

Exolon® Optica AR

High Optical Abrasion-Resistant Solid Polycarbonate Sheet



Your benefits:

- premium optical quality
- extreme impact strenght
- high abrasion resistance
- for flat applications

Exolon® Optica AR solid sheets are one-side abrasion resistant sheets for lamination with glass in security glazing. They offer superior optical properties with unrivalled low levels of distortion and visual defects. **Exolon® Optica AR** sheets have extreme impact resistance that exceeds the physical properties of other products in their class. They withstand temperatures from -100 to +120°C and are easy to machine.

Exolon® Optica AR sheets are developed for lamination with glass to create security glazing with anti-spall and abrasion resistant properties. Printing and decorating can be done on the uncoated side, with inks compatible with polycarbonate.

For lamination configurations where the Exolon sheets will be used as interlayer between glass panes, we recommend to use uncoated **Exolon® Optica LX500**

Applications of Exolon® Optica AR sheets include:

- Bullet-resistant glass-PC laminations
- Antiballistic glazing for military, police or VIP vehicles
- Forestry and agricultural vehicles
- Burglary-resistant glazing
- Security glazing in architecture
- Window glazing in electric cars, police vehicles, vans, buses and leisure vehicles
- Panoramic roofs in cars
- Visors and museum glazing

	Test Conditions	Typical values ⁽¹⁾	Unit	Standard
PHYSICAL				
Density	water at 23 °C	1200	kg/m ³	ISO 1183-1
Water absorption saturation	23 °C, 50% relative humidity	0.30	%	ISO 62
Water absorption equilibrium	Procedure A	0.12	%	ISO 62
Refractive index		1.587	–	ISO 489
MECHANICAL				
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
Strain at break	50 mm/min	120	%	ISO 527-1,-2
Flexural modulus	2 mm/min	2350	MPa	ISO 178
Flexural strength	2 mm/min	90	MPa	ISO 178
Taber abrasion resistance	Δ haze after 100 cycles (500 g CS 10F) after 500 cycles	1 – 4 4 – 9	% %	ASTM D1044 & ANSI Z26.1
THERMAL				
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 ⁻⁴ /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

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

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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.

Light Transmission: test Method according to **ASTM D1003**.

Light transmission %	3	4	5	6
Exolon® Optica AR clear 7099	91	90	90	89

Light Transmission: test method according to **DIN 5036**

The stated values are typical values only.

Light transmission %	3	4	5	6
Exolon® Optica AR clear 7099	88	87	87	86

Availability:

Exolon® Optica AR is available in thicknesses of 3 – 6 mm.

Dimensions (standard):

2000 x 2920 mm

Other sizes, sheet thicknesses or colours, please contact us.

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

Optical Properties:

The premium optical quality of **Exolon® Optica AR** is based on an extensive research and experience in the production of polycarbonate sheets. The sheets not only have extremely low distortion levels, easily passing diopter value requirements of maximum 0.06 points according to DIN 52305-A-AZ (glazing in vehicles), they also meet stringent requirements on optical defects like inclusions and transparent surface defects. The production and inspection processes are monitored by our Quality Department in line with our ISO 9001 certification.

Optical specifications:

Sample 500 x 500 mm, optical distortion.

Sheet thickness (mm)	3	4	5	6
Diopter (DIN 52305)	0.01	0.01	0.02	0.02

Maximum diopter under 55 degrees inclination with ripple perpendicular to the projected lines acc. DIN 52305.

Processing

Exolon® Optica AR has an enhanced resistance to chemicals on the coated side. It is recommended to perform preliminary testing in applications where it will come into direct contact with aggressive chemicals.

Due to its scratch resistant coating, **Exolon® Optica AR** can only be used for flat applications.



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