with 2,4-Dinitrophenylhydrazine, which is appropriate for the sampling of aldehyde and ketone. The particle size of the adsorbent material is 120 um and delivers better air permeability and higher sampling efficiency compared to irregular particle type silica-gels. In addition, the background is exceptionally low due to our rigorous quality control inspection tests.

Description	Adsorbent Volume	Pieces/Set	Cat.No.
InertSep mini AERO DNPH	300 mg	20	5010-23500

* This is a "keep cool" product. Please store this product immediately in a refrigerator.

Ozone Removal Cartridge InertSep™ mini AERO Ozone Scrubber

Potassium iodide is packed to the cartridge to remove ozone in air. It is known that ozone decomposes DNPH derivative and influences the analysis results. The above phenomenon can be prevented by installing this cartridge in front of the DNPH cartridge, providing highly reliable testing results.

Description	Adsorbent Volume	Pieces/Set	Cat.No.
InertSep mini AERO Ozone Scrubber	1,500 mg	20	5010-23510

Removal of Unreacted DNPH Cartridge InertSep[™] mini AERO SC

Strong cation-exchange resin is packed to the cartridge to remove unreacted DNPH. It is known that unreacted DNPH interferes the analysis using a gas chromatograph. The above phenomenon can be prevented by installing this cartridge at the end of the DNPH cartridge, providing highly reliable testing results.

Description	Adsorbent Volume	Pieces/Set	Cat.No.
InertSep mini AERO SC	250 mg	20	5010-23520

Thermal Desorption Tubes AERO TD Tube series





Description	Adsorbent Material	Pieces/Set	Cat.No.
AERO TD Tube (for T-Dex, ATD, Markes)	Tenax TA 35/60 150 mg	10	1003-74101
	Tenax TA 60/80 150 mg	10	1003-74102
	Tenax GR 35/60 150 mg	10	1003-74201
	Carbopack B 190 mg + Carboxen 1000 140 mg	10	1003-74301
	Carbotrap 50 mg + Carboxen 1000 75 mg	10	1003-74302

Detection Tubes



Target Gas	Tube No.	Measuring Concentration	Pieces/Set	Cat.No.
Ammonia	3La	$2.5{\sim}200$ ppm	10	1065-91036
Acetaldehyde	92L	$1\sim 20~{ m ppm}$	10	1065-91924
Acetic acid	81	$1\sim 100 \ { m ppm}$	10	1065-91810
Pyridine	182	$0.2\sim35~ m ppm$	10	1065-92820
Methylmercaptan	70L	0.1 \sim 8 ppm	10	1065-91704
	70	$0.35\sim 84~ m ppm$	10	1065-91700
Hydrogen sulfide	4LT	$0.1{\sim}4$ ppm	10	1065-91040
	4LB	$0.5{\sim}$ 12 ppm	10	1065-91039



Sample Tube Conditioner STC-4000

- · Maximum of 12 sample tubes can be installed
- Maximum of 5 temperature program steps can be set (including rising and lowering steps)
- · Compatible with sample tubes having a dimensions of 6-6.35 mm O.D. and 35-178 mm length



Specification

- \cdot Temperature Range: +10 $^\circ$ C \sim 450 $^\circ$ C
- Dimension: 562 (W) × 520 (D) × 450 (H) mm
- Weight : 44 Kg

Description	Cat.No.
Sample Tube Conditioner STC-4000, AC100V	2701-13071
Sample Tube Conditioner STC-4000, AC220V	2701-13072

Sample Tube Conditioner STC-4000, AC220V. Not UL Listed. Not CE marked.

For Multi-Compound Sampling Bag Analysis

Heated Sampling Bag Selector

This is an instrument to analyze multi-compounds using a sampling bag. The sample line from the instrument to the GC is heated, resulting in providing reproducible testing results.



Chromatogram at each temperature

By heating the sample line and valve, adsorption of compounds to the said parts can be prevented, offering reproducible results.



Sampling Oven System



* AC100V only. Not UL Listed. Not CE marked.



Sampling



Interior of Oven

Features

- · Gas supplying unit is installed to the unit
- (Nitrogen gas is not available and must be prepared at site)
- · Cleaning of sampling bag can be operated
- \cdot Sampling to 2 adsorbent tubes can be done at once.

Specification

- \cdot Includes a temperature program step function
- \cdot Temperature Range: Room temperature +10 $^\circ\!\!C$ \sim 210 $^\circ\!\!C$
- \cdot Arrival of Time to the Maximum Temperature: 50 mins
- Oven Dimension : 450(W) \times 450(D) \times 400(H) mm
- \cdot Total Dimension : 526(W) \times 550(D) \times 795(H) mm
- Weight : 48 kg