HC-5607

Optically Clear UV-curable Hard Coat

PRODUCT DESCRIPTION:

- Base chemistry: acrylate, radical polymerization
- UV-curing

PRODUCT USE:

- Hard coating
- Protective coating
- Binder resin for nano particle coating

FEATURES:

- High Tg,
- Fast UV-curable
- High Hardness

PROPERTIES OF CURED HC-5607 ON PET:

Process	
Solid content (%)	30
Solvent use and %	MIBK, 70%
Viscosity of 30% solution (cps, 25 °C)	3-6
Film Properties	
% Transmission	93
% Haze	0.1
Pencil Hardness on PET	3H to 4H
3H pencil with eight	300 gram
Adhesion	100/100
%T after steel wool (SW) test SW conditions: 50 g/cm^2/100 time	92
Delta Haze after SW	0.1
Surface engery mN/m^2	23
Solvent Resistance Properties	
Ethanol soak, 24 hrs (adhesion, appearance)	100/100*, O**
IPA soak, 24 hrs (adhesion, appearance)	100/100, O
Ethanol at 60°C soak, 24 hrs (adhesion, appearance)	100/100, O
Adhesion after moisture (40°C, 95% RH, 24 hrs)	100/100, O
QUV (72 hrs), yellow check	O
QUV+ ethanol soak x 72 hrs, adhesion check	100/100.O

*100/100= no delamination of the x-hatch test

**O= no delamination, no haze, no pocket and is excellent appearance

GENERAL USAGE INFORMATION:

Shipment: no restriction on shipment

Storage: After receipt in black syringes or amber HDPE bottles, room temperature storage (15-30°C) in the original container is required.

SAFETY AND HANDLING

The uncured adhesive can be cleaned with isopropyl alcohol (IPA), methyl ethyl ketone (MEK), acetone, or xylene. Avoid direct skin and eye contact. Use only in well ventilated areas. Use protective clothing, **gloves and safety goggles**. Read Safety Data Sheet before handling.

TYPICAL PROPERTIES of NEAT RESIN

Liquid	
Viscosity (cps, 25 °C)	1,000 to 1,300
Storage (°C)	20 - 25
Shelf life (15 - 25 °C)	6 months
Pot life (15 - 25 °C)	3 months
Cured film	
Shrinkage (volume, %)	7
Hardness – Shore D	90
Glass transition temperature (DMA, °C)	98-105
Refractive index of cured film (25°C)	
@ 589 nm	1.52
Coefficient of thermal expansion, 75 μm film	
below Tg (x10^{-6}), °C^{-1}	60
above Tg (x10^{-6}), °C^{-1}	120
Physical properties tested at 25°C, 50% RH (ASTM D638)	
Tensile strength, MPa	12
Elongation (%)	10
Modulus, MPa	1,000

TYPICAL PROPERTIES of COATED FILM

Viscosity (cps, 25 °C in 50% PM) 4-7

Suggested solvent: n-Butyl Acetate, propylene glycol monomethyl ether (PM or PGME), Methyl Isobutyl Ketone (MIBK), Methyl Ethyl Ketone (MEK), , IPA, Ethyl Acetate or mixture of solvents

Suggested hard coat solution for process: 25 – 50 wt % of neat HC-5607 in n-Butyl Acetate or propylene glycol monomethyl ether (PM or PGME)

Process

Film:	Plastic films (treated plastic film will enhance adhesion)
Coating:	Wire bar, roller coat, knife coat, dip coat, spin coat or spray
Pre-curing:	60 – 80 °C for 1 – 2 min, IR heating is acceptable
UV-curing:	High, medium pressure Mercury lamp or Fusion lamp
UV dose:	400 – 600 mJ/cm^2

Properties of coated film (3-5 μm)

Pencil Hardness	
TAC film (10-15 μm)	2H – 3H
PET film	3H – 4H
PC substrate	3H – 5H
PMMA substrate	4H – 5H
Adhesion to film	Excellent
Steel Wool resistance	Excellent

To achieve the optimum hardness, a dilution of 40-50% of solid and a UV dose of >500 mJ/cm^2 are required.

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