

# Makrolon® AR

## Abrasion-resistant solid polycarbonate sheet



I Line  
Innovative

### Your benefits:

- extreme impact strength
- good abrasion resistance
- excellent weathering resistance
- high clarity



**Makrolon® AR** sheet is an abrasion and enhanced UV resistant polycarbonate sheet that offers glasslike hardness coupled with the impact strength of standard polycarbonate. Additionally, **Makrolon® AR** offers on both surfaces enhanced resistance against yellowing and hazing for an extended service life in high profile architectural glazing. **Makrolon® AR** has a 10-years warranty against breakage and 5-years warranty against delamination and weathering.

### Applications:

Typical applications for **Makrolon® AR** sheet include transparent sound barriers, school and hospital shelter glazing. **Makrolon® AR** is also used extensively in correctional and psychiatric facilities. Additionally, the product performs well for view windows and machine guards in harsh chemical environments. Due to its scratch-resistant coating, **Makrolon® AR** cannot be formed like other **Makrolon®** sheets.

	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
Taber abrasion resistance	Δ haze after 100 cycles (500 g CS 10F) after 500 cycles	1 – 4 4 – 9	% %	ASTM D1044 & ANSI Z26.1
<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

<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... 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.

### Light Transmission:

Test Method according to DIN 5036

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 %	3	4	5	6	8	10	12	15
Makrolon® AR clear 8099	88	87	87	86	85	83	82	80
Makrolon® AR bronze 8850	50	50	50	50	50			

### Available sizes:

**Makrolon® AR** is available in thicknesses of 3 – 15 mm and in the following sizes; other sizes, colors and sheet thicknesses on request.

### Colors:

Makrolon® AR clear 8099

Makrolon® AR bronze 8850

### Sizes:

3,000 x 2,000 mm

3,000 x 2,000 mm

### Permanent Service Temperature:

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

### Fire Rating (\*):

Oxygen index (LOI) 28%, ISO 4589-2 Method A

Country	Standard	Rating	thickness	Colour
Germany	DIN 4102	B 2	3 – 12 mm	clear 8099
Germany	DIN 5510	S3 SR2 ST2	8 – 12 mm	clear 8099
USA	UL 94	V2 HB V0	0.75 - 1.4 mm ≥ 1.5 mm ≥ 10 mm	all colours all colours clear 8099

(\*): 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.



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