Hardcoat Film
Product Datasheet

Clear Hardcoat Film

KEY FEATURES:

1. Glass-like surface
2. Optically clear
3. Super hard
4. Scratch resistant
5. Chemical resistant
6. Flexible

KEY BENEFITS:

1. Glass performance with film processing
2. Easy to clean
3. Easy to fabricate

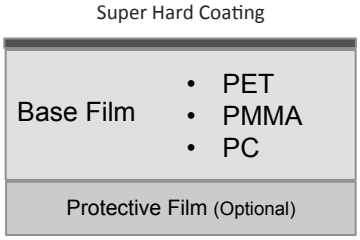
Introduction:

A crystal clear, super hard polymer film coating imparts a durable, scratch-resistant surface that looks and wears like glass when adhered to any product surface. **Hardcoat Film** is available as a coated PET, PMMA or PC film in 5 mil (125µm) and 7 mil (175µm) thicknesses.

Typical Applications:

- Touch screens
- Consumer product cover glass replacement
  - ✓ Protect non-chemically strengthened glass
  - ✓ Provide scratch resistance to PMMA and polycarbonate lens
  - ✓ Glass replacement on LCD displays
- Improved membrane and capacitive switch wear layers
- Appliance and automotive decorative films
- Point of purchase (POP) and Point of Information (POI) displays
- Many more…

Hardcoat Film Layers

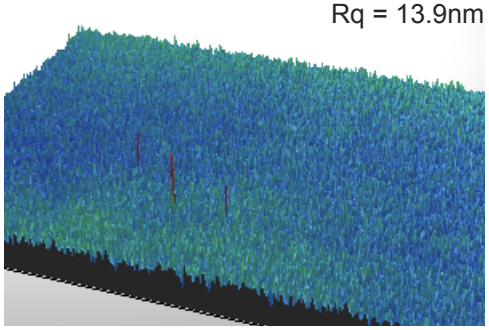


Typical Specifications:

Pencil hardness on PET:	**6H**
Refractive index:	**1.52**
Surface energy [dynes/cm]:	**~25**
Water contact angle [degree]:	**85**
Dodecane contact angle [degree]:	**25**
Substrate Thickness:	**125µ | 175µ**

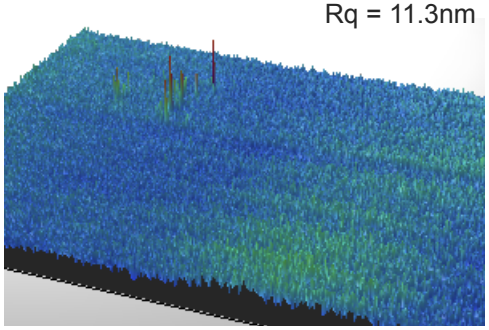
Suitable substrate: PET, Polycarbonate, PMMA

Rq = 13.9nm



Hardcoat Film on PET

Rq = 11.3nm



Leading Cover Glass

More Information: info@tollcoating.com, or 800.234.8069

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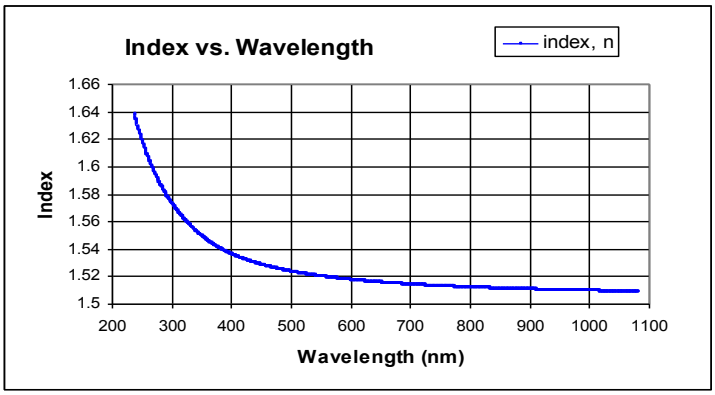
Cleaning & Maintenance

Hardcoat Film requires very little maintenance after application, however it is recommended to wipe the film with a damp microfiber cloth when needed. Glass cleaning products are also safe to use.

Typical Technical Specifications

Refractive Index



Category	Specification	Test Method	Hard Coat
Dimensions	Hardcoat Film Layer		5µm to 25µm
	Carrier Film		PET, PMMA, PC
	Carrier Film Thickness		125µm, 175µm
Optical Performance	Refractive Index		1.52 Hardcoat Film material only @ 550nm
	Transmission	ASTM D1003	> 90.5% A 2.8% improvement over uncoated PET (free standing film measurement)
	Haze	ASTM D1003	< 0.6% - base PET haze < 0.6% - Hardcoat Film on PET (free standing film measurement)
	Gloss	ASTM D523	20° = 84, 60° = 90, 85° = 92 (Gloss Units)
	Yellowness Index	ASTM E313 D65 2 degrees	YI = 0.7832 Transmission YI = -1.7558 Reflection
	Color Change for D65	Δu', Δv' for D65 (1976 CIE u', v')	Δu' = -0.0002 Δv' = -0.0006 Transmission Δu' = 0.0005 Δv' = 0.0010 Reflection
	Brightness Loss	Photometer	< 1.7% decrease when film is laminated to display
Surface Properties	Surface Energy	Contact Angle Goniometer Measurements	25 – 27 dynes/cm (water contact angle: 88±2°)
	Surface Roughness	WYKO NT1100 Optical Profiling System	Ra = 11.0nm Rq = 13.9nm
Wear	Abrasion	Wyzenbeek: Denim, 1000 cycles, 500g Taber: CS-10 wheels, 500 cycles, 500g	Transmission: 0. 4% loss after test Haze: 0.0% change after test
Scratch Resistance	Hardness	ASTM D3363	6H on PET
Bend	Mandrel, inside radius	ASTM E290-09	2cm
Thermal Stress	Operating Temperature	-20°C to 65°C, 100 cycles	Pass
	Storage Temperature	-40°C for 48 hrs	Pass
Chemical	Chemical Resistance	ASTM D1308: exposure* for 1 hour @ 70°F	Pass
	*IPA, acetone, Windex, vinegar, coffee, tea, cola, ketchup, yellow mustard		

Product Size Availability:
Master Rolls up to 58” (1475 mm)
Slitting to custom widths is available

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