



## FleXFOLD

Flexible hard coat for PET and CPI (50 micron) films



### Description

FleXFOLD is a siloxane polymer based coating designed for flexible PET and CPI plastic films. FleXFOLD forms highly transparent, optically clear and flexible hard coating, which is scratch and chemical resistant, easy to clean and has excellent optical properties. FleXFOLD is capable of withstanding dynamic folding with below one-millimeter 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

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

### Technical Background

Plastics are everywhere due to their light weight and design flexibility. However, most of the commonly used plastics are easily scratched, susceptible to degradation by various chemicals and suffer mechanical stress when folded to a small bending radius. Optitune's robust hard coats help circumvent these issues while delivering excellent optical properties.

### How to Apply

The solution is applied as a single-layer coating 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 stable coating performance is achieved.

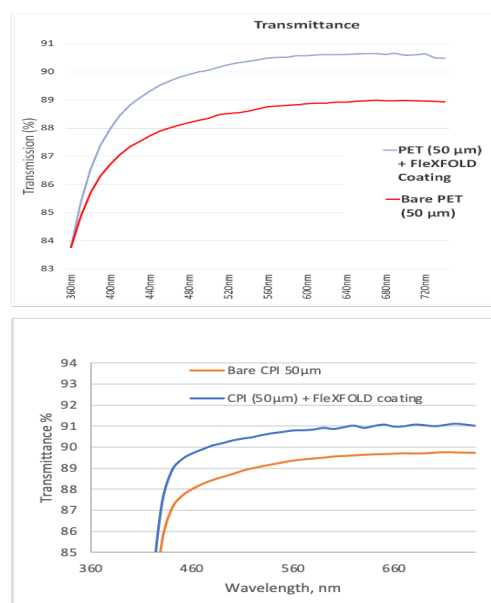


## FleXFOLD

Performance on PET and CPI (50 micron) films

| Optical Performance       | PET (bare) | PET (FleXFOLD) | CPI (bare) | CPI (FleXFOLD) |
|---------------------------|------------|----------------|------------|----------------|
| Transmittance % at 550 nm | 90.1%      | 91.2%          | 89.2%      | 90.7%          |
| Reflectance % at 550 nm   | 4.8%       | 4.5%           | 6.6%       | 4.8%           |
| Haze Cmod                 | 0.47       | 0.34           | 0.18       | 0.32           |
| L*                        | 95.4       | 96.1           | 95.6       | 96.1           |
| a*                        | -0.03      | -0.07          | -0.73      | -0.73          |
| b*                        | 0.56       | 0.63           | 2.2        | 1.97           |

Table 1. Optical performance comparison (ASTM D1003)



Graph 1. FleXFOLD increases T% across visible light spectrum in PET and CPI films

| Mechanical / Physical Performance | No coating | FleXFOLD (PET)                | FleXFOLD (CPI)                | Standard  |
|-----------------------------------|------------|-------------------------------|-------------------------------|---|
| Pencil Hardness                   | < 9B       | 2H                            | 4H                            | ASTM D3363, Elcometer Tester  |
| Adhesion                          | n/a        | 5B                            | 5B                            | ASTM D3359-09, Elcometer cross-hatch tester   |
| Foldability                       | n/a        | 100 000 cycles - PASS         | 200 000 cycles - PASS         | Outfolding 5 mm (R = 2.5 mm)<br>Infolding 3 mm (R=1.5 mm)   |
| Abrasion Resistance (steel wool)  | VERY POOR  | No scratches after 200 cycles | No scratches after 200 cycles | TABER® Linear Abraser - Model 5750<br>1000 g, 20 x 20 mm abradant,<br>2" stroke, 60 cycles per minute |
| Water Contact Angle               | 70°        | 105°                          | 105°                          | Biolin Scientific - Attension Theta<br>Static Water Contact Angle Measurement                         |

Table 2. Mechanical performance of bare 50 µm PET and CPI films.

### 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 manufacture. For working safety, consult product Material Safety Data Sheet.

The information given is based on our best knowledge at the date of issue but carries no guarantee or acceptance of responsibility. For further data on products toxicological, ecological and safety aspects, please consult the MSDS. It is the responsibility of the user of the product to ensure to satisfaction that the product is suitable for the intended purpose and methods of use. We do not accept responsibility for any harm caused by the use of this information.