

# Makrolon® RX-Line

## Solid polycarbonate sheet for LED lighting



### Your benefits:

- extreme high light reflection and high opacity at the same time
- excellent fire properties
- extreme impact strength
- resistance to wide range of temperature

Solid **Makrolon® RX** sheets are highly reflective opaque solid polycarbonate sheets. **Makrolon® RX** is developed for applications based on LED light sources, which do not emit UV light. It offers a combination of diffuse light reflectance of incident light with the opacity and exhibits excellent fire behavior and high impact strength. Makrolon® sheets resist temperatures of -100 to +120 °C. **Makrolon® RX** sheets can be thermoformed, cut, punched or otherwise fabricated with ease.

**Makrolon® RX** is an ultra-white opaque sheet offering a combination of high light reflectance in the LED spectral range together with its very high opacity. **Makrolon® RX** exhibits high gloss surface.

**Makrolon® RX-FR** is a white opaque sheet offering high light reflection in the LED spectral range and exhibits silk-matt surface which aids the diffuse reflectance of the incident light. Highly flame-retarding **Makrolon® RX-FR** comes with a UL listed flammability rating.

### Applications:

Typical applications for **Makrolon® RX** sheets are LED light fittings and fixtures, e.g.:

- flat and thermoformed reflectors,
- components of lamp interiors,
- external (housing) parts,
- indirect lighting
- back reflectors in edge-lit panels.

	Test Conditions	Makrolon RX <sup>(1)</sup>	Makrolon RX-FR <sup>(1)</sup>	Unit	Test Method
<b>PHYSICAL</b>					
Density		1340	1340	kg/m <sup>3</sup>	ISO 1183-1
Water absorption saturation	water at 23°C	0.30	0.30	%	ISO 62
Water absorption equilibrium	23°C, 50 % RH	0.12	0.12	%	ISO 62
<b>MECHANICAL</b>					
Tensile modulus	1 mm/min	2600	2600	MPa	ISO 527-1,-2
Nominal strain at break	50 mm/min	> 50	>50	%	ISO 527-1,-2
Charpy impact strength	23°C, unnotched	non-break	non-break	kJ/m <sup>2</sup>	ISO 179-1eU
Izod impact strength	23°C, 3.2 mm, notched		15C(P)	kJ/m <sup>2</sup>	ISO 180-A
<b>THERMAL</b>					
Vicat softening temperature	50 N; 50°C/h	143	142	°C	ISO 306
Coefficient of thermal expansion	23 to 55°C	0.6	0.6	10 <sup>-4</sup> K	ISO 11359-1,-2
<b>ELECTRICAL</b>					
Electrical strength	1 mm	34	34	kV/mm	IEC 60243-1
Volume resistivity		1E14	1E14	Ohm.m	IEC 60093
Surface resistivity		1E16	1E16	Ohm	IEC 60093
Relative permittivity	100 Hz	3.1	3.1	-	IEC 60250
Relative permittivity	1 MHz	3	3	-	IEC 60250
Dissipation factor	100 Hz	5	8	10 <sup>-4</sup>	IEC 60250
Dissipation factor	1 MHz	90	90	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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Ideas, innovative, intelligent, interesting...

Bayer MaterialScience 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.

### Optical Properties:

Test Method according to EN ISO 13468-2

Makrolon® Type	RX	RX-matte	RX-UV	RX-FR
Light reflectance D65	> 96%	95%	95%	> 94%
YI D65	< 0,4	< 2	< 0,8	< 2,7
gloss60° (ISO 2813)	100	< 30	104	< 30

### Dimensions:

Thicknesses: **Makrolon® RX** line will be available in 1.0 - 4.0 mm except for RX-FR: 1.5 - 4.0 mm and RX matte 1.0 mm.

Sizes: **Makrolon® RX** line will be available in 1.250 x 2.050 mm

Upon request and quantity requirements, other dimensions can be offered

### Permanent Service Temperature:

The permanent service temperature without load is approx. 120 °C.

### Fire Rating (\*):

Sample thickness (mm)	Makrolon® RX		Makrolon® RX-FR		Makrolon® RX matte
	1.5	3.0	1.5	3.0	1.0
UL 94	V-2**	V-2**	V-0	V-0	V-2**

\*) Fire certificates are 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.

\*\*) Only indicative test result, no Yellow Card.

### Glow Wire Flammability Tests:

Test method according to IEC 60695-2-12

Glow Wire Flammability Index (GWFI):

Makrolon® RX	1 mm:	850°C
Makrolon® RX,	1.5/3.0 mm:	960°C
Makrolon® RX-FR,	1.5/3.0 mm:	960°C

Glow Wire Ignition Test (GWIT):

Makrolon® RX	1 mm	850°C
Makrolon® RX,	1.5 mm:	825°C
Makrolon® RX,	3.0 mm:	850°C
Makrolon® RX-FR,	1.5/3.0 mm:	850°C



## Bayer MaterialScience

Bayer MaterialScience GmbH  
Otto-Hesse-Straße 19/T9, 64293 Darmstadt, Germany  
Tel. +49 6151 13 03-0  
Fax +49 6151 13 03-500

[www.bayersheeteurope.com](http://www.bayersheeteurope.com)