

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 thickness: 53 µm

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
- Superior resistance to solvents and heat
- Operating temperature limit: 120 °C
- Film thickness: 50 µm

Applications:Automobile interior materials, automobile emissions, diffusion gas from materials etc.



Fluororesin Bag

- Fluororesin Bag is made of ethylene-tetrafluoroethylene copolymer film
- Good resistance to solvents and heat
- Operating temperature limit: 110 °C
- Film thickness: 50 µm

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
- Film thickness: 130 µm

Applications:Inorganic gas

Polyester Bag

- Polyester Bag is made of polyester film
- Good permeation resistance to VOC
- Film thickness: 38 µm

Applications:volatile Organic Compound, odor analysis

Tedlar® Bag

- Polyvinyl fluoride (PVF)
- Operating temperature limit : 100 °C
- Film thickness : 50 µm

Applications: Inorganic gas, organic solvents etc.

***Please inquire for the availability of Tedlar® Bags.
Please note that GL Sciences is still capable of
supplying the Tedlar® Bags upon request.**

**Tedlar® is a registered trademark of E.I. du Pont
de Nemours & Co., Inc.**

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.

How to Choose a Sampling Bag

①

②

③

④

(Example) Smart 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 □ : Sleeve or sleeve with mini valves ○ : M6 Connector	
③	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 AAJ8 : PTFE joint for 8 φ sleeve at one end, Aluminum bag A type only CCJ8 : PTFE joint for 8 φ sleeve at both ends, Aluminum bag C type only AAP8 : PTFE joint for 8 φ sleeve at one end + 8 φ sleeve with valve at the other end Standard sleeve (6 φ) Sleeve with mini valve(6 φ) M6 Connector With silicone packing	
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:C



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



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.

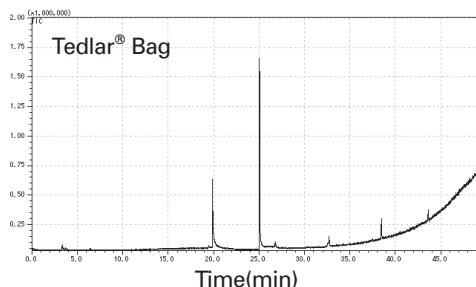
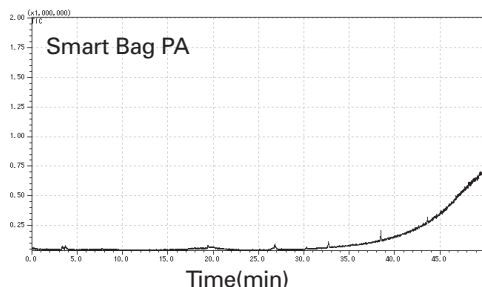
Operating temperature limit: 120 °C

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.

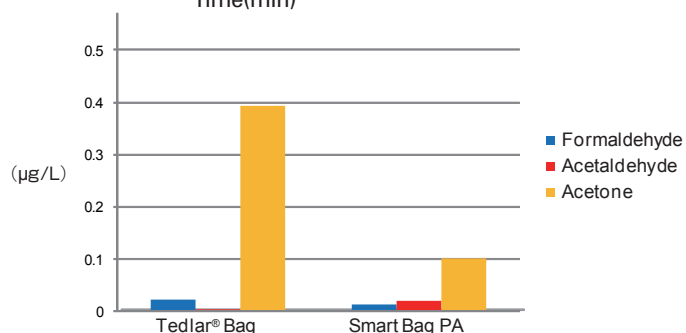
* Please note that both bags were not flushed/cleaned with nitrogen.



Aldehydes / Acetone Blank Test

[Testing Procedure]

Fill each *sampling bag with nitrogen, seal them and put them into a chamber at 60°C . 1 hour later, vacuum 1L of gases from each bag with a pump to DNPH cartridges and elute, then analyze by HPLC. * Please note that both bags were not flushed cleaned with nitrogen.



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

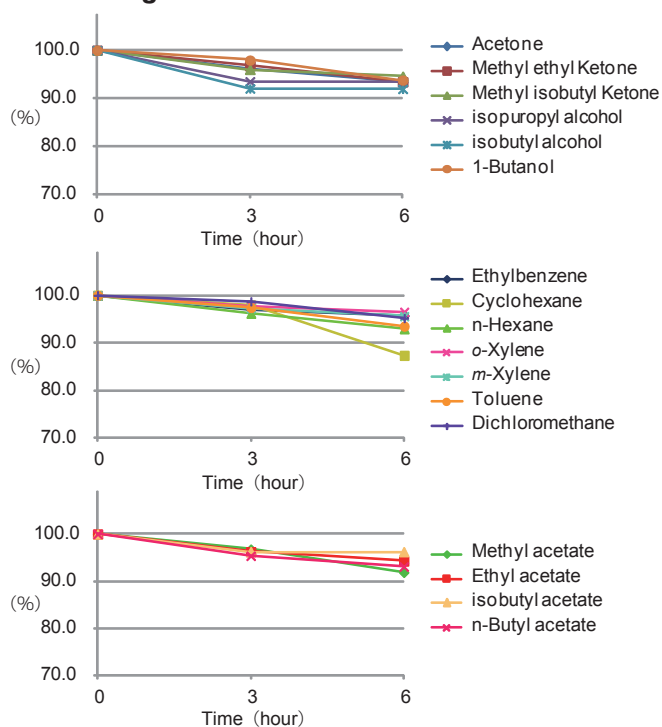
[Testing Procedure]

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

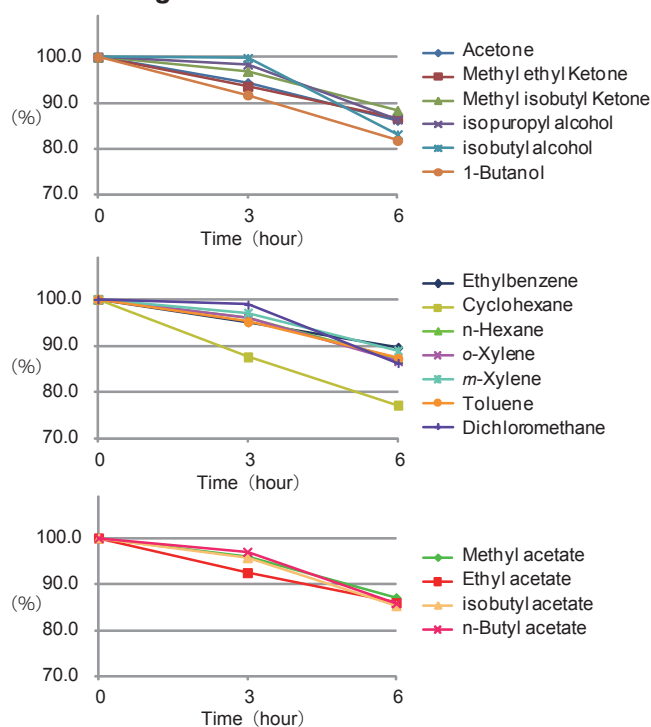
[Standard Compound List]

Acetone, Methyl ethyl ketone, 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)

○ Smart Bag PA



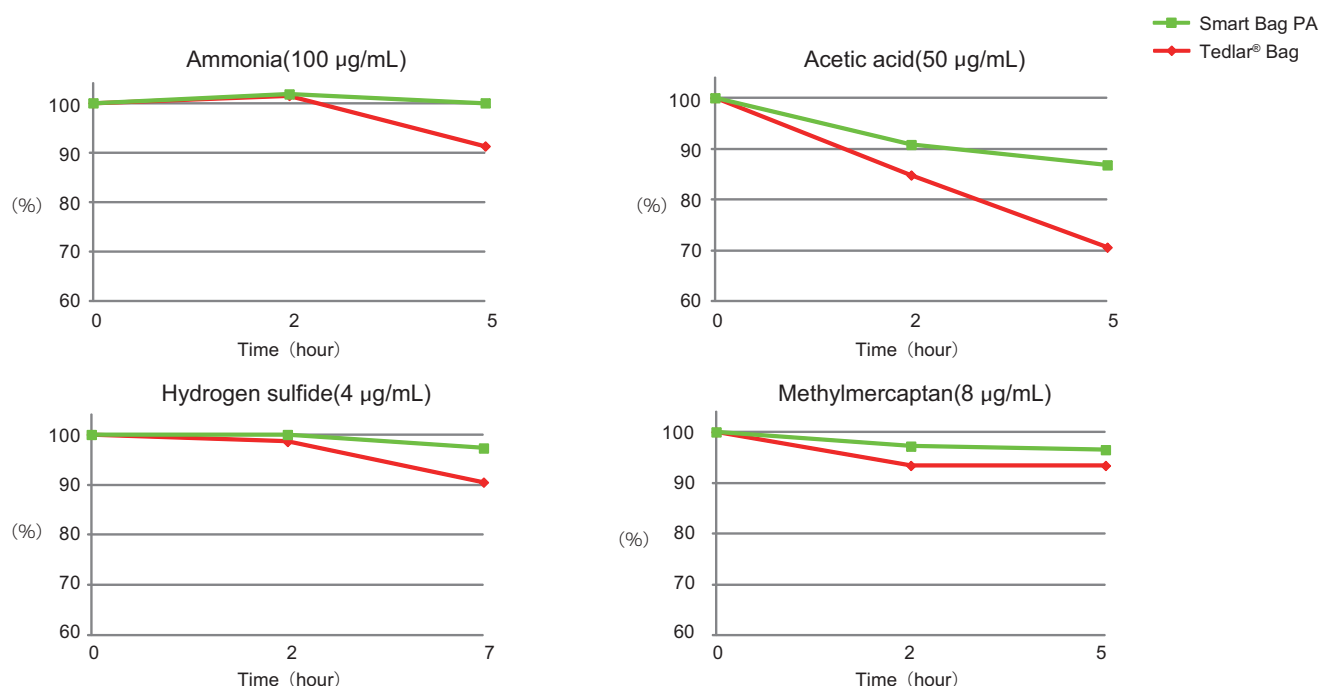
○ Tedlar® Bag



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

[Testing Procedure]

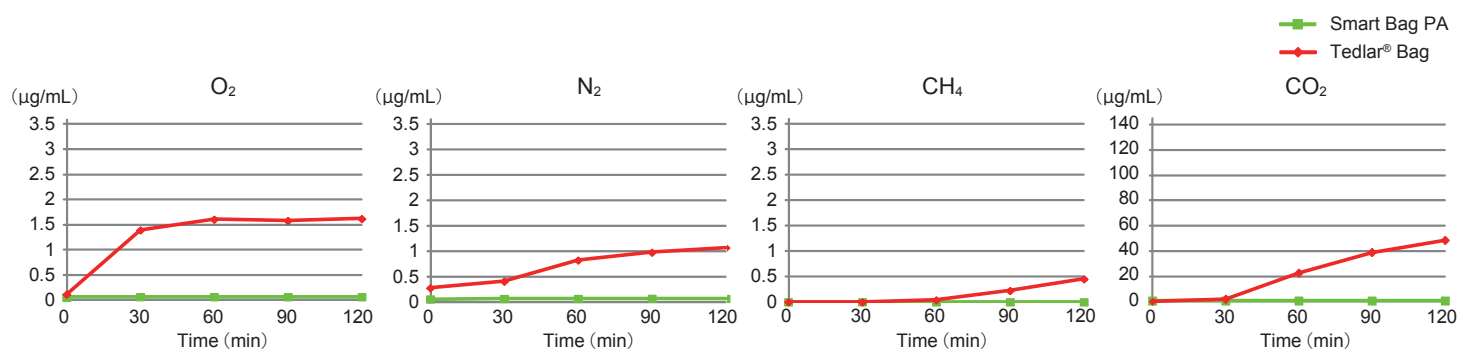
Arrange the concentration of each malodorous compounds as described below and fulfill a 5L Smart Bag PA and a 5 L Tedlar® Bag with the malodorous compounds together with nitrogen gas. Damping rate was calculated using a detecting tube at certain times.



◆ 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

Shape		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

* 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.

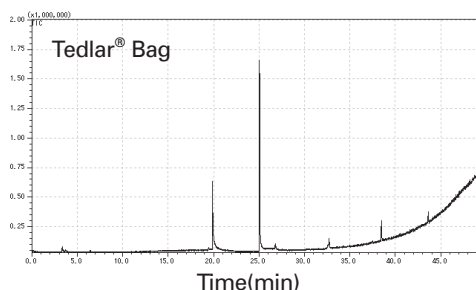
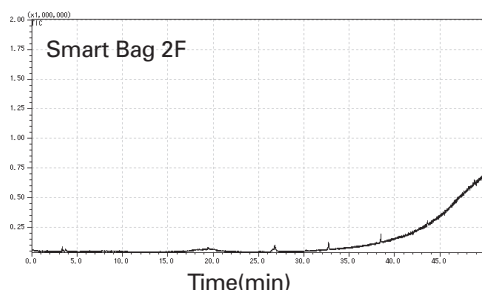
Operating temperature limit: 120 °C

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.

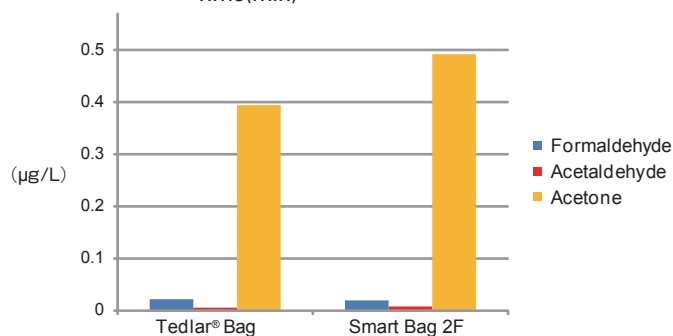
* Please note that both bags were not flushed/cleaned with nitrogen.



Aldehydes / Acetone Blank Test

[Testing Procedure]

Fill each *sampling bag with nitrogen, seal them and put them into a chamber at 60°C. 1 hour later, vacuum 1L of gases from each bag with a pump to DNPH cartridges and elute, then analyze by HPLC. * Please note that both bags were not flushed/cleaned with nitrogen.



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

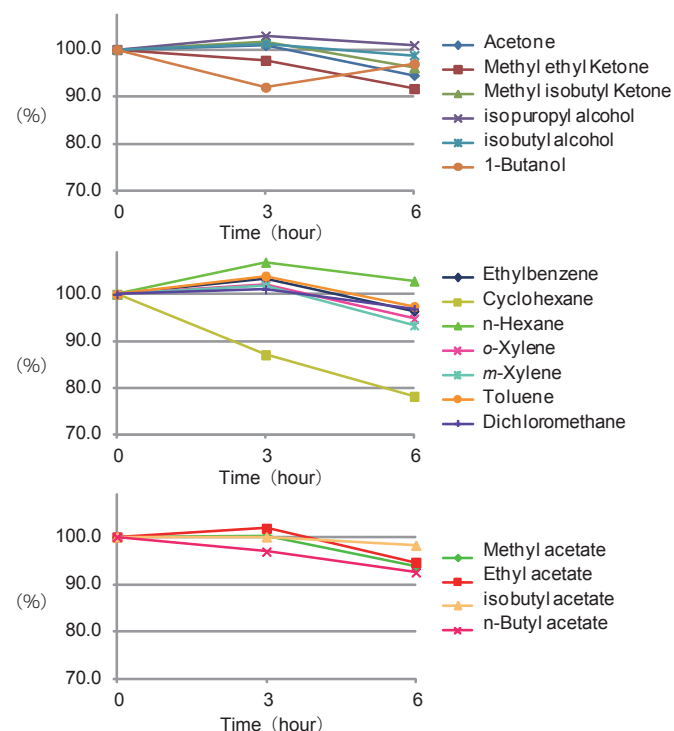
[Testing Procedure]

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

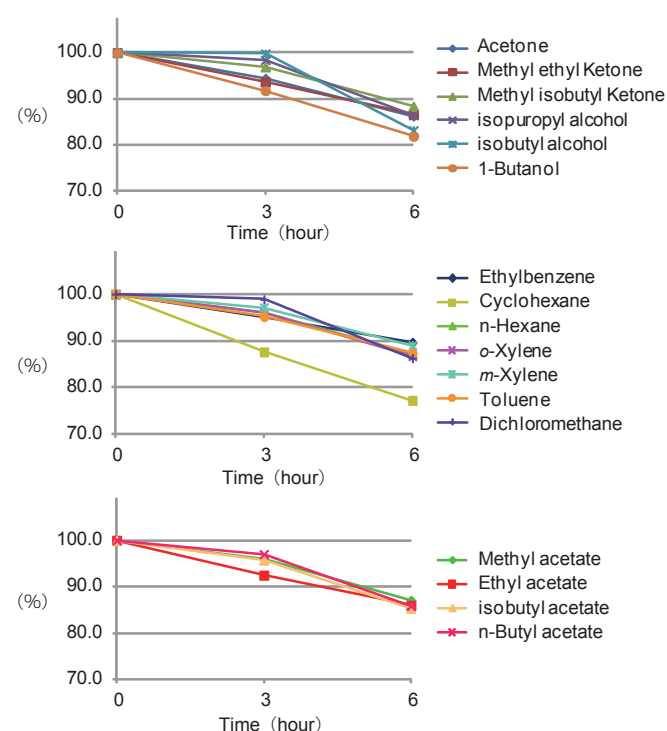
[Standard Compound List]

Acetone, Methyl ethyl ketone, 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)

○ Smart Bag 2F



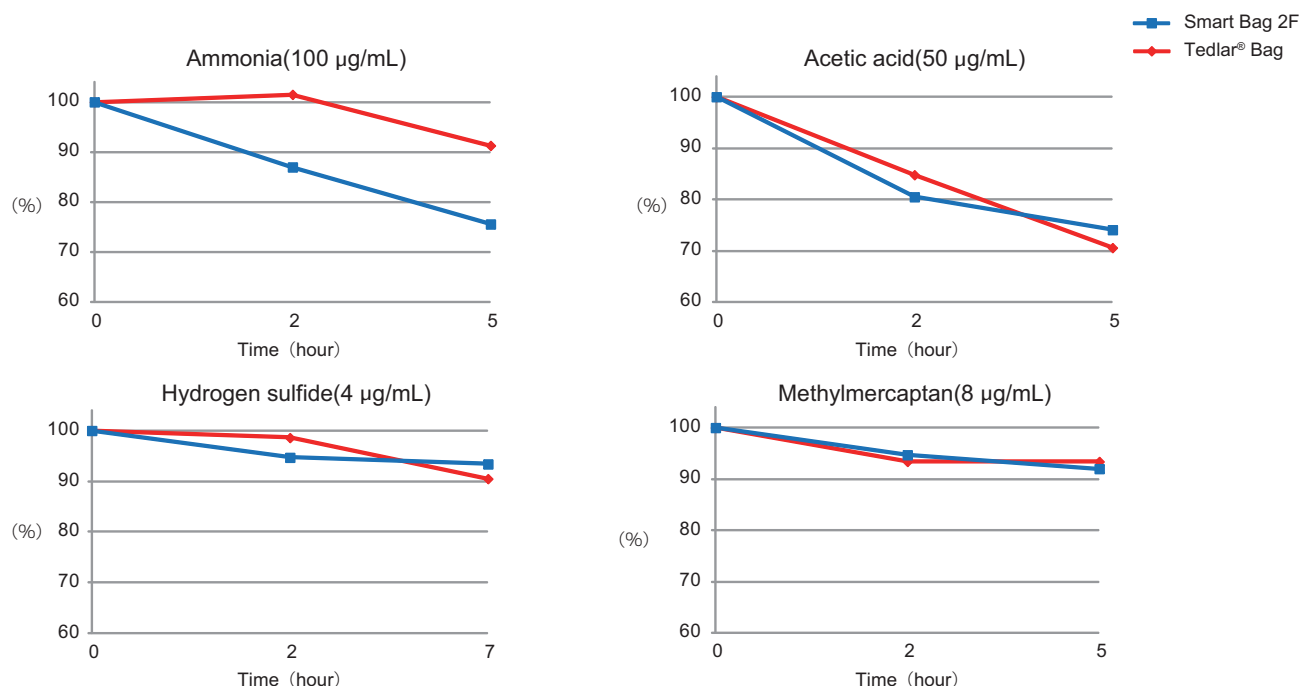
○ Tedlar® Bag



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

[Testing Procedure]

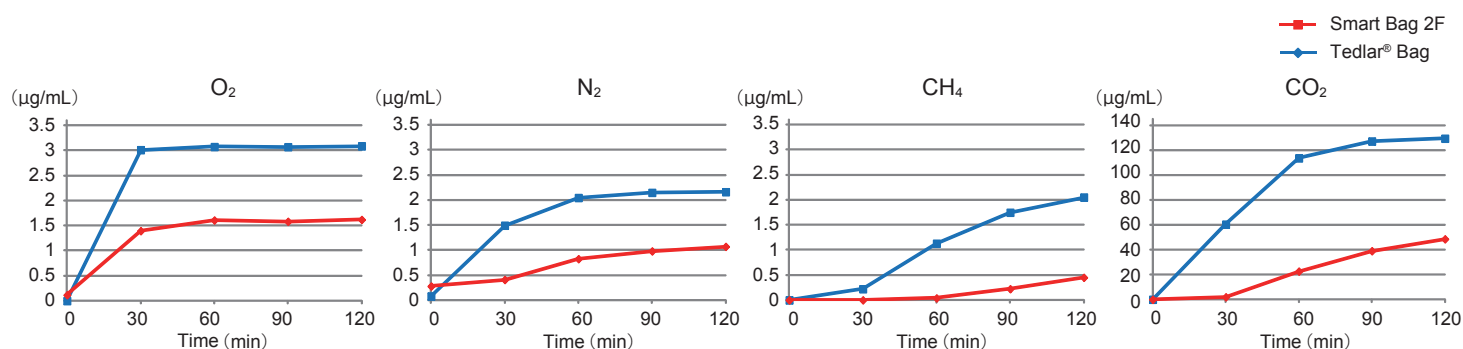
Arrange the concentration of each malodorous compounds as described below and fulfill a 5L Smart Bag 2F and a 5 L Tedlar® Bag together with nitrogen gas. Damping rate was calculated using a detecting tube at certain times.



◆ 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

Shape		AA	AAK	AB	CC	CCK	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.

Custom Size Sampling Bags

Many of Our experiences in this industry enables providing custom size sampling bags from 0.1 L ~ 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



Environmental air



Odor-fighting fibers



Automobile emissions



Work Environment



Soil gas

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