

# Makrolon Marine 5 Product Details

## Flexible Enclosure

Makrolon® Marine 5 sheet is a polycarbonate product designed for applications demanding high optical clarity, exceptional durability, and longevity against the harsh marine environment. State-of-the-art manufacturing processes provide low optical distortion for clear views and unparalleled sight lines. The advanced hard coat technology provides excellent abrasion resistance, enhanced clarity, chemical resistance, and long lasting outdoor weathering performance. Makrolon Marine 5 maintains its impact strength in extreme temperatures to -30°F. Makrolon Marine 5 can be easily cut and sewn, making this a more versatile option versus glazing materials that require gluing.

Makrolon Marine 5 is offered with a five (5) year Limited Product Warranty against micro-cracking, yellowing, and breakage. The terms of the warranty are available upon request.

## Applications

Marine flexible enclosures, tent and awning enclosures

## Typical Properties\*

Property	Test Method	Units	Values
<b>PHYSICAL</b>			
Specific Gravity	ASTM D 792	-	1.2
Light Transmission, Clear @ 0.060"	ASTM D 1003	%	90
Light Transmission, Clear @ 0.080"	ASTM D 1003	%	89
Chemical Resistance	ANSI Z26.1	-	Pass
Taber Abrasion, 100 Cycles, Delta Haze CS-10F Wheel @ 500 g load	ASTM D 1044	%	2
<b>MECHANICAL</b>			
Tensile Strength, Ultimate	ASTM D 638	psi	9,500
Modulus of Elasticity	ASTM D 638	psi	340,000
Flexural Strength	ASTM D 790	psi	13,500
Compressive Strength	ASTM D 695	psi	12,500
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 @ 0.60"	ASTM D 3763	ft-lbs	21
Instrumented Impact @ 0.80"	ASTM D 3763	ft-lbs	33
Instrumented Impact @ 0.125"	ASTM D 3763	ft-lbs	47
Instrumented Impact @ 0.125", @ -30°F	ASTM D 3763	ft.lbs	50
Poisson's Ratio	ASTM E 132	-	0.38
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>
Heat Deflection Temperature @ 66 psi	ASTM D 648	°F	280

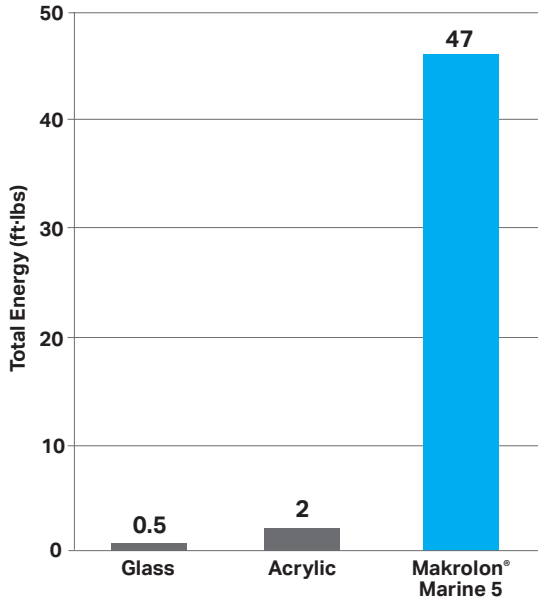
\*Typical properties are not intended for specification purposes



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## Impact Resistance\*



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

## Chemical Resistance\*

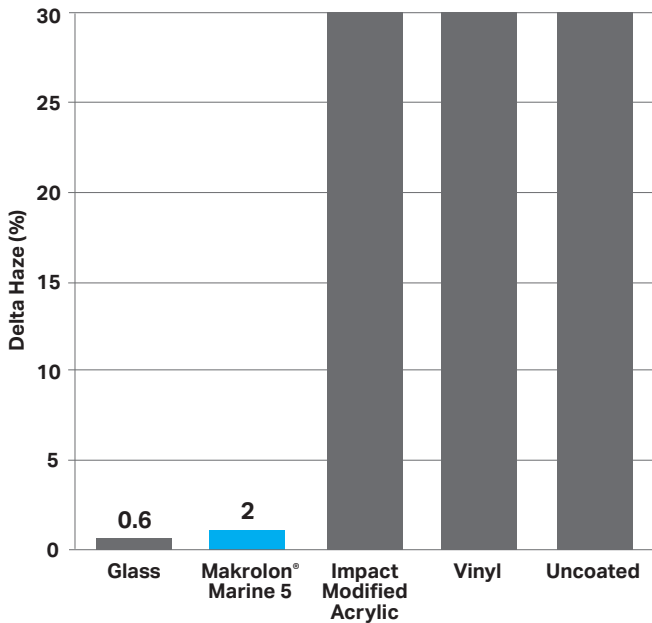
Chemical Tested	Resistance Time
Acetone	>24 hrs
Antifreeze (50/50)	>24 hrs
Benzene	>24 hrs
Bleach (Clorox concentrated)	>24 hrs
Denatured Alcohol	>24 hrs
Di (2-ethylhexyl) phthalate	>24 hrs
Diesel Oil	>24 hrs
Isopropyl Alcohol (IPA)	>24 hrs
Kerosene	>24 hrs
Methyl Alcohol	>24 hrs
Methyl Butyl Ketone	>24 hrs
Methyl Ethyl Ketone	>24 hrs
Methylene Chloride	>24 hrs
Naphthalene, 1-bromo-	>24 hrs
Potassium Hydroxide - Lye (10%)	>24 hrs
Sodium Hydroxide (10%)	>24 hrs
Toluene	>24 hrs
Turpentine	>24 hrs
Unleaded Gasoline (87 Octane)	>24 hrs
Vinegar	>24 hrs
Xylene	>24 hrs
Acids:	
Hydrochloric Acid (20%)	>24 hrs
Sulfuric Acid (20%)	>24 hrs

\*Tested in accordance to ASTM D 1308-02

Always keep hazardous chemicals away from uncoated edge of Makrolon Polycarbonate

\*Taber Abrasion per ASTM D 1044, 100 cycles, CS-10F wheels at 500 g load

## Abrasion Resistance\*



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, information and recommendations 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 Covestro.

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.

With respect to health, safety and environment precautions, the relevant Safety Data Sheets (SDS) and product labels must be observed prior to working with our products.

