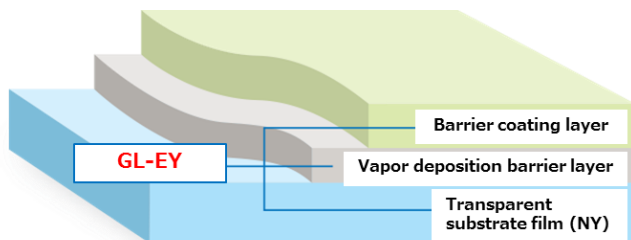


TOPPAN USA LAUNCHES **GL-EY**

WORLD'S HIGHEST LEVEL BARRIER FOR NYLON-BASED TRANSPARENT DEPOSITION FILM

● **GL-EY** structure



GL-EY (Commercialized in Asia)

- ✓ OTR: 0.5 cc/m²/day (0.03 cc/100 inch²/day), WVTR: 1.0 g/m²/day (0.06 g/100 inch²/day)
- ✓ Transparent deposition film combining high strength with excellent barrier performance.
- ✓ Can be used for hot filled foods.
- ✓ Safe for use in microwave ovens and metal detectors.
- ✓ FDA approved.

Chicago, June 11, 2018—TOPPAN USA will launch manufacturing and sales of **GL-EY** barrier film in late June.

GL-EY boasts the world's highest level barrier performance for a nylon-based transparent deposition film.

Due to its high physical strength, nylon is used in protective packaging and packaging for heavy items in the retail and food service sectors. Barrier performance is provided by adding a barrier layer (aluminum or aluminum deposited onto PET), a printing substrate, and a sealing layer. This results in packaging with a three- or four-layer laminate structure.

GL-EY achieves high physical strength and barrier performance by applying TOPPAN's outstanding transparent vapor deposition and coating technologies to a nylon substrate.

The ability to print directly on **GL-EY** means that the number of film layers can be reduced from three or four to two. This enables **reductions in material volume, environmental impact, and costs.**

GL-EY is already on sale in Asia, where it is used for sachets, as well as packaging for heavy items and medical and pharmaceutical goods. TOPPAN USA's Georgia Plant will now manufacture and sell **GL-EY** for the North, Central, and South American markets.

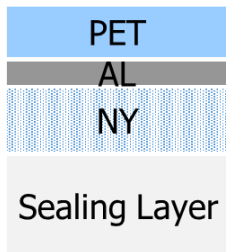
●OTR and WVTR properties

Barrier	Numbers	Conditions
OTR	0.5 cc/m ² /day (0.03 cc/100 inch ² /day)	30°C, 70%RH
WVTR	1.0 g/m ² /day (0.06 g/100 inch ² /day)	40°C, 90%RH

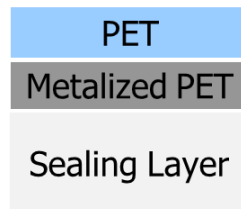


●Product concept

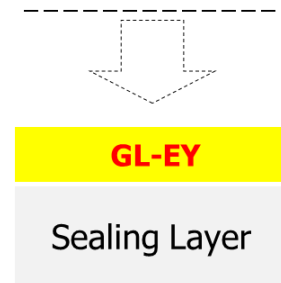
4-Ply structure



3-Ply structure



2-Ply structure



TOPPAN USA will market **GL-EY** for a range of packaging and other applications, including the following:

- Heavy items for the retail and food service industries (seasonings, wine, oil, and sauces)
- Foods that require durable packaging (sachets and liddings)
- Medical and pharmaceutical products (outer packaging for IV bags)
- Industrial materials (transparent balloons)

TOPPAN USA will expand GL FILM production to meet growing demand for flexible packaging in North, Central, and South America.

We will continue to add new products to our lineup of barrier films to respond to market needs.

●Applications of **GL-EY**



Bag-In-Box



Sauce packaging for food chains



Lidding for cups



Outer packaging for IV Bags

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