

# Makrolon® LD Product Data

## LIGHT DIFFUSING

Makrolon® LD sheet is a polycarbonate product designed with an advanced light diffusion technology that provides excellent light uniformity without sacrificing light transmission. The proprietary diffuser technology eliminates visible hot spots from pinpoint LED lights in typical flat and formed sign applications. LD is available in a range of standard sign colors and can be custom matched to any color. Makrolon LD is easy to form, fabricate, and decorate, and has excellent impact strength and dimensional stability. The product's UV resistance technology assures long lasting outdoor weathering performance. Makrolon LD is offered with a ten (10) year limited product warranty against breakage. The terms of the warranty are available upon request.

## APPLICATIONS

Flat and formed sign faces, channel letters, and lighting fixture covers.

## TYPICAL PROPERTIES\*

Property	Test Method	Units	Values
<b>PHYSICAL</b>			
Specific Gravity	ASTM D 792	-	1.2
Light Transmission, B27 white @ 0.118"	ASTM D 1003	%	27
Light Transmission, B48 white @ 0.118"	ASTM D 1003	%	50
Water Absorption, 24 hours	ASTM D 570	%	0.15
<b>MECHANICAL</b>			
Tensile Strength, Ultimate	ASTM D 638	psi	9,500
Tensile Strength, Yield	ASTM D 638	psi	9,000
Tensile Modulus	ASTM D 638	psi	340,000
Elongation	ASTM D 638	%	110
Flexural Strength	ASTM D 790	psi	13,500
Flexural Modulus A	STM D 790	psi	345,000
Compressive Strength	ASTM D 695	psi	12,500
Compressive Modulus	ASTM D 695	psi	345,000
Izod Impact Strength, Notched @ 0.125"	ASTM D 256	ft·lbs/in	16
Izod Impact Strength, Unnotched @ 0.125"	ASTM D 256	ft·lbs/in	No Break
Instrumented Impact @ 0.125"	ASTM D 3763	ft·lbs	>47
Shear Strength, Ultimate	ASTM D 732	psi	10,000
Shear Strength, Yield	ASTM D 732	psi	6,000
Shear Modulus	ASTM D 732	psi	114,000
Rockwell Hardness	ASTM D 785	-	M70 / R118
<b>THERMAL</b>			
Coefficient of Thermal Expansion	ASTM D 696	in/in/°F	3.75 x 10 <sup>-5</sup>
Coefficient of Thermal Conductivity	ASTM C 177	BTU·in/hr·ft <sup>2</sup> ·°F	1.35
Heat Deflection Temperature @ 264 psi	ASTM D 648	°F	270
Heat Deflection Temperature @ 66 psi	ASTM D 648	°F	280
Brittleness Temperature	ASTM D 746	°F	-200



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## ELECTRICAL

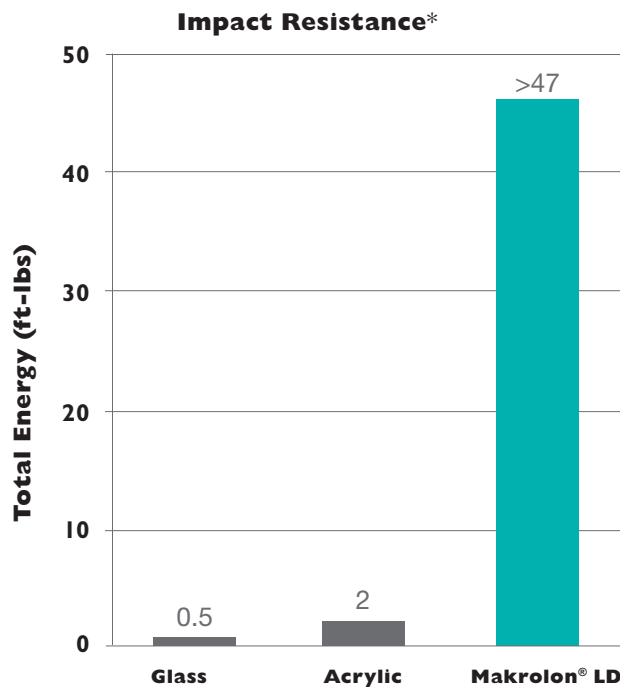
Dielectric Constant @10 Hz	ASTM D 150	–	2.96
Dielectric Constant @ 60 Hz	ASTM D 150	–	3.17
Volume Resistivity	ASTM D 257	Ohm·cm	8.2 x 10 <sup>16</sup>
Dissipation Factor @ 60 Hz	ASTM D 150	–	0.0009
Arc Resistance – – –			
Stainless Steel Strip Electrodes	ASTM D 495	Seconds	10
Tungsten Electrodes	ASTM D 495	Seconds	120
Dielectric Strength, in air @ 0.125"	ASTM D 149	V/mil	380

## FLAMMABILITY

Horizontal Burn,	AEB ASTM D 635	in	<1
Flame Class @ 0.093"	UL 94	–	V2
Flame Class @ 0.236"	UL 94	–	V0

\*Typical Properties are not intended for specification purposes

\*Some values based upon clear sheet



\* Instrumented Impact per ASTM D 3763, sample thickness is 0.125" nominal.

## REGULATORY CODE COMPLIANCE AND CERTIFICATIONS

UL 879:	Electric Sign Components	UL File	#E146154
UL 94:	Flammability	UL File	#E351891



The manner in which you use and the purpose to which you put and utilize our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether our products, technical assistance and information are suitable for your intended uses and applications. This application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by us. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale which are available upon request. All information and technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information. Any statement or recommendation not contained herein is unauthorized and shall not bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with any claim of any patent relative to any material or its use. No license is implied or in fact granted under the claims of any patent.