



made of  
**makrolon**<sup>®</sup>  
High-tech plastic from Bayer

# Rail Glazing Product Data

## MAKROLON<sup>®</sup> TG

**MAKROLON<sup>®</sup> TG** polycarbonate sheet is a transparent, optically clear, virtually unbreakable sheet featuring a leading edge clear surface hard-coat technology for enhanced abrasion and UV resistance. Selecting polycarbonate means you have chosen a material none tougher in the industry.

MAKROLON TG polycarbonate sheet is formulated to meet the stringent Federal Railroad Administration requirements for type I and II ballistic and impact performance criteria for side facing and rear facing windows.

MAKROLON TG polycarbonate sheet material was specifically developed for FRA window applications in gauges from .236-.500.

### Typical Physical Properties

Property	Test Method	Units	MAKROLON
<b>PHYSICAL</b>			
Specific Gravity	ASTM D792	-	1.2
Light Transmission, Clear 1/8"	ASTM D1003	%	86
Light Transmission, Gray/Bronze	ASTM D1003	%	50
Chemical Resistance	ANSI Z26.1	-	pass
Taber Abrasion, 100 Cycles CS10F, Delta Haze	ASTM D1044	%	1-2
<b>MECHANICAL</b>			
Tensile Strength, Ultimate	ASTM D638	psi	9,500
Flexural Strength	ASTM D790	psi	13,500
Compressive Strength	ASTM D695	psi	12,500
Modulus of Elasticity	ASTM D638	psi	340,000
Poisson's Ratio	-	-	0.38
Izod Impact Strength, Notched @ 1/8"	ASTM D256	Ft-lbs/in	12-16
Izod Impact Strength, Unnotched @ 1/8"	ASTM D256	Ft-lbs/in	60 (No failure)
Instrumented Impact, 1/8"	ASTM D3763	Ft-lbs	>45
<b>THERMAL</b>			
Coefficient of Thermal Expansion	ASTM D696	In/in/F	3.75 x 10 <sup>-5</sup>
Heat Deflection Temperature, @ 264 psi	ASTM D648	F	270
Heat Deflection Temperature, @ 66 psi	ASTM D648	F	280
<b>ELECTRICAL</b>			
Dielectric Constant, @ 10 Hz	ASTM D150	-	2.96
Dielectric Constant, @ 60 Hz	ASTM D150	-	3.17
Volume Resistivity	ASTM D257	Ohm-cm	8.2 x 10 <sup>16</sup>
Dissipation Factor, @ 60 Hz	ASTM D150	-	0.0009
Dissipation Factor, @ 1 MHz	ASTM D150	-	0.01
Arc Resistance	ASTM D495	Seconds	
Stainless Steel Strip Electrode			10-11
Tungsten Electrodes			120
Dielectric Strength, in air, 125 mils	ASTM D149	V/mil	380
<b>FLAMMABILITY</b>			
Horizontal Burn, AEB	ASTM D635	Inches	<1
Ignition Temperature, Self	ASTM D1929	F	1070
Ignition Temperature, Flash	ASTM D1929	F	870
UL 94, Clear @ .060"	UL 94	-	HB
UL 94, Clear @ .118"	UL 94	-	V1
UL 94, Clear @ .375"	UL 94	-	V0

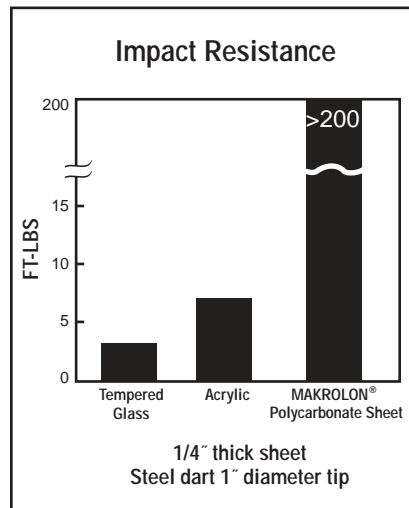
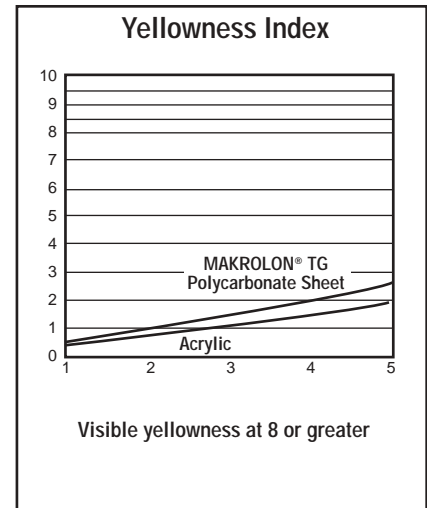
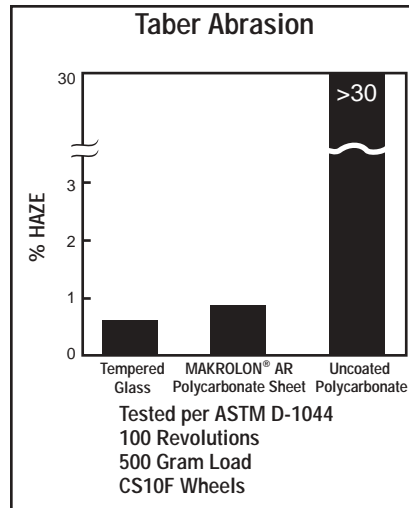
*Sheffield Plastics Inc. will not be responsible for the use of this information relative to actual application. Users must make their own determination of its suitability for their specific application. No warranty is made for the fitness of any product, and nothing herein waives any of the seller's conditions of sale.*

# Product Data

## HIGH IMPACT STRENGTH

MAKROLON TG polycarbonate sheet is virtually unbreakable with 250 times the impact strength of float glass and 30 times that of acrylic.

## MAKROLON® TG



### Chemical Resistance

ASTM D-1308

Chemical	Resistance Time
Acetone	>24 hrs.
Ethylene Dichloride	>24 hrs.
Unleaded Gasoline	>24 hrs.
Hydrochloric Acid (10%)	>24 hrs.
Methyl Alcohol	>24 hrs.
Methylene Chloride	>24 hrs.
Methyl Ethyl Ketone	>24 hrs.
Nitric Acid (100%)	<24 hrs.
Sodium Hydroxide (10%)	<24 hrs.
Sulfuric Acid (1%)	>24 hrs.
Toluene	>24 hrs.
Isopropanol	>24 hrs.
Kerosene	>24 hrs.

*For additional information please call the Sheffield Plastics Customer Service at: 800-254-1707.*



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