

Technical Data Sheet (TDS) - DPQA0001101-001

Anti-Fog Hard Coat on Polycarbonate (PC)

Material Description

Anti-Fog Hard Coat applied to polycarbonate (PC) sheets provides a clear, abrasion-resistant surface that actively resists condensation and fogging in high-humidity or temperature-variable environments. The coating enhances visibility, cleanability, and optical stability while maintaining the base material's outstanding impact resistance, thermal performance, and dimensional stability.

This coating system is typically specified where moisture accumulation or sudden temperature shifts would lead to fogging, but where clarity, durability, and resistance to physical wear must still be maintained.

- 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	–	HB
Surface Energy	ASTM D2578	mN/m	>38

Mechanical Properties

Property	Test Method	Conditions	Units	Typical Value
Scratch Resistance	ISO 1518	–	–	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	–	–	Low

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

- Display covers used in environments prone to condensation or high humidity
- Cold room and refrigerated display panels
- Diagnostic and medical equipment exposed to warm, moist conditions
- Safety shields and enclosures in temperature-fluctuating environments
- Optical windows and visors requiring clear visibility in fog-forming scenarios

Design Considerations

- Specify anti-fog coating early to ensure correct placement relative to moisture sources
- Position coated surface facing the humid air interface for maximum effectiveness
- Avoid edge-sealing or lamination processes that trap moisture or restrict airflow
- Avoid aggressive post-processing steps that could alter the coated surface; controlled in-house machining is recommended for edge and feature definition.

Disclaimer

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