

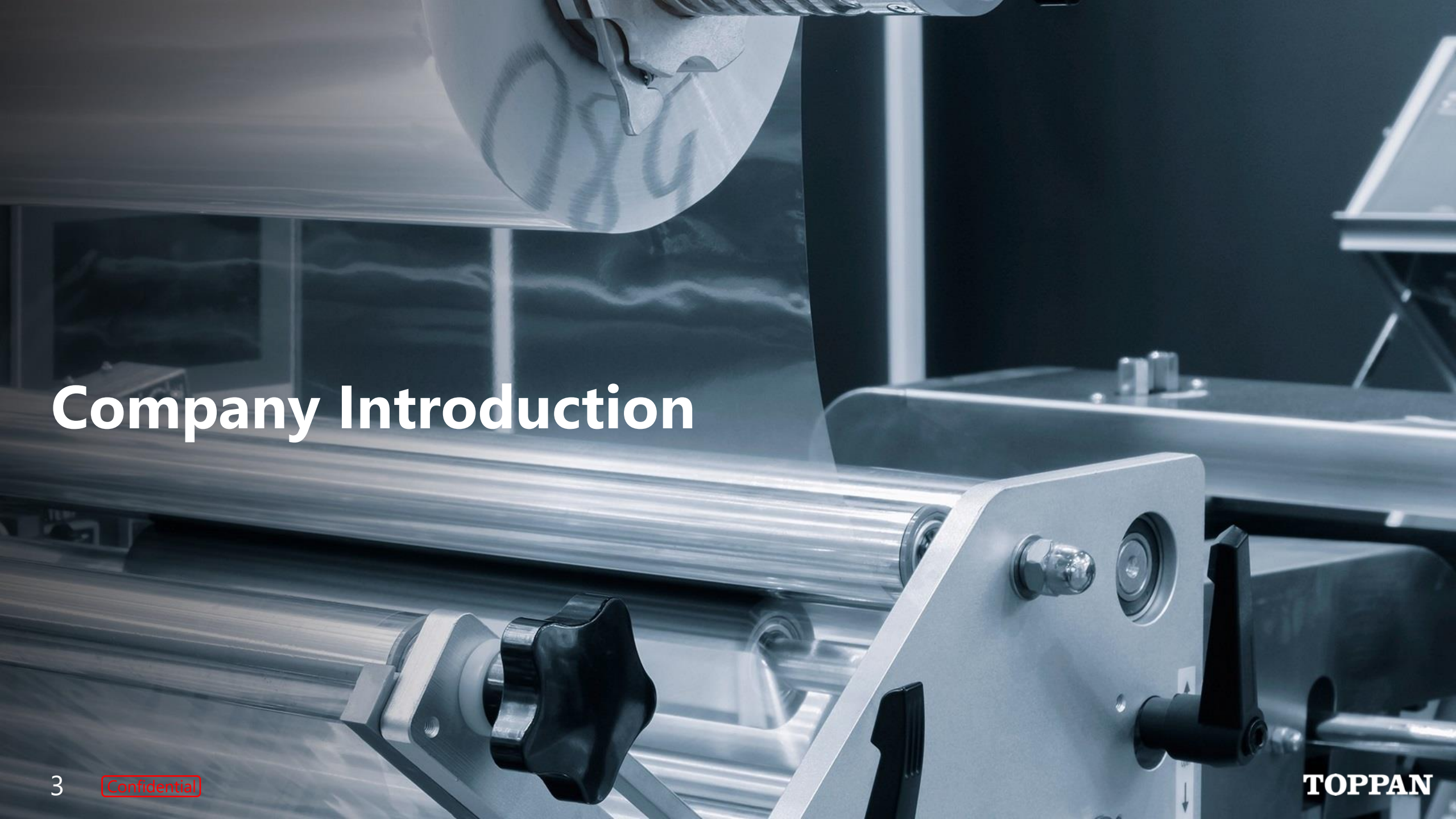


TOPPAN GL High Barrier Film

TOPPAN Inc.
Living & Industry Division
Global Packaging Subdivision

Agenda

- 1. Company introduction ESG**
- 2. Comprehensive supply chain**
- 3. CEFLEX complied packaging**
- 4. Innovation of our packaging technology**

A close-up, blue-tinted photograph of industrial machinery. A large, circular metal wheel is at the top, with a thin, translucent material being fed into it. Below the wheel, several horizontal rollers are visible, with the material passing between them. The machinery is made of polished metal, and there are black adjustment knobs and levers. The background is dark and out of focus.

Company Introduction

Company introduction

Quick Facts

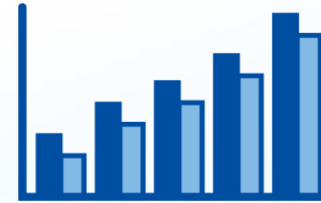


1900



Founded – HQ Tokyo

USD 12.3 B



Net sales

52,401



Number of employees
(Consolidated)

224



Number of groups

131



Main manufacturing bases

USD 0.6 B

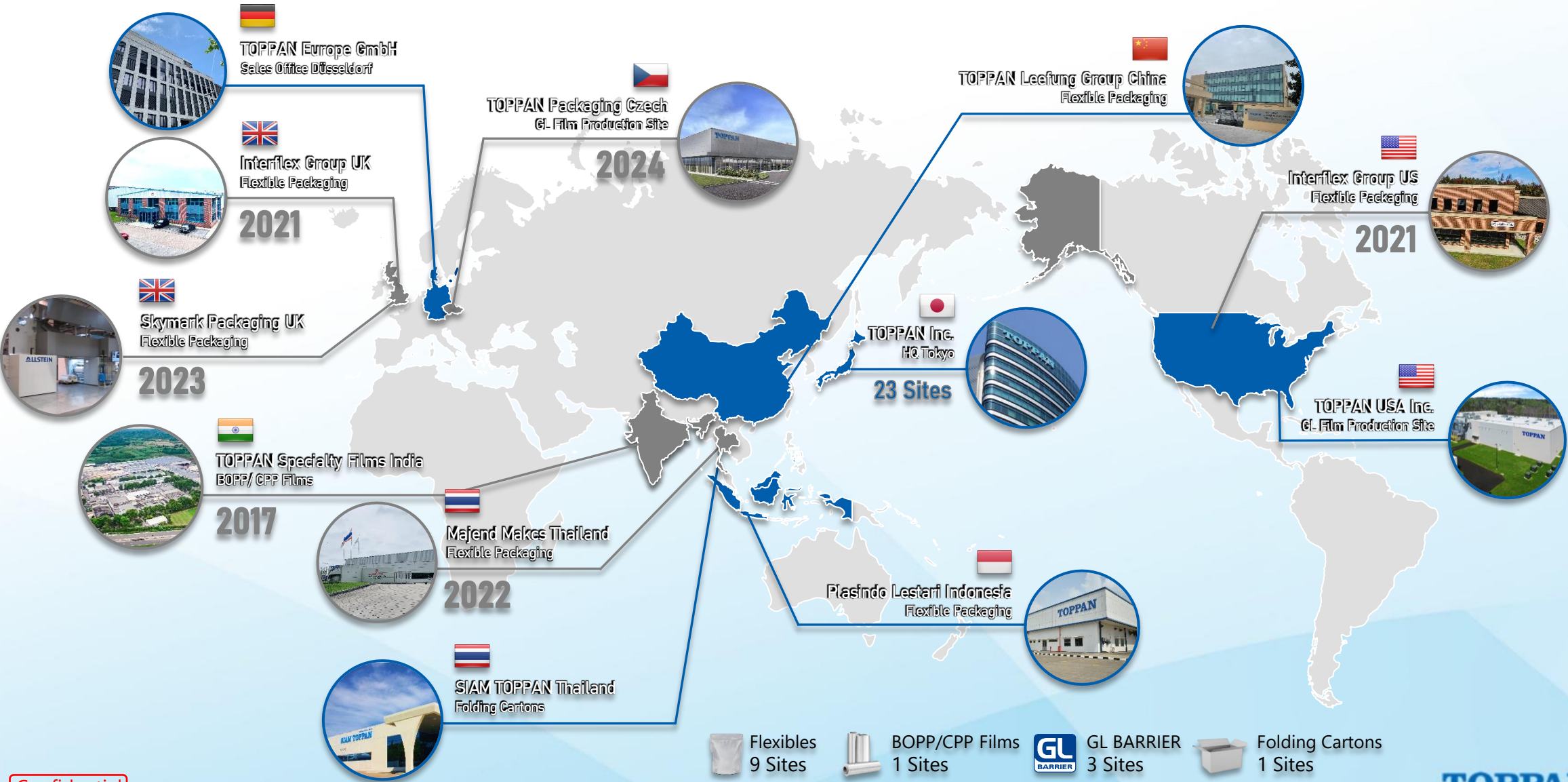


Operating profit

As of March 31, 2023

Comprehensive supply chain

Our global network of packaging and film business



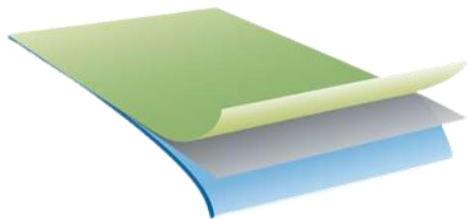
Comprehensive supply chain

What each of our plants produce

Company	Country	BOPP film	Barrier film	Flexible packaging	Folding carton
Toppan Specialty Films Private Limited.					
Toppan Inc.					
Toppan USA Inc.					
Toppan Europe GmbH					
Majend Makcs Co., Ltd.					
PT. Indonesia Toppan Printing					
PT. Plasindo Lestari					
Toppan Leefung Packaging (Shanghai)					
InterFlex Group	 				
Siam Toppan packaging Co., Ltd.					
Toppan Packaging Czech s.r.o. (Start production from the end of 2024)	 Under Construction				



Our Packaging Innovation Technology



- ① Barrier coated layer
- ② Inorganic transparent vapor deposition barrier layer (AlOx/SiOx)
- ③ Substrate film

World **No.1** transparent AlOx/ SiOx barrier film.



- Highly managed quality based in Japan -



High barrier performance



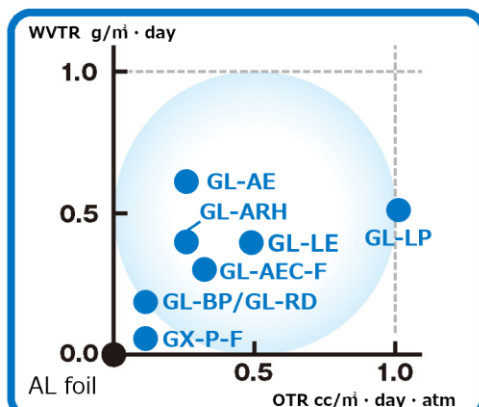
Transparent



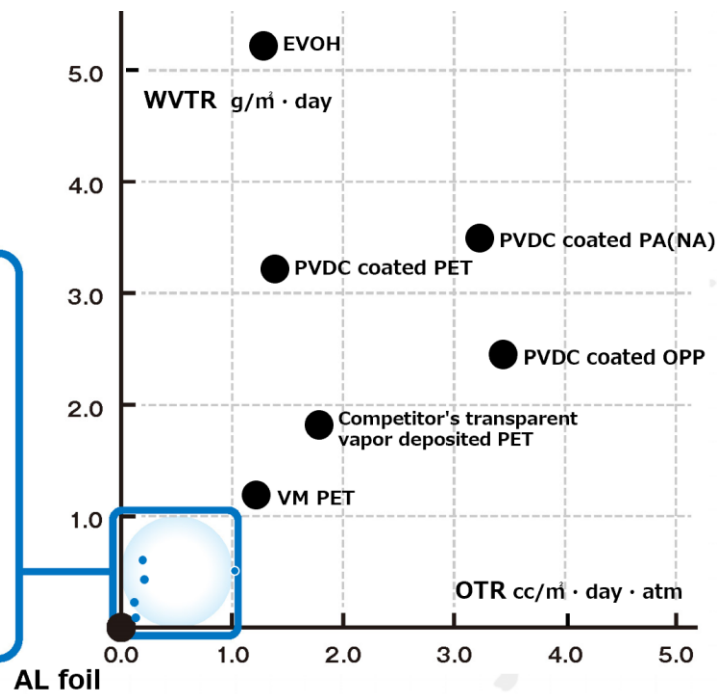
Metal-free,
Non-conductive



Eco-friendly



FOR DISCUSSION PURPOSES ONLY



Type	Grade	Base Film	Deposition	Thickness	OTR	WVTR	Application
Standard	GL-AE	PET	AlOx	12μ	0.5	1.0	Dry content
	GX-P-F	PET	AlOx	12μ	0.1	0.05	Medical/ Electronics
Hot-Filling	GL-AEC-F	PET	AlOx	12μ	0.3	0.7	Hot-Fill/ liquids
Retort	GL-ARH	PET	AlOx	12μ	0.3	1.3	Standard/ high retort
	GL-RD	PET	SiOx	12μ	0.2	0.3	Enhanced post-retort
Recyclable	GL-LE-G	HDPE	SiOx	32μ	1.0	0.5	Dry content
	GL-BP-NC(F) GL-BP-NC(F) /CPP	BOPP	SiOx	18μ	0.2	0.3	Hot-fill/ boiling/ liquid
	GL-X-RP OPP/ GL-X-RP/ CPP	BOPP	SiOx	20μ	0.8	0.5	Standard/ high retort
	GL-X-HE HDPE/ GL-X-HE/ LLDPE	HDPE	SiOx	32μ	0.5	0.5	Hot-fill/ boiling/ liquid

Measurement conditions: OTR: cc/ m² • day • atm (30°C, 70% rH) WVTR: g/ m² • day (40°C, 90% rH)

CEFLEX Compliant Packaging

CEFLEX complied packaging

Mono-Material grades of GL BARRIER



Global Standard for
AL Foil Alternative

Designed for
Mono-PP & Mono-PE Packaging

~ 2019

2019

2023 ~

GL-PET

PET/AlOx, PET/SiOx
Barrier for Dry, Retort, etc.



*Cooked Rice,
Coffee Capsule, etc.*

GL-PP

PP/SiOx Barrier
for Pasteurization



*Baby Food,
etc.*

GL-PE

PE/SiOx Barrier
for Dry Contents



*Serial Bars,
etc.*

GL-PP Retort

PP/SiOx Barrier
for Retort



*Retort Ready Meals,
Wet Petfood, etc.*

GL-PE Hot-Fill

PE/SiOx Barrier
for Hot-Fill



*Liquids,
hot-fill, etc.*

ALL PP for Liquid contents

Mono-material barrier packaging



All-PP
Hot-Fill

OTR
cc/m²/day

0.2

30°C 70%RH

WVTR
g/m²/day

0.3

38°C 100%RH

OPP/GL Barrier PP/ Sealant CPP

Innovation of our Packaging Technology

GL BARRIER Mono-PP for Hot-Fill Applications

OPP18/ GL-BP-NC18/ CPP60

Technical Performance

Barrier Values

OTR	0.2 cc/m ² / day
WVTR	0.3 g/ m ² / day

Measurement conditions: OTR: 30°C, 70% RH WVTR: 38°C, 100% H

Structure	Lamination Strength
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OPP/ GL-BP-NC	3.8 – 4.2 N/ 15mm
GL-BP-NC/ CPP	3.8 – 4.2 N/ 15mm

Sealing Strength (120°C)

48 N/ 15mm

The values shown in this document are examples of measured values obtained in our measurement environment (including some laminated products). The values are not guaranteed values.



➡ Germany's Interseroh+ and Institute cyclos-HTP recognize outstanding recyclability of Toppan's packaging products



ALL PP for Retort processing Mono-material barrier packaging

It's
Retortable!!



Post Retort

OTR
cc/m2/day

0.8

30°C 70%RH

WVTR
g/m2/day

0.5

40°C 90%RH

OPP/GL Barrier PP/sealant CPP

Innovation of our Packaging Technology

GL Barrier Mono-PP for Retort Applications

TecOPP20/ GL-X-RP20/ CPP80

Post retort performance

Barrier Values

OTR	0.8 cc/ m ² / day
WVTR	0.5 g/ m ² / day

Measurement conditions: OTR: 30°C, 70% RH WVTR: 40°C, 90% H

Structure Lamination Strength

OPP/ GL-X-RP	~2.0 N/ 15mm
GL-X-RP/ CPP	~2.0 N/ 15mm

Drop Test Values

Water/ 330 ml/ 1m	5 x pass
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Pressure Test Values

50 kpa 1 min + 80 kpa 1min	pass
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➡ Toppan Inc. received prestigious PIDA Award for
“Sustainable Packaging Design of the year 2023”



Special Awards in 4 Categories:

- ① Sustainable Packaging
- ② Save Food Packaging
- ③ Accessible & Inclusive Packaging
- ④ Marketing



ALL PE for Liquid contents

Mono-material barrier packaging



All-PE Hot-Fill

OTR
cc/m²/day

0.5

30°C 70%RH

WVTR
g/m²/day

0.5

40°C 90%RH

PE/GL Barrier PE/ Sealant PE
※This is actual value

Innovation of our Packaging Technology

GL BARRIER Mono-PE for Liquid Applications

HDPE32/ GL-X-HE32/ LLDPE60 to 100

Technical performance

Barrier Values

OTR	0.5 cc/ m ² / day
WVTR	0.5 g/ m ² / day

Measurement conditions: OTR: 30°C, 70% RH WVTR: 40°C, 90% H

Structure	Lamination Strength
HDPE/ GL-X-HE	2.3~6.8 N/ 15 mm
GL-X-HE/ PE	> 10 N/ 15 mm

Sealing Strength (120°C)

33 N/ 15 mm

The values shown in this document are examples of measured values obtained in our measurement environment (including some laminated products). The values are not guaranteed values.



S
S-VALUE[®]
Packaging



- ➡ Recyclability provided by PE mono-material composition
- ➡ High barrier and suitable for boiling sterilization
- ➡ Suitable for sauces, baby food, honey, etc.



Thank You