

Technical Data Sheet (TDS) – DPQA0001095-001
Standard Clear Hard Coat on PMMA (Cast Acrylic)

Material Description

Standard Clear Hard Coat applied to cast PMMA (acrylic) sheets improves surface scratch resistance, abrasion durability, and cleanability while maintaining the excellent optical clarity and UV stability of the base material.

This coating system is commonly specified where cosmetic appearance, transparency, and long-term surface quality are critical.

Substrate

- Cast acrylic (PMMA)
- Typical thickness range: 1.0–20.0 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
Pencil Hardness	ISO 15184	–	4H–6H
Surface Energy	ASTM D2578	mN/m	>38

Mechanical Properties

Property	Test Method	Conditions	Units	Typical Value
Scratch Resistance	ISO 1518	–	–	Strongly improved
Abrasion Resistance	Taber CS-10F	500 cycles	% haze	<3
Impact Resistance	ISO 179	unnotched	kJ/m ²	Substrate-limited
Edge Chipping Sensitivity	Internal	–	–	Moderate

Optical Properties

Property	Test Method	Conditions	Units	Typical Value
Light Transmission	ASTM D1003	3 mm	%	>92
Haze	ASTM D1003	–	%	<1
Refractive Index	ISO 489/A	–	–	~1.49
Optical Distortion	Internal	–	–	None

Thermal Properties

Property	Test Method	Units	Typical Value
Service Temperature Range	–	°C	–40 to +80
Vicat Softening Temp	ISO 306	°C	>110
CTE	ASTM D696	mm/m·°C	0.077

Fire Performance

Fire performance is governed by the PMMA substrate.

- Typically UL 94 HB
- Compatible with BS 476 Part 7 Class 3
- Hard coating does not materially alter fire rating

Chemical Resistance (General)

- Resistant to:
 - Dilute acids
 - Alcohols
 - Mild detergents
- Limited resistance to:
 - Oils
 - Fuels
- Not recommended for:
 - Ketones
 - Aromatic solvents
 - Chlorinated solvents

Processing and Fabrication

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

Typical Applications

- High-clarity display covers
- Optical windows and indicators
- Medical and laboratory equipment
- Scientific instrumentation
- Cosmetic-sensitive interfaces

Design Considerations

- PMMA offers superior optical clarity but lower impact resistance than PC
- Hard coating improves surface durability but not structural strength
- Stress management is critical to avoid birefringence
- Bond-line design must allow for higher CTE than glass

Disclaimer

Material properties are typical values and not guaranteed. Final performance depends on substrate grade, thickness, coating process, and finished assembly validation.