

Technical Data Sheet (TDS) – DPQA0001096-001
Anti-Glare Hard Coat on PMMA (Cast Acrylic)

Material Description

Anti-Glare Hard Coat applied to cast PMMA (acrylic) sheets provides a durable, matte-finish surface that reduces reflections and glare under ambient or direct lighting, while retaining the base material's optical clarity, UV stability, and dimensional stability. The coating also enhances abrasion resistance and surface cleanability.

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

Optical Properties

Property	Test Method	Units	Typical Value
Light Transmission	ASTM D1003	%	>90
Haze	ASTM D1003	%	8–15
Gloss (60°)	ASTM D523	GU	10–25
Refractive Index	ISO 489/A	-	~1.49
Optical Distortion	Internal	-	Low

Note

All values shown are typical and subject to variation depending on substrate grade, thickness, and processing. Anti-glare performance is optimised for typical indoor or outdoor viewing environments. Material selection should be validated through customer-specific testing.

Mechanical Properties

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

Thermal Properties

Property	Test Method	Units	Typical Value
Service Temperature Range	-	°C	-40 to +80
Vicat Softening Temperature	ISO 306	°C	>110
Coefficient of Thermal Expansion (CTE)	ASTM D696	mm/m·°C	0.077

Fire Performance

Fire performance is governed by the PMMA substrate:

- UL 94 HB (typical)
- Compatible with BS 476 Part 7 Class 3
- Hard coating does not materially alter the 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

- Air gap between display and the rear surface of the cover lens
- 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.