TOPPAN

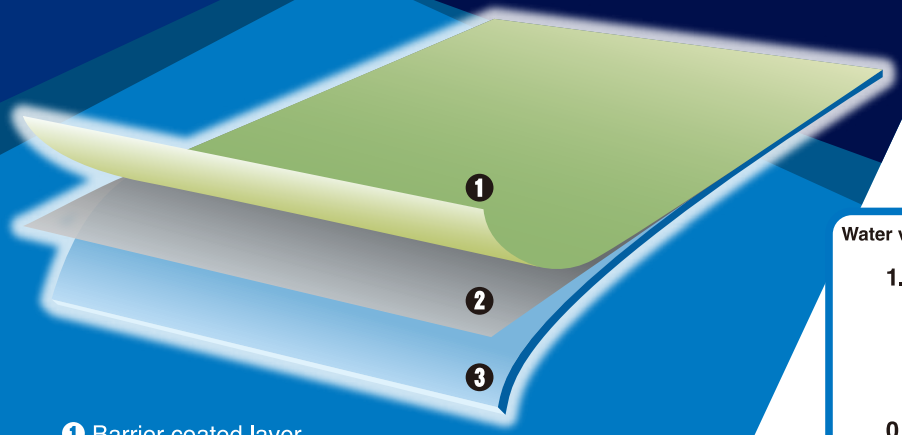
The Global Leader in High Barrier Films

GL BARRIER

Providing the highest quality with a wide-ranging product lineup

Get more information

GL FILM



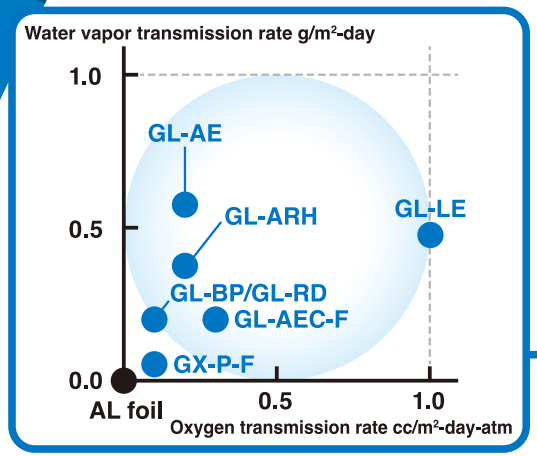
❶ Barrier coated layer
❷ Inorganic transparent vapor deposition barrier layer (AlOx/SiOx)
❸ Substrate film (PET, PP, PE, etc.)

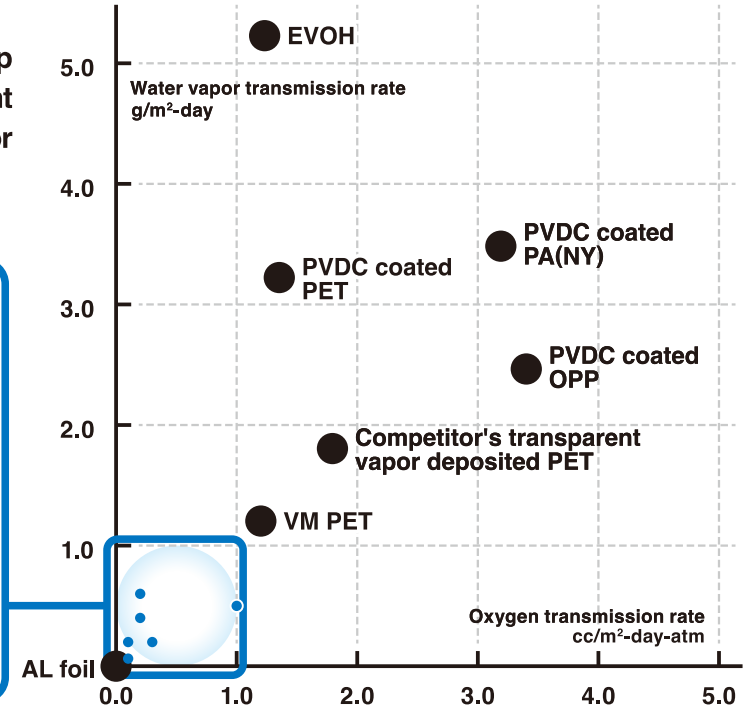
Structure

The structure consists of a base film with a layer of the inorganic transparent vapor-deposited barrier layer and barrier coated layer.
It has excellent barrier properties, flex crack resistance as well as suitable for printing and lamination.

Performance Comparison and Lineup

GL FILM offers a full lineup of products with excellent oxygen and water vapor barrier properties.





Application (Grade)	Product name	Substrate	Applications and features	Water vapor transmission rate	Oxygen transmission rate
General application	GL-AE	PET	General use (for a wide range of applications such as dry food) *Not suitable for liquid contents	0.6	0.2
	GL-AEC-F	PET	High moisture barrier grade for general use	0.2	0.3
High barrier	GX-P-F	PET	High barrier properties comparable to AL foil *Not suitable for liquid contents	0.05	0.1
Boil and Retort	GL-ARH	PET	For long time and high temperature retorting	0.4	0.2
	GL-RD	PET	High-barrier, long time and high temperature retorting, high durability	0.2	0.1
Mono-material	GL-BP Series	PP	General use(suitable for hot filling and liquid contents)	0.2 (GL-BP)	0.1 (GL-BP)
	GL-LE Series	PE	General use (for a wide range of applications such as dry food) *Not suitable for liquid contents	0.5 (GL-LE)	1.0 (GL-LE)

Measuring Conditions : Water vapor transmission rate g/m²-day JIS K7129-2 method at 40°C 90%RH
Oxygen transmission rate cc/m²-day-atm JIS K7126-2 method at 30°C 70%RH

- The figures shown in this document are examples of measured values obtained in our measurement environment (including some laminated products) and are not guaranteed values.
- Please contact us for details on boil, retort and Mono-material grades.

Product Features

High barrier performance

Lineup of films with highest barrier performance

-GX-P-F: High barrier films with performance comparable to that of AL foil
-GL-RD: Suitable for long time and high temperature retorting

Stable performance

-Almost no dependence on temperature or humidity, making it suitable for a wide range of applications
-Resistant to barrier degradation even in high-humidity environments for long periods of time

Durable barrier layer

-Retains barrier properties even after repeated bending
-Almost no degradation in barrier properties even after retort processing, etc.

Metal-free, Non-conductive

Microwavable

-Can be used in various microwavable packaging types

Metal detector friendly

-Capable of detecting foreign matter contamination

Transparency

High transparency

-Enables product appeal by showing the contents

Eco-friendly

Source reduction of packaging materials

-CO_2 emissions can be reduced by source reduction of packaging materials

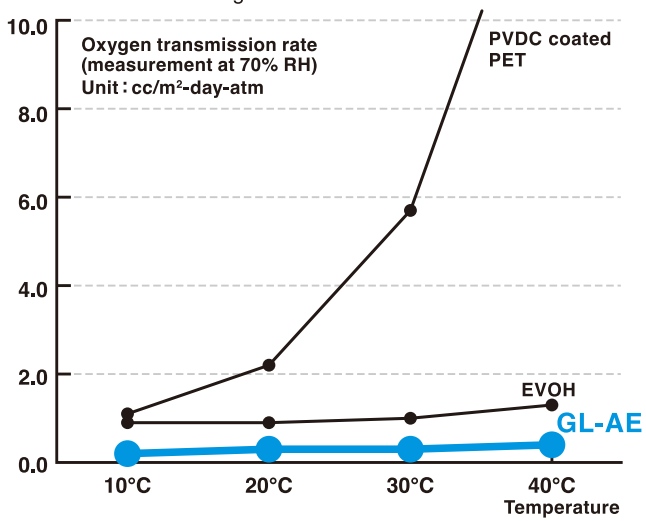
Eco-friendly

-Almost no residue is generated and no harmful gases are emitted during incineration
-Lineup of eco-friendly products for mono-material packaging
-Lineup of products using recycled resources

Performance comparison of GL FILM versus other barrier films

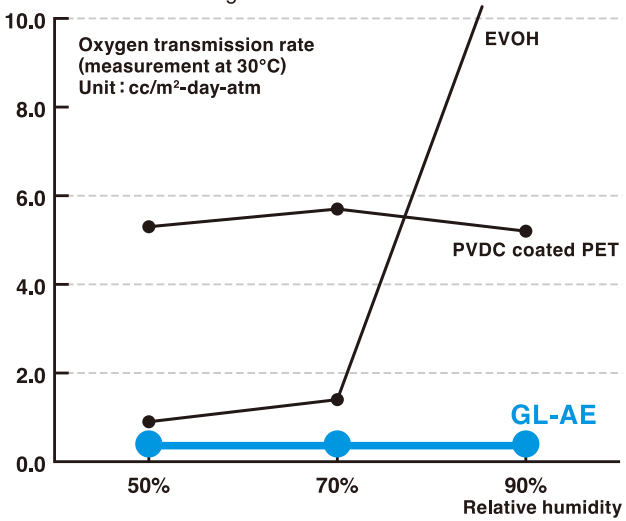
Temperature dependency

Stable performance unaffected by temperature or surrounding environment.



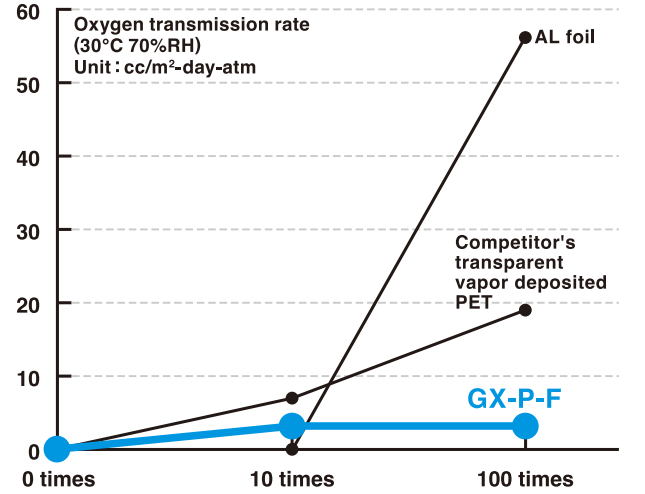
Humidity dependency

Stable performance unaffected by humidity or surrounding environment.



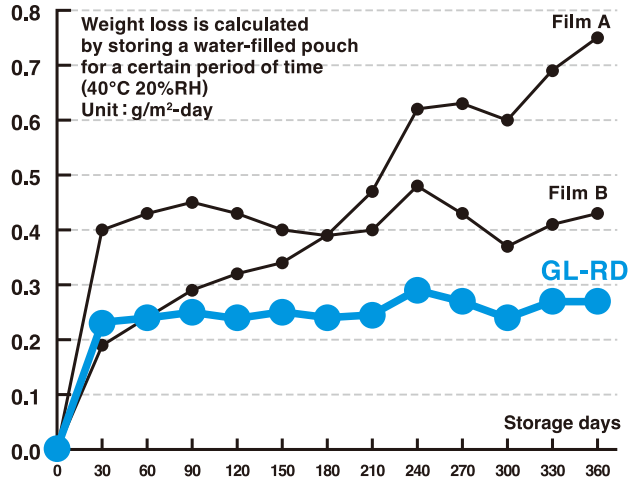
Flex crack resistance

Retains its barrier property even after repeated bending.



Evaporation prevention performance (long-term water resistance)

Prevents moisture loss (evaporation) from inside the packaging for a long time.



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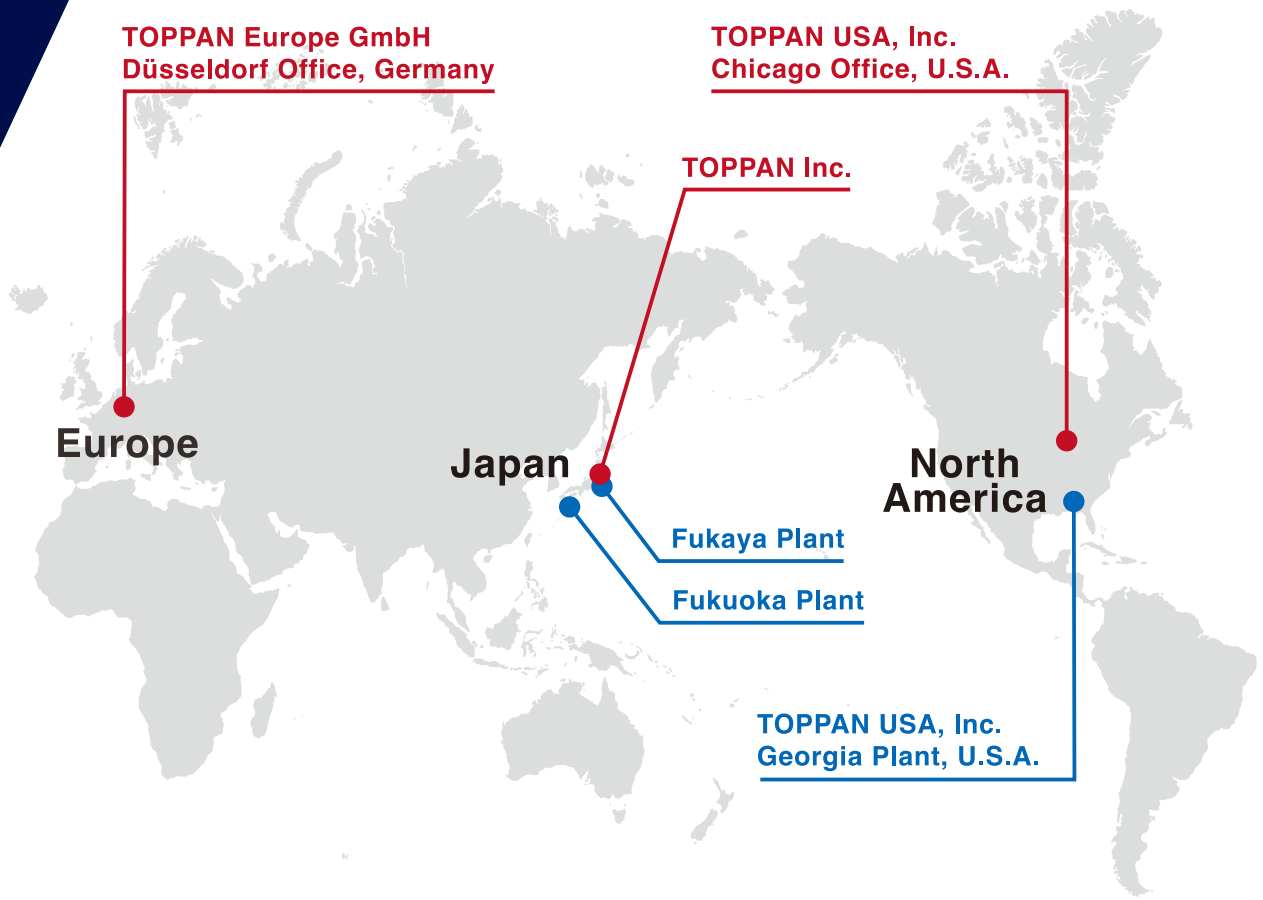
Application Examples

From various flexible packaging to paper containers for liquids, GL BARRIER can be used for a wide range of applications.

Locations



GL BARRIER production system (BCP)

We have established a production system for barrier films at three facilities, in Japan and the U.S.A., enabling and securing the prompt and stable supply of high-quality products on a global scale.

Customer Support

With offices in Japan, the U.S., and Europe, we are able to monitor and react to local demands whilst providing excellent customer support.

Contact information

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Eco-friendly Products

Mono-material packaging materials
(products made of one single material)

Mono-material packaging consists of a single material, making it more suitable for recycling than packaging made of composite materials.

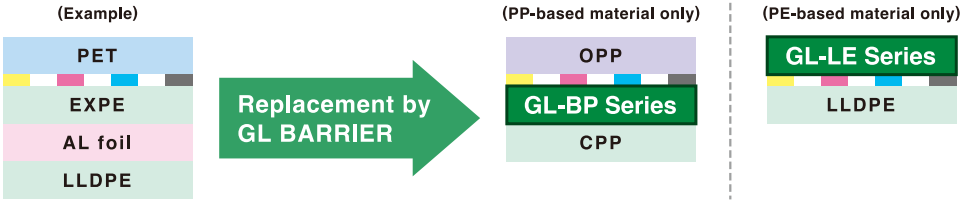
Features

- GL BARRIER promote the recyclability of mono-material high barrier packaging.
- GL BARRIER is available in both PP and PE-based grades for mono-material packaging. Despite its single material composition, it still retains its high barrier properties and various functions.

Suggestion

Conventional packaging uses multi-material plastic films to meet certain required technical functions. (i.e. barrier property)

By using GL BARRIER, recyclable mono-material packaging can be made, whilst meeting technical requirements of the highest standards.



Product lineup

Substrate	Product name	Applications and features	Water vapor transmission rate	Oxygen transmission rate
PP	GL-BP Series	General use (suitable for hot filling and liquid contents)	0.2 (GL-BP)	0.1 (GL-BP)
PE	GL-LE Series	General use (for a wide range of applications such as dry food) *Not suitable for liquid contents	0.5 (GL-LE)	1.0 (GL-LE)

Measuring Conditions : Water vapor transmission rate g/m²-day JIS K7129-2 method at 40°C 90%RH
Oxygen transmission rate cc/m²-day-atm JIS K7126-2 method at 30°C 70%RH

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- Please contact us for more information on Mono-material grades.

Mechanically Recycled PET Grade

Areas available for sale may be limited. Please contact us for details.

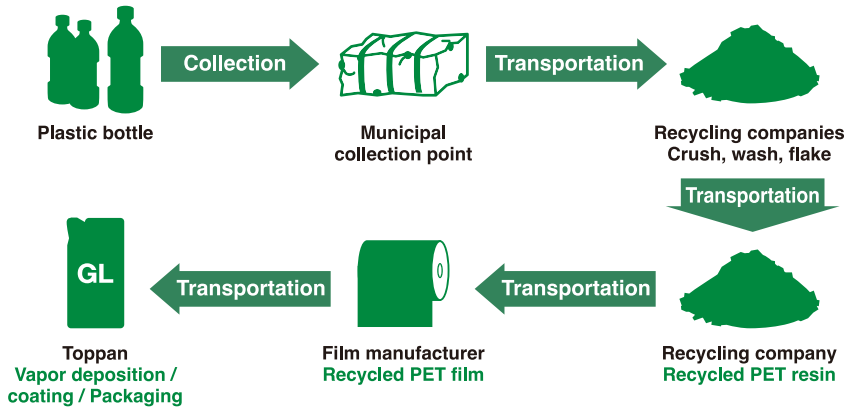
The base material contains mechanically recycled PET from the plastic bottles.
It promotes the use of recycled resources.
The film has high barrier properties by using GL BARRIER technologies.

*High-quality recycled resin is obtained by melting, decompressing, and filtering from used plastic bottles at high temperature after crushing and cleaning them.

Features

- The film uses 80% of recycled resin in order to reduce the amount of petroleum resources.
- Toppan's patented vapor deposition and coating technologies provide the world's highest level of barrier properties and a wide range of product lineup.
- Reducing CO_2 emissions by approximately 17% compared to general transparent vapor-deposited barrier films.

Mechanical recycling process



PETボトル 再利用品
This mark indicates that the product is made from recycled plastic bottles (in Japan only).

Product lineup

Grade	Product name	Applications and features	Water vapor transmission rate	Oxygen transmission rate
General application	GL-AE-N	General use (for a wide range of products) *Not suitable for liquid contents	0.6	0.2
Boil, Retort	GL-AR-NF	Boiling and Retorting	0.4	0.2

Measuring Conditions : Water vapor transmission rate g/m²-day JIS K7129-2 method at 40°C 90%RH
Oxygen transmission rate cc/m²-day-atm JIS K7126-2 method at 30°C 70%RH

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- Please contact us for details on boiling and retorting grades.

A wide range of products
to meet customers needs

BESELA

Transparent barrier film specially designed for boiling / retorting treatment.The PET substrate is coated with a polyacrylic acid-based material.

PET film
Barrier coated layer

Features

High barrier performance even after sterilization

This product forms its barrier layer with heat and moisture from the sterilization process (boiling / retorting).

BESELA forms an oxygen barrier layer during the boiling and retorting process.This high oxygen barrier property, equivalent to GL FILM, can be obtained after retorting at 120°C for 30 minutes.

Comparison of barrier properties after retorting treatment

Structure \ Oxygen transmission rate	Before retorting	After retorting
BESELA13μm/PA(NY)15μm/CPP60μm	2.0	0.5
PET12μm/AL7μm/CPP60μm	0.0	0.0
Competitor's transparent vapor deposited PET12μm/PA(NY)15μm/CPP60μm	0.7	1.5

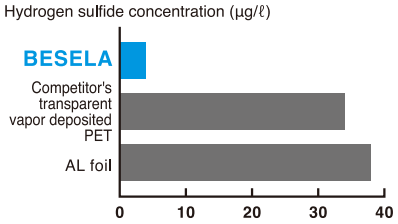
Unit: cc/m²-day atm JIS K7126-2 method at 30°C 70%RH
Retort conditions: 120°C for 30 minutes. with water-filled

Retort odor absorption

Absorbs retort odor

BESELA adsorbs retort odor (unpleasant odor generated by the hydrolysis of sulfur-containing amino acids in meat and eggs, which is denatured into hydrogen sulfide and mercaptan) arising from retorting.

Comparison of retort odor adsorption performance



Test method :
After injecting 30 ml of 0.03% L-cysteine solution into a pouch (8 cm x 10 cm), retort it at 120°C for 60 minutes, and measure the concentration of hydrogen sulfide in the solution using the methylene blue method.

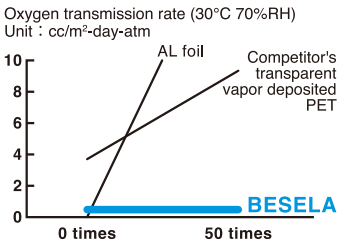
Structure :
- BESELA13μm/ PA(NY)15μm/CPP60μm
- Competitor's transparent vapor deposited PET12μm/ PA(NY)15μm/CPP60μm
- PET12μm/AL7μm/CPP60μm

Retains barrier properties even after bending

Excellent flex crack resistance

Since the barrier layer is formed by heat and moisture during the retorting process, any damage caused by scratching or bending during the package manufacturing process or the filling process does not remain in the final product. BESELA provides excellent barrier properties even after retorting.

Comparison of barrier film performance



Test method :
Measure oxygen transmission rate after bending the BESELA 0 to 50 times with a Gelbo flex tester, retorting 121°C for 30 minutes.

Structure :
- BESELA13μm/ PA(NY)15μm/ CPP60μm
- PET12μm/AL7μm/CPP60μm
- Competitor's transparent vapor deposited PET12μm/ PA(NY)15μm/CPP60μm

GL-ME-RC

- **This is an aluminum vapor deposited film (Substrate: PET 12μm) with excellent barrier properties, developed using the vapor deposition and coating technologies of GL FILM.**
- **High barrier property, tensile strength, and high light-shielding property (visible light cut) that can not be achieved with conventional aluminum vapor-deposited film.**

PET film
Vapor deposition layer
Barrier coated layer

Features

High barrier property

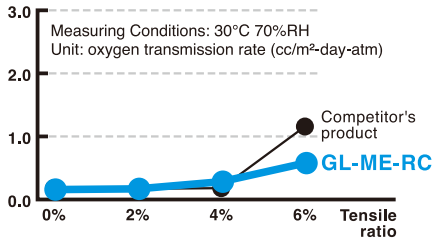
Product name	Application	Water vapor transmission rate	Oxygen transmission rate
GL-ME-RC	Industrial materials, food, and pharmaceuticals that require light shield function	0.1	0.06

High light-shielding property

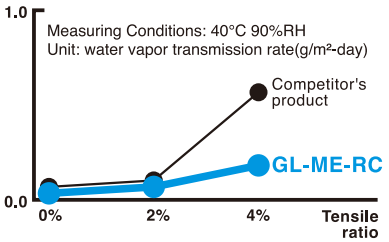
Optical density (OD value)	3.6
Total light transmittance (converted value)	<0.03%

Tensile strength

Comparison of oxygen transmission rate after elongation



Comparison of water vapor transmission rate after elongation



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