

# Makrolon® UV

## Patterned polycarbonate sheet



S Line  
Standard

### Your benefits:

- excellent weathering resistance
- extreme impact strength
- resistance to a wide range of temperatures

**Makrolon® UV** patterned sheets are clear transparent polycarbonate sheets with UV protection on both sides, and a patterned surface. They offer extreme impact strength that exceeds the physical properties of other products of their class. **Makrolon** sheets resist temperatures of -100 to +120 °C.

**Makrolon® UV clear 2099 RH** is a clear transparent sheet with high light transmission, a raindrop pattern on one side, and a haircell pattern on the other side.

### Applications:

Typical applications for **Makrolon® UV** patterned sheets include lighting fixtures, luminair covers, balcony guards, wall and door partitions. The sheets offer protection against involuntary breakage and wilfull destruction. The patterned surfaces offer a solution wherever sight screens are required to let in light.

|   | Test Conditions              | Typical values <sup>(1)</sup> | Unit                | Standard       |
|---|------------------------------|-------------------------------|---------------------|----------------|
| <b>PHYSICAL</b>                         |                              |                               |                     |                |
| Density                                 |                              | 1200                          | kg/m <sup>3</sup>   | ISO 1183-1     |
| Water absorption saturation             | water at 23 °C               | 0.30                          | %                   | ISO 62         |
| Water absorption equilibrium            | 23 °C, 50% relative humidity | 0.12                          | %                   | ISO 62         |
| Refractive index                        | Procedure A                  | 1.587                         | –                   | ISO 489        |
| <b>MECHANICAL</b>                       |                              |                               |                     |                |
| Tensile modulus                         | 1 mm/min                     | 2350                          | MPa                 | ISO 527-1,-2   |
| Yield stress                            | 50 mm/min                    | > 60                          | MPa                 | ISO 527-1,-2   |
| Yield strain                            | 50 mm/min                    | 6                             | %                   | ISO 527-1,-2   |
| Nominal strain at break                 | 50 mm/min                    | > 50                          | %                   | ISO 527-1,-2   |
| Flexural modulus                        | 2 mm/min                     | 2350                          | MPa                 | ISO 178        |
| Flexural strength                       | 2 mm/min                     | 90                            | MPa                 | ISO 178        |
| Charpy impact strength                  | 23 °C, unnotched             | non-break                     | kJ/m <sup>2</sup>   | ISO 179-1eU    |
| Charpy impact strength                  | 23 °C, 3 mm, notched         | 80P                           | kJ/m <sup>2</sup>   | ISO 179-1eA    |
| Izod impact strength                    | 23 °C, 3.2 mm, notched       | 90P                           | kJ/m <sup>2</sup>   | ISO 180-A      |
| <b>THERMAL</b>                          |                              |                               |                     |                |
| Vicat softening temperature             | 50 N, 50°C/h                 | 148                           | °C                  | ISO 306        |
| Thermal conductivity                    | 23°C                         | 0.20                          | W/(m.K)             | ISO 8302       |
| Coefficient of linear thermal expansion | 23 to 55°C                   | 0.65                          | 10 <sup>-4</sup> /K | ISO 11359-1,-2 |
| Temperature of deflection under load    | 1.80 Mpa                     | 128                           | °C                  | ISO 75-1,-2    |
| Temperature of deflection under load    | 0.45 Mpa                     | 140                           | °C                  | ISO 75-1,-2    |
| <b>ELECTRICAL</b>                       |                              |                               |                     |                |
| Electrical strength                     | 1 mm                         | 34                            | kV/mm               | IEC 60243-1    |
| Volume resistivity                      |                              | 1E14                          | Ohm.m               | IEC 60093      |
| Surface resistivity                     |                              | 1E16                          | Ohm                 | IEC 60093      |
| Relative permittivity                   | 100 Hz                       | 3.1                           | –                   | IEC 60250      |
| Relative permittivity                   | 1 MHz                        | 3.0                           | –                   | IEC 60250      |
| Dissipation factor                      | 100 Hz                       | 5 · 10 <sup>-4</sup>          | –                   | IEC 60250      |
| Dissipation factor                      | 1 MHz                        | 95 · 10 <sup>-4</sup>         | –                   | IEC 60250      |

<sup>(1)</sup> These values are measured on injection molded samples, and are not intended for specification purposes.

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Exolon Group S-Line, the standard product line, represents a range of certified quality products which offer the reliable solution for most applications.

**Light Transmission:** Test Method according to DIN EN ISO 13468.  
The stated thicknesses are not all available as standard. Please ask us for more information.  
The stated values are typical values only.

| Light transmission in %<br>at 3 mm thickness | Makrolon® UV RH |
|--|-----------------|
| clear 2099                                   | 86              |
| green 2650                                   | 67              |
| blue 2550                                    | 53              |
| bronze 2850                                  | 44              |

**Available sizes: Makrolon® UV** patterned sheets are available in thicknesses 3 – 6 mm and in following sizes; other sizes, colors and sheet thicknesses on request.

### Colors:

Makrolon® UV green 2650 R      Makrolon® UV bronze 2850 RH  
Makrolon® UV blue 2550 RH      Makrolon® UV clear 2099 RH

### Patterns:

Makrolon® UV clear 2099 RH



### Sizes (Standard):

3,050 x 2,050 mm (RH)

**Weathering Resistance: Makrolon® UV** sheets show excellent weathering resistance, which guarantees their impact strength even after many years. Since their introduction in 1989, the sheets have been examined in an intensive test program, including a real-time outdoor exposure test in a southern European climate (Bandol).

**Permanent Service Temperature:** The permanent service temperature without load is approx. 120 °C.

### Fire Rating <sup>(\*)</sup>:

| Country | Standard | Rating  | Thickness | Color         |
|---------|----------|---------|-----------|---------------|
| Europe  | EN13501  | Bs 1 d0 | 3 - 6 mm  | clear 2099 RH |

\*) Fire certificates could be limited in time and scope, always check if the mentioned certificate is valid for the purchased Polycarbonate sheet type at the date of delivery. Polycarbonate sheets may change their fire behavior due to ageing and weathering. The indicated fire rating was tested on new / unweathered Product in accordance with the indicated fire classification standards.

**Glow wire flammability index, IEC 60695-2-12, in °C <sup>(\*)</sup>:** Makrolon® UV clear 2099 RH: 960 °C at 3 mm



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