

Product Data Sheet, January 2020

Makrolon® SX Sharp

Solid polycarbonate sheet for controlling glare in lighting



Your benefits:

- extreme optical efficiency
- very good light shaping properties (de-glare) at low thickness
- good fire behaviour - self-extinguishing solution

Solid **Makrolon® SX Sharp** sheets are clear polycarbonate sheets with a microstructure optic (*patent pending*) on one side and gloss surface on the other. It is specifically designed for glare control function in lighting. **Makrolon® SX Sharp** features a combination of high light transmission and light shaping. When compared to other prismatic products, **Makrolon® SX Sharp** sheets have superior impact strength and toughness, which exceeds by far the physical properties of other thermoplastics and glass. **Makrolon® SX Sharp** sheets resist temperatures of -100 to +120 °C and have a very good flammability performance providing an additional advantage over acrylic. **Makrolon® SX Sharp** comes without UV protection and is therefore the perfect choice for a long service for indoor lighting solutions.

Applications:

- Typical applications for **Makrolon® SX Sharp** sheets are:
- LED fixtures for functional glare control lighting, luminaires, especially in office lighting
 - LED retrofits of fluorescent lamps
 - Controlled forwarding light from any kind of light source

	Test Conditions	Typical Values ⁽¹⁾	Unit	Test Method
PHYSICAL Density Water absorption saturation Water absorption equilibrium Refractive Index	water at 23°C 23°C, 50 % RH Procedure A	1200 0.3 0.12 1,586	kg/m ³ % % -	ISO 1183-1 ISO 62 ISO 62 ISO 489
MECHANICAL Tensile modulus Yield stress Yield strain Nominal strain at break	1 mm/min 50 mm/min 50 mm/min 50 mm/min	2100 >54 5,6	MPa MPa %	ISO 527-1,-2 ISO 527-1,-2 ISO 527-1,-2
THERMAL Vicat softening temperature Thermal conductivity Coefficient of linear thermal expansion	50 N; 50°C/h 23°C 23 to 55°C	145 0.2 0.7	°C W/(mK) 10 ⁻⁶ K	ISO 306 ISO 8302 ISO 11359-1,-2

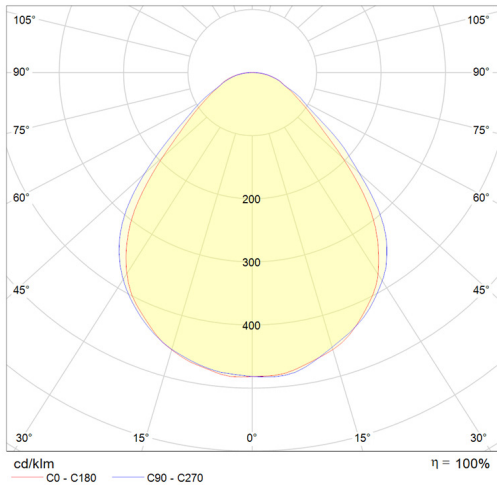
⁽¹⁾ Physical and thermal values were sourced from resin data.

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Ideas, innovative, intelligent, interesting... Exolon Group i-line represents the next generation of quality products. This seal guarantees innovative and intelligent first-class solutions at all times for a multitude of requirements.



The graph shows how the lenses control the light distribution to allow for efficient de-glaring.

Important to emphasize is that **Makrolon® SX Sharp** gives an even light intensity distribution (= low peak intensity). This can be verified by pointing a laserbeam at the sheet and looking at the transmitted image. It is not a sharp thin lined circular image, but more wide spread circular beam and partially filled inwards. This peak shielding gives a significant improved comfort. When looking into the luminaire, it gives a softer effect and prevents blinding.

Unfortunately, the current UGR calculation methods do not allow to quantify this peak shielding. However, it is an important issue and helps your customers outcome to appreciate the luminaires.

Light Transmission: $T_{D65} = 90\%$

Dimensions:

Thicknesses: Makrolon® SX Sharp will be available in 3 mm thickness

Sizes [W x L]: Makrolon® SX Sharp line will be available in 1.650 x 3.050 mm

Permanent Service Temperature:

The permanent service temperature without load is approx. 100 °C. A short term maximum of 120 °C is allowed.

Fire Rating*:

Oxygen index (LOI) 27% ISO 4589-2 Method A.