

TUFFAK WG Polycarbonate



Window Grade

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

Applications

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

Typical Properties

Property	Test Method	Units	Values
PHYSICAL			
Specific gravity	ASTM D 792	-	1.2
Water absorption, 24 hours @ 73°F	ASTM D 570	%	0.15
Poisson's ratio	ASTM E 132	-	0.38
Haze	ASTM D 1746	%	1
MECHANICAL			
Tensile strength, break	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	ASTM D 790	psi	345,000
Compressive strength	ASTM D 695	psi	12,500
Compressive modulus	ASTM D 695	psi	345,000
Shear strength, break	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
THERMAL			
Coefficient of thermal expansion	ASTM D 696	in/in/°F	3.75 x 10 ⁻⁵
Coefficient of thermal conductivity	ASTM C 177	BTU-in/hr-ft ² -°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
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 ¹⁶
Dissipation factor @ 60 Hz	ASTM D 150	-	0.0009
Dielectric strength, in air @ 0.125"	ASTM D 149	V/mil	380
FLAMMABILITY			
Flame class @ 0.060"	UL 94	-	HB

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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 TUFFAK WG polycarbonate sheet. 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 TUFFAK WG polycarbonate sheet or any other engineering plastics.

1. Thermal expansion is up to 10 times greater than 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

Regulatory code compliance and certifications

Polycarbonate sheet classification	A-A-59502	Type 1, Class 1
Polycarbonate resin classification	ASTM D 3935	PC0116
Flammability – Plastic component	UL 94	UL File #E87887

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use are beyond our control. We recommend that the prospective user determines the suitability of our materials and suggestions before adopting them on a commercial scale.