



FleXHC-16

Flexible hard coat on plastic film



Description

FleXHC is a siloxane polymer solution designed for plastic substrates. FleXHC is available as a coated PET-film, and as a liquid ready-to-coat solution. FleXHC forms highly transparent, optically clear and flexible hard coating on substrates like PET films. The coating is scratch resistant, easy to clean and has excellent optical properties. FleXHC is ideal for touch screen applications.

Main applications

- Touchscreens
- Cover glass replacements
- Appliance overlays
- Automotive films
- Flexible electronics overcoats

Key features of FleXHC coating

- Scratch resistant
- Easy to clean – smudge resistant
- Superb optical clarity
- Excellent visual outlook
- Glass-like surface
- Superior chemical resistance
- Truly flexible and bendable

Technical Background

Plastics are everywhere due to their light weight and design flexibility. However, most of the commonly used plastics tend to scratch very easily and are susceptible to degrading by various chemicals. Optitune's flexible hard coats can vastly improve these issues observed in plastics without sacrificing their flexibility or optical properties.

How to Apply

The solution is applied as a single-layer coating by using 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, bar or other means of coating. After final curing, a stable coating performance is achieved. R2R processing enables coating in high volumes whereas sheet processing is easily set up for small series production and R&D purposes.

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Key properties of FleXHC-16 *		Result	Standards
Mechanical performance	Pencil Hardness	750 g / 2H	ASTM D3363 ; Elcometer tester Mitsubishi pencils
	Adhesion	5B	ASTM D3359-D9 ; Elcometer Cross-hatch tester
	Adhesion	5B	ASTM D3359-D9 ; Elcometer tape test
	Flexibility	No cracking	Bending around mandrel (diameter <0.4 cm), coating facing out
	Abrasion (steel wool)	500g / 500 cycles, No scratches, No haze changes	TABER® Linear Abraser (Abrader) - Model 5750
Optical performance	Transmittance % (550 nm)	>90 (Blank PET typically ~ 88.5-89) AR increase 1-1.5%	ASTM D1003, Konica Minolta spectrophotometer
	Visible light transmittance % (400-700 nm)	>90 (Blank PET typically ~ 88.5-89) AR increase 1-1.5%	
	Haze %	- 0.2 (Blank PET = 0.6) Haze improvement 0.4	
Environmental performance	High temp / High humidity	PASS	Environmental Chamber; T70°C : H90% (500 hrs)
	Thermal cycle	PASS	Environmental Cycling Chamber; High temp 70°C : Low temp -40°C, 27 cycles, 90 min / cycle
	UV exposure test 15 kWh	PASS	ASTM D1003, Konica Minolta spectrophotometer

* Test results reported for 7 µm coating thickness on 125 µm thick PET MELINEX ® 506, but coating up to 15 µm are possible

Solution properties, storage and handling

The solution is a clear liquid of siloxane polymer in glycol ether and alcohol solvents with a specific gravity of 0.98 kg/L (at 20°C) and with a viscosity of 5 mPas. The solution should be stored in well-ventilated place. Refrigeration to -18°C gives optimum storage stability. Shelf life is 6 months from the date of manufacturing. Keep containers tightly closed and protected from sources of heat and light. For working safety, consult product Material Safety Data Sheet.

Coated products

We also provide coated rolls with Optitune Flex-materials, see information contacts below.

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.