FleXFOLD LR+

Flexible hard coat for PET (50 micron) films

Description

FleXFOLD LR+ is a siloxane polymer-based coating designed for flexible PET plastic films. FleXFOLD LR+ has excellent optical properties with transparent, optically clear and flexible hard coating, which is moderate scratch and chemical resistant and easy to clean properties. FleXFOLD LR+ is capable of withstanding dynamic folding with below 1.5 mm radius and as such is ideal for foldable display and touch screen applications. Compatible with standard AF treatments.

Main Applications

- Foldable displays
- Protective overlays
- Lighting Fixtures / Luminaires

Key features

- Reduced surface reflection
- Cost savings through improved energy efficiency
- Truly flexible coating
- Scratch Resistant Hard-Coat
- Easy-to-Clean
- Chemically Resistant

Technical Background

Plastics are everywhere due to their light weight and design flexibility. However, most of the commonly used plastics are prone to reflection, resulting in increased energy consumption and reduced viewability. Optitune's FleXFOLD LR+ combines the intrinsic properties of our hard coatings with excellent optical properties based on low refractive index polymers.

How to Apply

This is a double-layer coating, TPD150 applied on top of FleXFOLD LR layer using a roll-to-roll (R2R) or sheet coating process followed by thermal and UV curing steps. Coating can be carried out using slot/die, gravure, reverse gravure, Meyer bar or other method. Plasma or corona pre-treatment may be necessary depending on substrate manufacturer grade. After final curing, a stabile coating performance is achieved.

For product sales, please contact
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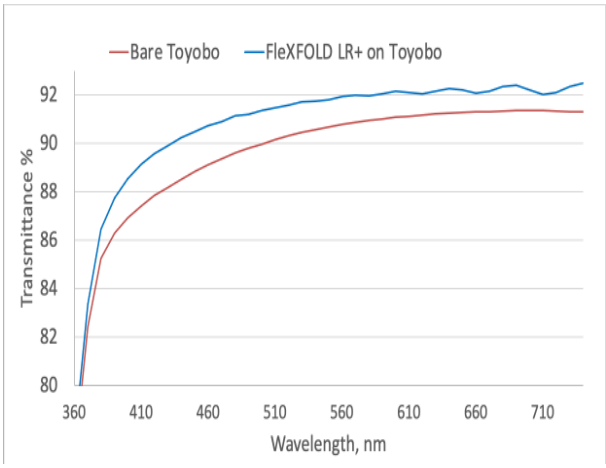
Performance on (50 micron) PET

Optical Performance	PET (bare)	PET (FleXFOLD LR+)
Transmittance % at 550 nm	90.5%	91.7%
Reflectance % at 550 nm	4.5%	3.8%
Haze Cmod	0.5	0.4
L*	95.4	96.1
a*	-0.03	-0.07
b*	0.6	0.6

Table 1. Optical performance comparison (ASTM D1003)



Graph 1. FleXFOLD LR+ increases T% across visible light spectrum on PET film

Mechanical / Physical Performance	No coating	FleXFOLD LR + (TPD*) (PET)	Standard
Pencil Hardness	< 9B	H-2H	ASTM D3363, Elcometer Tester
Adhesion	n/a	5B	ASTM D3359-09, Elcometer cross-hatch tester
Foldability	n/a	n/a	Outfolding 5 mmm (R = 2.5 mm)/Infolding 3mm (R=1.5mm)
Abrasion Resistance (steel wool)	VERY POOR	No scratches after 2000 cycles	TABER® Linear Abraser - Model 5750 1000 g, 20 x 20 mm abradant, 2" stroke, 60 cycles per minute
Abrasion Resistance (Minoan rubber)	VERY POOR	No scratches after 1200 cycles	TABER ® Linear Abraser-Model 5750, Minoan rubber 1 kg weight lead, 40 cycles / min, 1000 cycles
Water Contact Angle	70°	115°	Biolin Scientific - Attension Theta Static Water Contact Angle Measurement

Table 2. Mechanical performance of bare 50 µm PET film and FleXFOLD LR+ coated PET. *TPD150 applied on top of FleXFold LR Layer provides improved AF function.

Solution properties, storage and handling

Solution should be stored below room temperature, preferably -18°C, in a well-ventilated place. Keep containers tightly closed and protected from sources of heat and light. Shelf life is 6 months from the date of manufacturing. For working safety, consult product Material Safety Data Sheet.

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