

TUFFAK WG polycarbonate engineering plate is an amorphous thermoplastic sheet. It offer extremely high impact strength, high modulus of elasticity, outstanding dimensionals stability and good mechanical and electrical properties. TUFFAK WG demonstrates low levels of black specks or other impurities.

APPLICATIONS

Sight windows for tanks/vessels, viewport windows, medical parts and military applications

Typical Properties			
Property	Test Method	Units	Values
PHYSICAL			
Specific Gravity	ASTM D792	-	1.2
Water Absorption, 24 hrs	ASTM D570	%	0.15
Poisson's Ratio	ASTM E132	-	0.38
MECHANICAL			
Tensile Strength, Ultimate	ASTM D638	psi	9,500
Tensile Strength, Yield	ASTM D638	psi	9,000
Tensile Modulus	ASTM D638	psi	340,000
Elongation	ASTM D638	%	110
Flexural Strength	ASTM D790	psi	13,500
Flexural Modulus	ASTM D790	psi	345,000
Compressive Strength	ASTM D695	psi	12,500
Compressive Modulus	ASTM D695	psi	345,000
Shear Strength @ Yield	ASTM D732	psi	6,000
Shear Strength, Ultimate	ASTM D732	psi	10,000
Shear Modulus	ASTM D732	psi	114,000
Rockwell Hardness-	ASTM D785	-	M70/R118
THERMAL			
Coefficient of Thermal Expansion	ASTM D696	in/in/°F	3.75 x 10 ⁻⁵
Coefficient of Thermal Conductivity	ASTM C177	BTU·in/hr·ft ² ·°F	1.35
Heat Deflection Temperature @ 264 psi	ASTM D648	°F	270
Heat Deflection Temperature @ 66 psi	ASTM D648	°F	280
Brittleness Temperature	ASTM D746	°F	-200
ELECTRICAL			
Dielectric Constant, @10Hz	ASTM D150	-	2.96
Dielectric Constant @ 60Hz	ASTM D150	-	3.17
Volume Resistivity	ASTM D257	Ohm·cm	8.2 x 10 ¹⁶
Dissipation Factor @ 60 Hz	ASTM D150	-	0
Dielectric Strength, in air @ 0.125"	ASTM D149	V/mil	380
OPTICAL			
Haze	D1746	%	1.0
FLAMMABILITY			
UL 94 @ 0.75"-2.00"	UL94	-	VO

FABRICATION GUIDELINES

Cutting

A circular saw blade with carbide teeth utilizing the “triple chip” tooth design is preferred method of cutting TUFFAK WG polycarbonate sheet. Table or overhead panel saws are normally used. Circular saws should be run in the speed range of 6,000 - 8,000 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 and working with TUFFAK WG polycarbonate sheet or 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.