

MAKROLON[®] WG

MAKROLON[®] WG (Window Grade) polycarbonate engineering plate is an amorphous thermoplastic material made from Bayer's MAKROLON resin.

This "None Tougher" polycarbonate engineering plate offers extremely high impact strength, high modulus of elasticity, and outstanding dimensional stability. With good mechanical and electrical properties and a 270°F (132°C) heat deflection temperature at 264 psi, MAKROLON WG polycarbonate engineering plate demonstrates low levels of black specks or other impurities.

APPLICATIONS

MAKROLON WG is a versatile product that meets the needs for a wide range of market segments. Typical applications include sight windows for tanks/vessels, viewport windows, medical parts and some military applications. Featuring excellent clarity and dimensional stability, as well as good dielectric properties and thermal performance, MAKROLON WG polycarbonate engineering plate is fabrication friendly, making it ideal for use in a variety of lightly fabricated parts. MAKROLON WG polycarbonate engineering plate is available from stock in a clear color and UV-stabilized. It can also be custom ordered in FDA grade.

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.

Typical Physical Properties

Property	ASTM Test Method	Units	MAKROLON [®] WG
MECHANICAL			
Compressive Strength	D695	psi	12,500
Flexural Modulus	D790	psi	340,000
Flexural Strength @ yield	D790	psi	14,200
Hardness - Rockwell M	D785	-	M70
Hardness - Rockwell R	D785	-	R118
Izod Impact Notched	D256	ft-lbs/in	17
Izod Impact Un-notched	D4812	ft-lbs/in	No Break
Tensile Elongation @ break	D638	%	110.0
Tensile Elongation @ yield	D638	%	7.0
Tensile Strength @ break	D638	psi	9,500
Tensile Strength @ yield	D638	psi	9,000
THERMAL			
Coefficient of Thermal Expansion	D696	in/in/°F	3.8 x 10 ⁻⁵
Flammability Rating-UL 94 @ .750"-2.000"	-	-	V0
Heat Deflection Temperature @ 66 psi	D648	°F	280
@ 264 psi	D648	°F	270
Thermal Conductivity	C177	(BTU-in)/(hr-ft ² -°F)	1.32
ELECTRICAL			
Dielectric Constant @ 60 Hz	D150	-	3.17
@ 1 MHz	D150	-	2.96
Dielectric Strength	D149	V/mil	380
Dissipation Factor @ 60 Hz	D150	-	0.0009
@ 1 MHz	D150	-	0.0100
Volume Resistivity	D257	Ohm-cm	>1.0 x 10 ¹⁷
OPTICAL			
Haze	D1746	%	1.0
OTHER			
Specific Gravity	D792	-	1.20
Water Absorption @ 24 hours	D570	%	0.150
@ Equilibrium	D570	%	0.35

Product Data

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Fabrication Guidelines

Cutting A circular saw blade with carbide teeth utilizing the “triple chip” tooth design is the preferred method of cutting MAKROLON WG polycarbonate engineering plate. Table or overhead panel saws are normally used. Circular saws should be run in the speed range of 6000-8000 ft./min. Blades for cutting 3/32” and thicker material should have 3-5 teeth per inch. The hook or rake angle should be 10°–15°.

Cautions

The following are suggested guidelines or concerns regarding machining/working with MAKROLON WG polycarbonate engineering plate or any other engineering plastics.

1. Thermal expansion is up to 10 times greater with plastics than metals.
2. Plastics will lose heat more slowly than metals.
3. Avoid localized overheating.
4. Softening/melting temperatures of plastics are much lower than metals.
5. Coolants are generally not required for most machining operations (not including drilling).
6. General purpose petroleum-based cutting fluids, although suitable for many metals and plastics, may contribute to stress cracking of amorphous plastics such as MAKROLON WG polycarbonate engineering plate.

***For additional information please call the Sheffield Plastics
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