

Technical Data Sheet (TDS) - DPQA0001094-001
Standard Clear Hard Coat on Polycarbonate (PC)

Material Description

Standard Clear Hard Coat applied to polycarbonate (PC) sheets provides enhanced scratch resistance, abrasion durability, and improved surface cleanability while retaining the inherent impact resistance and toughness of the base material.

This coating system is typically specified where uncoated polycarbonate would show cosmetic degradation during handling or service, but where optical neutrality and mechanical performance must be preserved.

- Polycarbonate (PC) – optical and engineering grades
- Typical thickness range: 0.5–10.0 mm
- Coating applied to one or both surfaces

Physical Properties

Property	Test Method	Units	Typical Value
Coating Thickness	Internal	μm	3–6
Adhesion (cross-hatch)	ISO 2409	Class	0–1
Pencil Hardness	ISO 15184	–	3H–4H
Surface Energy	ASTM D2578	mN/m	>38

Mechanical Properties

Property	Test Method	Conditions	Units	Typical Value
Scratch Resistance	ISO 1518	–	–	Significantly improved
Abrasion Resistance	Taber CS-10F	500 cycles	% haze	<5
Impact Resistance	ISO 180/1A	notched	kJ/m ²	Retained
Edge Chipping Sensitivity	Internal	–	–	Low (process-dependent)

Optical Properties

Property	Test Method	Conditions	Units	Typical Value
Light Transmission	ASTM D1003	3 mm	%	88–90
Haze	ASTM D1003	–	%	<1
Refractive Index	ISO 489/A	–	–	~1.586
Optical Distortion	Internal	–	–	None when controlled

Thermal Properties

Property	Test Method	Units	Typical Value
Service Temperature Range	–	°C	–40 to +120
HDT (1.8 MPa)	ISO 75	°C	~130
CTE	ASTM D696	mm/m·°C	0.065

Fire Performance

Fire performance is governed by the polycarbonate substrate, not the coating.

- Compatible with UL 94 V-2 and V-0 grades
- No adverse impact on EN 13501-1 ratings when correctly specified
- Coating does not contribute to flaming drips or smoke generation

Chemical Resistance (General)

- Resistant to:
 - Alcohols
 - Dilute detergents
 - Common cleaning agents
- Limited resistance to:
 - Oils and hydrocarbons
- Not recommended for prolonged exposure to:
 - Ketones
 - Aromatic solvents
 - Chlorinated solvents

Processing and Fabrication

Process	Compatibility
CNC machining	Excellent (post-coating preferred)
Laser cutting	Limited – validation required
Screen printing	Compatible
Digital printing	Compatible
Optical lamination	Fully compatible
Bonding systems	Must be validated

Typical Applications

- Impact-resistant display covers
- Industrial HMIs and control panels
- Transportation and rail interiors
- Medical equipment housings
- Protective viewing windows

Design Considerations

- Hard coating should be specified early in the design phase
- Edge quality and masking strategy affect cosmetic yield
- Thermal expansion of PC must be considered in bonded assemblies
- Post-coating rework is not recommended

Disclaimer

Typical values shown are not guaranteed. Final performance depends on substrate grade, coating thickness, processing conditions, and assembly validation.