

Makrolon® Sheet AR

Polycarbonate

Covestro - Polycarbonates

Message:

Makrolon® AR sheet is a one or both sides hard-coated polycarbonate product that adds higher abrasion resistance and surface hardness to polycarbonate's inherent performance benefits of impact strength and clarity. The proprietary hard-coat also provides chemical resistance and long lasting outdoor weathering performance. This product is available in clear, a range of standard tints, or can be custom matched to any color. Makrolon AR sheet has a seven (7) year Limited Product Warranty against breakage, yellowing, and hazing. The terms of the warranty are available on request.

Applications

Flat architectural glazing, machine guards, and laminates

General Information			
UL YellowCard	E351891-101049030	E351891-101049035	
Features	Impact resistance, good		
	Good wear resistance		
	Good chemical resistance		
	Good weather resistance		
	Definition, high		
Uses	Laminate		
	Assembled glass		
Agency Ratings	ANSI Z 97.1		
	CPSC 16 CFR 1201 Category I		
	CPSC 16 CFR 1201 Category II		
	ICC-ES Evaluation Report ESR-2728		
	UL 972		
Appearance	Available colors		
	Clear/transparent		
Forms	Sheet		
Physical	Nominal Value	Unit	Test Method
Specific Gravity	1.20	g/cm ³	ASTM D792
Water Absorption (24 hr)	0.15	%	ASTM D570
Hardness	Nominal Value	Unit	Test Method
Rockwell Hardness			ASTM D785
Class m	70		ASTM D785
Class r	118		ASTM D785
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus	2340	MPa	ASTM D638
Tensile Strength			ASTM D638

Yield	62.1	MPa	ASTM D638
Limit	65.5	MPa	ASTM D638
Tensile Elongation (Break)	110	%	ASTM D638
Flexural Modulus	2380	MPa	ASTM D790
Flexural Strength	93.1	MPa	ASTM D790
Compressive Modulus	2380	MPa	ASTM D695
Compressive Strength	86.2	MPa	ASTM D695
Shear Modulus	786	MPa	ASTM D732
Shear Strength			ASTM D732
-- ¹	68.9	MPa	ASTM D732
-- ²	41.4	MPa	ASTM D732
Poisson's Ratio	0.38		ASTM E132
Wear resistance-Delta Haze ³	2	%	ASTM D1044
Shading Coefficient			NFRC 100-2010
Clear : 5.99 mm	0.970		NFRC 100-2010
Gray or Bronze : 5.99 mm	0.770		NFRC 100-2010
U Factor			NFRC 100-2010
Summer : 5.99 mm	0.850	BTU/hr/ft ² /°F	NFRC 100-2010
Summer : 9.53 mm	0.780	BTU/hr/ft ² /°F	NFRC 100-2010
Winter : 5.99 mm	0.920	BTU/hr/ft ² /°F	NFRC 100-2010
Winter : 9.53 mm	0.850	BTU/hr/ft ² /°F	NFRC 100-2010
Flash Ignition Temperature	440	°C	ASTM D1929
Horizontal Burn - AEB		cm	ASTM D635
Self Ignition Temperature	550	°C	ASTM D1929
Chemical Resistance	Pass		ASTM D1308
Impact	Nominal Value	Unit	Test Method
Notched Izod Impact (3.18 mm)	850	J/m	ASTM D256
Unnotched Izod Impact (3.18 mm)	No Break		ASTM D256
Instrumented Dart Impact (3.18 mm)	> 63.7	J	ASTM D3763
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load			ASTM D648
0.45 MPa, not annealed	138	°C	ASTM D648
1.8 MPa, not annealed	132	°C	ASTM D648
Brittleness Temperature	-129	°C	ASTM D746
CLTE - Flow	6.8E-5	cm/cm/°C	ASTM D696
Thermal Conductivity	0.19	W/m/K	ASTM C177
Electrical	Nominal Value	Unit	Test Method
Volume Resistivity	8.2E+16	ohms · cm	ASTM D257
Dielectric Strength (3.18 mm, in Air)	15	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
10 Hz	2.96		ASTM D150
60 Hz	3.17		ASTM D150

Dissipation Factor (60 Hz)	9.0E-4		ASTM D150
Arc Resistance			ASTM D495
-- ⁴	10.0	sec	ASTM D495
-- ⁵	120	sec	ASTM D495
Flammability	Nominal Value	Unit	Test Method
Flame Rating			UL 94
1.5 mm	HB		UL 94
10.0 mm	V-0		UL 94
Optical	Nominal Value	Unit	Test Method
Refractive Index	1.586		ASTM D542
Transmittance			ASTM D1003
3000 μm ⁶	86.0	%	ASTM D1003
3000 μm ⁷	50.0	%	ASTM D1003
3000 μm ⁸	50.0	%	ASTM D1003
3000 μm ⁹	18.0	%	ASTM D1003
NOTE			
1.	Ultimate		
2.	Yield		
3.	100 Cycles, CS-10F Wheel, 500 g load		
4.	Steel Strip Electrode		
5.	Tungsten Electrodes		
6.	Clear		
7.	I30 Gray		
8.	K09 Bronze		
9.	I35 Dark Gray		

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