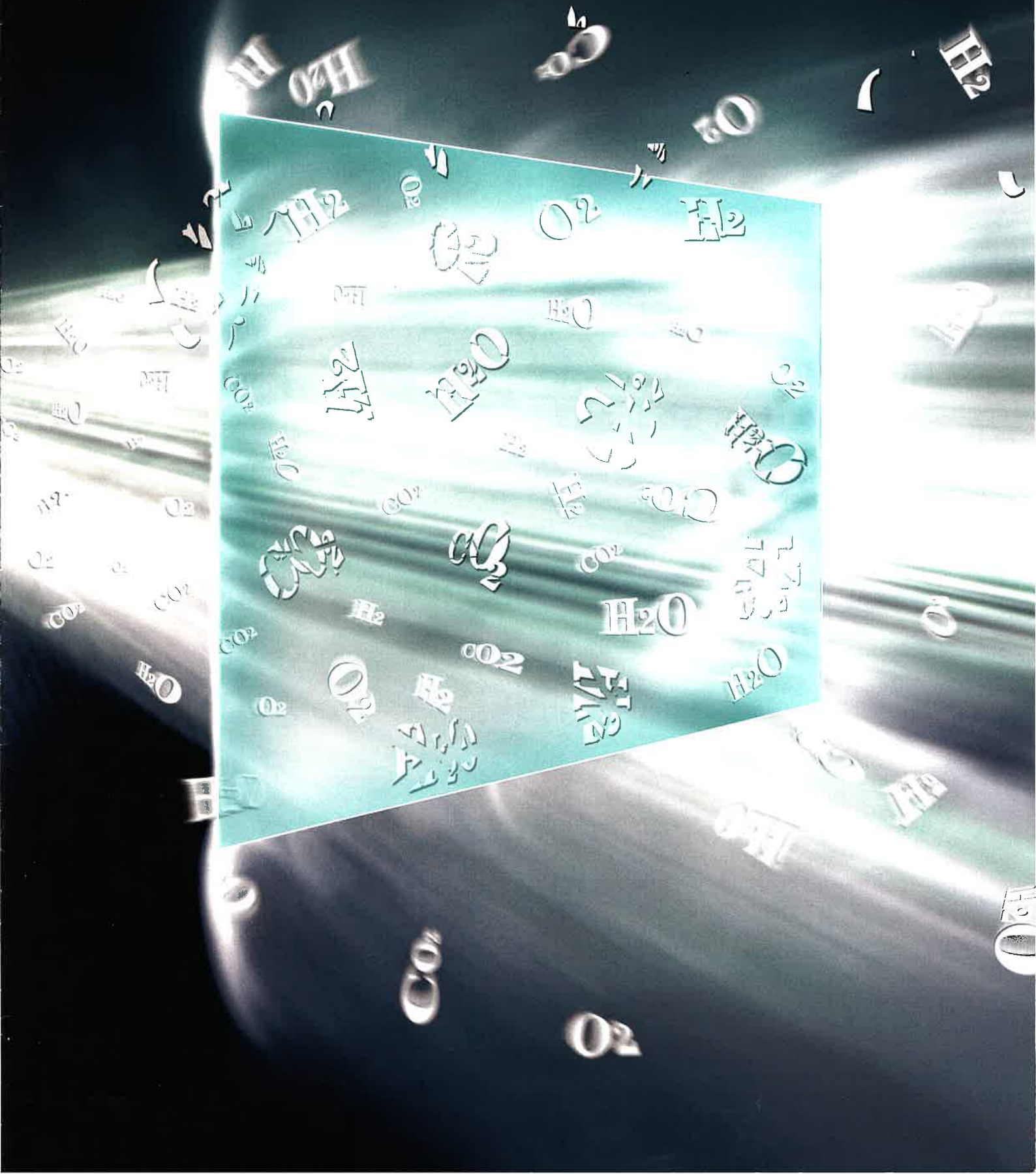


 MITSUBISHI CHEMICAL

Transparent High Gas Barrier Film

# TECHBARRIER™



# High Gas Barrier, Transparency, Durability That's TECHBARRIER™.

TECHBARRIER™ is a SiOx coated OPET film with High Gas Barrier, Transparency and Durability. High Gas Barrier is working for the contents. Transparency from metal free brings packaging microwavable and customer's attention. Durability is essential for a long term storage and industrial components.

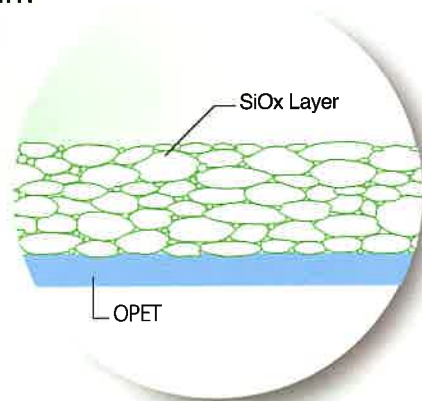


Figure 1.  
Cross-Section of TECHBARRIER™

## Hybrid Barrier Technology: SiOx Vacuum Coating and Top Coating.

TECHBARRIER™ SiOx Vacuum Coating makes superior barrier performances.  
TECHBARRIER™ Top Coating draws out the SiOx potentials.

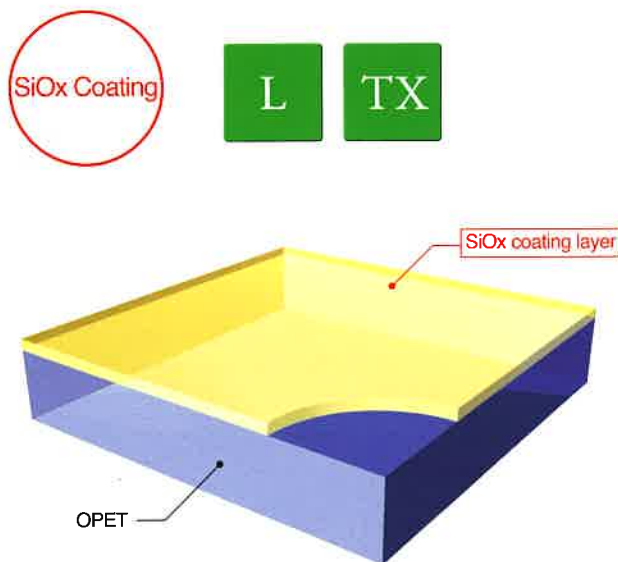


Figure 2.

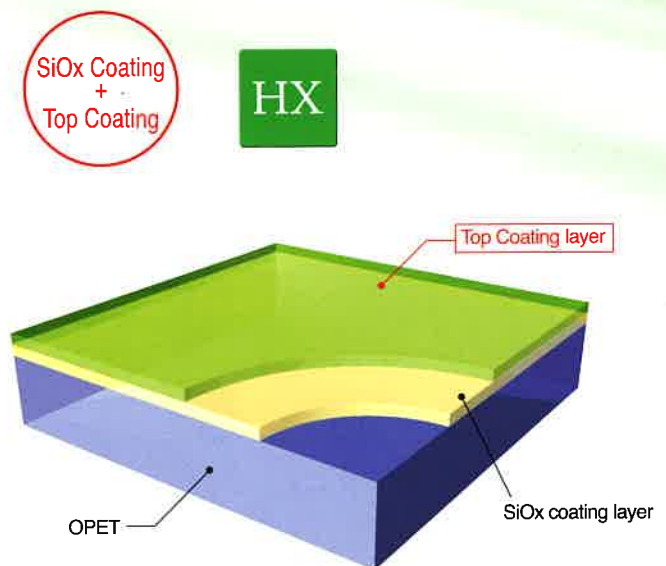
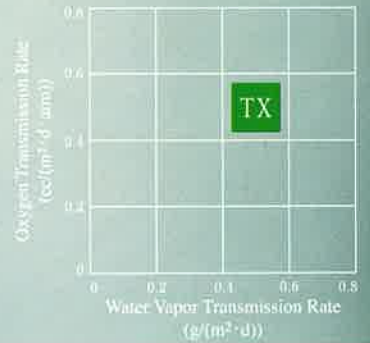


Figure 3.



## Retortable Type

O<sub>2</sub>TR is 0.5 cc/(m<sup>2</sup>·d·atm), WVTR is 0.5 g/(m<sup>2</sup>·d).

TX can keep Oxygen/Moisture Barrier after Boil and Retort Sterilization.



Table 1. Gas Barrier Durability against Retort Sterilization.

	Structure	TX	Measurement
	Condition	TX // OPA(15) // CPP(50)	
<b>Oxygen Transmission Rate</b> (25°C, 80%RH, cc/(m <sup>2</sup> ·d·atm))	Blank	0.5	JIS K 7126
	110°C, 30min	0.5	
	121°C, 30min	0.5	
	130°C, 30min	0.6	
<b>Water Vapor Transmission Rate</b> (40°C, 90%RH, g/(m <sup>2</sup> ·d))	Blank	0.5	JIS K 7129
	110°C, 30min	0.5	
	121°C, 30min	0.5	
	130°C, 30min	0.5	

Reference data ONLY.

Table 2. Gas Barrier Durability against foods and food additives.

O<sub>2</sub>TR (cc/(m<sup>2</sup>·d·atm)) after Retort (121°C, 30min)

		Structure	TX // OPA // CPP
Contents			
Water			0.5
Food	Vinegar		0.5
	Tomato sauce		0.5
	Curry sauce		0.5
	Ketchup + Salad oil		0.5
PH regulator	Citric acid (1%)		0.5
	Sodium metaphosphate (1%)		0.5
Coloring substance	Sodium nitrite (1%)		0.5

Reference data ONLY.

## Application

1. Lidding for Boil and Retort Food
2. Pouch for Boil and Retort Food
3. Enteral Nutrition
4. Outer Bag for I-V Bag



Lidding



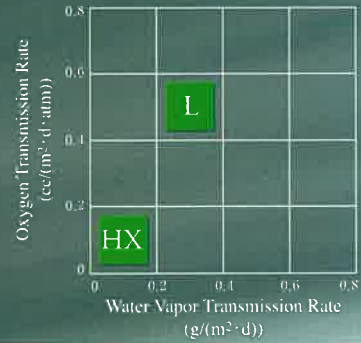
Outer Bag of I-V Bag



Stand-up pouch

TECHBARRIER™

# HX L



## High Barrier type

O<sub>2</sub>TR is 0.1 cc/(m<sup>2</sup>·d·atm), WVTR is 0.08 g/(m<sup>2</sup>·d).  
HX has the highest gas barrier in TECHBARRIER™ series.

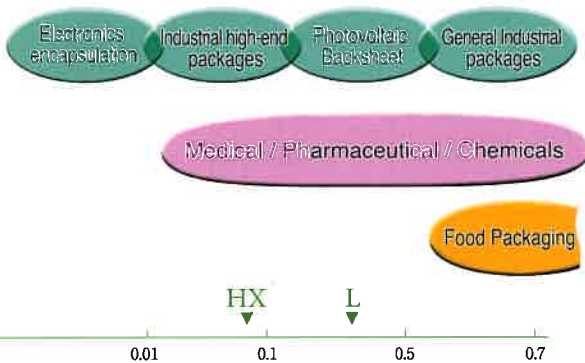


## Middle Barrier type

O<sub>2</sub>TR is 0.5 cc/(m<sup>2</sup>·d·atm), WVTR is 0.3 g/(m<sup>2</sup>·d).  
L is the all-round type in TECHBARRIER™ series.



Figure 5. Application by Moisture Barrier.



Water Vapor Transmission Rate (40°C, 90%RH, g/(m<sup>2</sup>·d))  
Reference data ONLY.

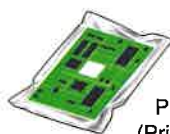
Table 3. Gas Barrier Properties.

Property	Oxygen Transmission Rate	Water Vapor Transmission Rate
Type	(25°C, 80%RH, cc/(m <sup>2</sup> ·d·atm))	(40°C, 90%RH, g/(m <sup>2</sup> ·d))
HX	0.1	0.08
L	0.5	0.3

Reference data ONLY.

### Application

1. Packaging for Electronic products.
2. Packaging for Semiconductors
3. Packaging for Medical / Pharmaceutical products.
4. Moisture Sensitive Food Packaging.



Packages for PCB (Printed Circuit Board).



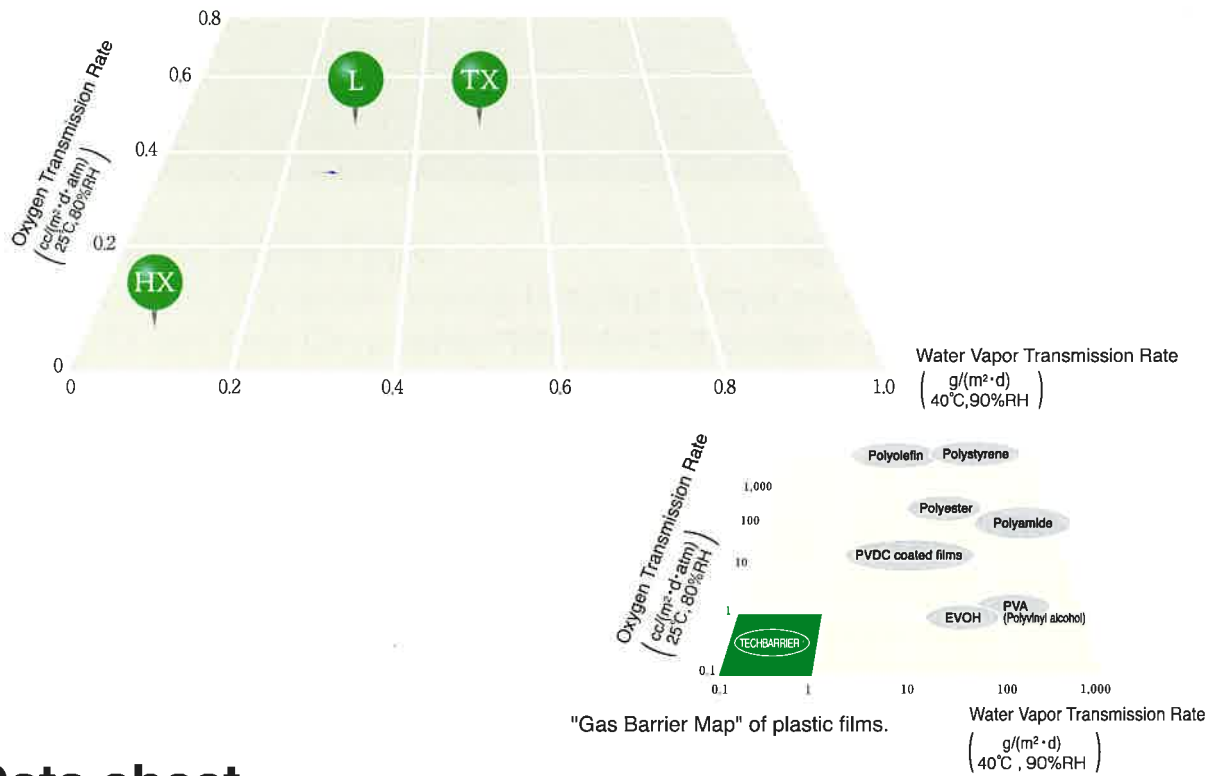
Component of Photovoltaic Backsheet



Medical device packaging

Figure 4.

# Position of Each TECHBARRIER™ on Oxygen / Moisture Barrier (Map).



"Gas Barrier Map" of plastic films.

## Data sheet

Type	HX	L	TX	Method	
Features	High Barrier	Middle Barrier	Retort	JIS K 7126 *1	
Substrate	OPET	OPET	OPET		
Thickness $\mu\text{m}$ (gauge)	12(48)	12(48)	12(48)		
O <sub>2</sub> TR*1	25°C, 80%RH	cc/(m <sup>2</sup> ·d·atm)	0.1	0.5	JIS Z 0222 *1
		cc/(100in <sup>2</sup> ·d·atm)	0.0065	0.0325	
WVTR*1	40°C, 90%RH	g/(m <sup>2</sup> ·d)	0.08	0.3	JIS K 7136
		g/(100in <sup>2</sup> ·d·atm)	0.0052	0.02	
Haze	%	4.0	4.0	JIS K 7127	
Light Transmission Rate	%	89	89		
Tensile Strength	MD	Kg/mm <sup>2</sup> (psi)	22 (31900)	22 (31900)	Puncture test
	TD	Kg/mm <sup>2</sup> (psi)	23 (33500)	23 (33500)	
Tensile Elongation	MD	%	110	110	Area Yield
	TD	%	110	110	
Puncture Impact Strength	J/piece (Kg-cm/piece)	0.7 (7)	0.7 (7)	0.7 (7)	Compliance for food contact *2
Area Yield	m <sup>2</sup> /Kg	59.5	59.5	59.5	
	in <sup>2</sup> /lb	41920	41920	41920	JAPAN (incl. Announcement No.370.1958, MHLW)
Compliance for food contact *2					USA (incl. 21 CFR §177.1630, FDA)
JAPAN (incl. Announcement No.370.1958, MHLW)				✓	EU Member States and Switserland ( incl. No.10/2011, Plastic Regulation (EU))
USA (incl. 21 CFR §177.1630, FDA)				✓	
EU Member States and Switserland ( incl. No.10/2011, Plastic Regulation (EU))				✓	

\*1: Measured as a laminated film.

\*2: Please obtain the latest information from your Sales Account.

## Attention

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- (1) Heavy damage possibility for baby and infants.  
Small children including babies can be choked with this film.  
Keep apart from children.
- (2) Transportation.  
Fix Rolls and tighten them together in order to avoid spontaneous dismantling of the palletizing.
- (3) Protection.  
Put on appropriate protection not to be cut by film edge.
- (4) Storage.  
Storage should be in cool and indirect sunshine place.  
Keep apart from heat and high humidity.
- (5) Mitsubishi Chemical Corporation strongly recommends that customer  
should make tests (evaluation) with using actual layer structure before commercial production.
- (6) Other Direction.  
Please see SDS (Safety Data Sheet).



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