



HC-5302

Optically Clear Anti-static UV-curable Hard Coat

Features

- Anti-static, anti-fingerprint, anti-scratch and anti-fog
- High Tg
- Excellent steel wool scratch resistance
- Fast UV-curable
- High hardness

Description

- UV-curable Anti-static hard coat

Properties of HC-5302 cured film on plastic

Test parameters	HC-5302
<u>Process</u>	
Solid content (%)	30
Solvent use and %	MIBK, 70
Viscosity of 30% solution (cps, 25°C)	5
<u>Film properties</u>	
% Transmission	92
% Haze	0.1
Pencil Hardness on PMMA	5 H
5H pencil with weight	650 gram
Adhesion	100/100
% T after steel wool (SW) test SW conditions = 100 g/cm ² /100 time	92
Delta Haze after SW	0.1
Surface energy mN/m ²	22
<u>Solvent resistance properties</u>	
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) - yellowing 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

***Minimum intensity recommended for Spot lamp system: 300 mW/cm²

***Minimum intensity recommended for Flood lamp system: 125 WPI or 49 W/cm²

SAFETY AND HANDLING

The un-cured adhesive can be cleaned from apparatus with isopropyl alcohol (IPA), MIBK, methyl ethyl ketone (MEK), or commercial alcohol based cleaning solution.

Use caution in handling this material. Avoid direct skin and eye contact. Use only in well ventilated areas. Use protective clothing, gloves and safety goggles. Read [Material Safety Data Sheet](#) before handling.

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APPLICATIONS

Anti-static UV-curable hard coat for plastic film

TYPICAL PROPERTIES of NEAT RESIN

Liquid

Viscosity (cps, 25 °C)	2,000 – 3,000
Storage (°C)	20 - 25
Shelf life (15 - 25 °C)	3 months
Pot life (15 - 25 °C)	2 months

Cured film

Shrinkage (volume, %)	7
Hardness – Shore D	95
Glass transition temperature (DMA, °C)	98 - 100
Refractive index of cured film (25°C) @ 589 nm	1.525

Physical properties tested at 25°C, 50% RH (ASTM D638)

Tensile strength, MPa	14
Elongation (%)	4
Modulus, MPa	1,000

TYPICAL PROPERTIES of COATED FILM

Viscosity (cps, 25 °C in 50% IPA/Ethyl Acetate) 3-6
Suggested solvent: Methyl Isobutyl Ketone (MIBK), Methyl Ethyl Ketone (MEK), propylene glycol monomethyl ether (PM or PGME), IPA, Ethyl Acetate, or any mixture of solvents

Suggested hard coat solution for process: 40 – 50 wt. % of neat HC-5302 in **Methyl Isobutyl Ketone (MIBK)** or 1:3 ratio of IPA and Ethyl Acetate, 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 or spin coat
Pre-curing:	60 – 80 °C for 1 – 2 min, IR heating is acceptable
UV-curing:	High, medium Mercury lamp or Fusion lamp or the likes
UV dose:	400 – 600 mJ/cm ²

Properties of coated film (3-7 μm)

Pencil Hardness	
TAC film	3H – 4H
PET film	4H – 5H
PC substrate	4H – 5H
PMMA substrate	5H – 6H
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/cm² are required.

Surface Resistivity (ohm.cm @25°C, 55% relative humidity) 3.0 x 10¹⁰