Makrolon® RX-Line
Solid polycarbonate sheet for LED lighting

I Line
Innovative

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 Lambertian 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-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(*)	Makrolon RX-FR(**)	Unit	Test Method
PHYSICAL					
Density		1340	1340	kg/m³	ISO 1183-1
Water absorption saturation	water at 23°C	0.30	0.30	%	ISO 62
Water absorption equilibrium	23°C, 50 % relative humidity	0.12	0.12	%	ISO 62
MECHANICAL					
Tensile modulus	1 mm/min	2700	2700	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/m²	ISO 179-1eU
THERMAL					
Vicat softening temperature	50 N; 50°C/h	140	140	°C	ISO 306
Coefficient of thermal expension	23 to 55°C	0.65	0.65	10^{-4} K	ISO 11359-1,-2
ELECTRICAL					
Electrical strength	1 mm	31	34	kV/mm	IEC 60243-1
Volume resistivity		8.2 E14	6 E14	Ohm.m	IEC 60093
Surface resistivity		1 E17	5.3 E16	Ohm	IEC 60093
Relative permittivity	100 Hz	3.5	3.5	-	IEC 60250
Relative permittivity	1 MHz	3.4	3.4	-	IEC 60250
Dissipation factor	100 Hz	8	8	10^{-4}	IEC 60250
Dissipation factor	1 MHz	97	93	10^{-4}	IEC 60250

(*) RX sheet thickness 1/ 2/ 3/ 4 mm (other thickness on request)
(**) RX FR sheet thickness 1,5/ 2/ 3/ 4 mm (other thickness on request)

covestro **makrolon**®

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Ideas, innovative, intelligent, interesting... Covestro 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 DIN EN ISO 13468-2

Makrolon® Type	RX	RX-matte	RX-UV	RX-FR
Light reflectance D65	> 96%	94%	95%	> 94%
YI D65	< 2	< 3	< 3	< 4
gloss60° (ISO 2813)	< 110	< 3	110	< 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 (*):

	Makrolon® RX		Makrolon® RX-FR		Makrolon® RX matte
Sample thickness (mm)	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