Technical Data Sheet (TDS) - DPQA0001093-001
Hard-Coating Selection Matrix - Display Cover Lenses

Coating types compared

- Uncoated substrate
- Standard hard coat (HC)
- Abrasion-resistant hard coat (AR-HC)
- Anti-glare hard coat (AG-HC)
- Anti-reflective hard coat (AR-HC)
- Multi-functional hard coat (AG + AR + HC)

Performance comparison

Requirement/Criteria	Uncoated	Standard HC	Abrasion-Resistant HC	AG Hard Coat	AR Hard Coat	Multi-Functional HC
Scratch resistance	Low	Good	Excellent	Good	Good	Excellent
Abrasion durability	Low	Moderate	High	Moderate	Moderate	High
Optical clarity	Excellent	Excellent	Excellent	Reduced slightly	Excellent	Very good
Glare reduction	None	None	None	High	Low	High
Reflection reduction	None	None	None	Moderate	High	High
Smudge / cleanability	Poor	Improved	Improved	Improved	Improved	Best
Chemical resistance	Substrate-limited	Improved	Improved	Improved	Improved	Improved
Environmental durability	Substrate-limited	Good	Excellent	Good	Good	Excellent
Touch compatibility	Yes	Yes	Yes	Yes	Yes	Yes
Visual haze	None	None	None	Controlled	None	Controlled
Relative cost	£	ff	fff	fff	fff	ffff

Design-driven selection guidance

Design driver	Recommended coating	Reason
Maximum scratch resistance	Abrasion-resistant HC	Highest surface durability
Outdoor or high-light use	AG-HC or Multi-functional	Reduces glare and reflections
Cosmetic-critical displays	AR-HC or Multi-functional	Preserves clarity and contrast
Frequent cleaning	Standard HC or above	Improved chemical resistance
Touch interfaces	Any HC	Protects substrate from wear
Harsh environments	Abrasion-resistant or Multi-functional	Long-term durability
Cost-sensitive designs	Standard HC	Best performance-to-cost balance

Substrate compatibility

Substrate	Coating compatibility
Polycarbonate (PC)	Excellent – strongly recommended
Acrylic (PMMA)	Excellent
Chemically toughened glass	Excellent
Coated glass	Compatible (system dependent)

Risk considerations (important)

- AG coatings introduce controlled surface texture. This can slightly reduce image sharpness.
- AR coatings improve contrast but are more sensitive to handling if not over-coated.
- Multi-functional coatings require tighter process control and inspection criteria.
- Coating performance depends on thickness, cure, and cleaning regime.

Engineering summary (use everywhere)

Hard-coating selection balances optical performance, durability, cleanability, and environmental exposure. Final coating choice is validated against the finished assembly and use conditions.