



POLYCARBONATE

Also Known As (common industry trade names):

Cyrolon . Excelon PC . Hyzod . Hyzod TI Lexan . Macrolux . Makrolon . Polycarb . Polygal . Polygal (Twin-Wall) . Tuffak . Tuffak A . Tuffak CM-II . Tuffak XL . Zelux

Description:

Polycarbonate offers all of the clarity and beauty of acrylic with an impact resistance that is unparalleled in glazing materials. Polycarbonate is used in applications such as machine guards and security windows that require the optical clarity and the assurance of safety. Polycarbonate is relatively light weight and is fairly rigid. Polycarbonate is easily sawed, machined, heat formed, cold formed, cemented and painted. Polycarbonates are high-molecular weight, amorphous engineering thermoplastics that have exceptionally high-impact strength over a wide temperature range. Polycarbonate resins are produced in the U.S. principally by General Electric Co (Lexan) and by Bayer Corp (Makrolon). The Dow Chemical Co has recently become the third producer of polycarbonate resins (Calibre). The resins are available in general-purpose and specialty grades that provide specific properties or processing characteristics. These include flame-retardant formulations, grades that meet FDA regulations for parts used in food-contact and medical applications, and glass-reinforced grades for applications requiring maximum strength and stiffness. The natural resin is water-clear and transparent. Polycarbonates are generally unaffected by greases and oils. However, they are attacked by most aromatic solvents, esters and ketones which cause crazing and cracking in stressed parts. Grades with improved chemical resistance are available and special coatings can be applied to provide additional chemical protection.

Applications:

Bus Shelters . Control Panels . Displays
Display Panels . Glazing . Green Houses
Machine Guards . Motorcycle Windscreens
Museum Displays . Medical Components
Nameplates . Sun Rooms . Security
Switch Overlays . Sky Lights
Signs . Vending Machine Panels

Characteristics / Enhancements

Varieties / Available Grades:

20% Glass Filled
Abrasion Resistant
Aircraft
*Film
Flame Retardant
Bullet Resistant
Twin Wall
Textured
UV Resistant

Standard Shapes and Sizes (please call for custom sizes not listed):

Sheet: From 48" x 96" (standard) up to 96" x 144", also avail. in rolls

Rod: 3/16" Diameter up thru 8" Diameter

Tube: Please call for availability

Film: *Readily available in many thicknesses and textures - please call

Other: Extruded "multi-wall" sheets for glazing applications

Dallas, Texas (Corporate Offices)
Houston, Texas
Brandon, Mississippi

phone 800-782-1836 / 214-239-3870
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**TECANAT™
TECANAT™
GF20**

TECANAT™ TECANAT™ GF20

TECANAT™ is a natural unfilled polycarbonate that has transparency, excellent impact strength and tensile properties. TECANAT™ GF20 is a 20% glass-reinforced polycarbonate with higher temperature and tensile properties

than the unfilled TECANAT™. Polycarbonate is an amorphous thermo-plastic. Good electrical properties combined with superior impact strength and moderate chemical resistance make this product

widely accepted for numerous applications. This product is offered in many popular rod and plate sizes.

- Superior impact strength
- Outstanding mechanical strength and stiffness
- Excellent dimensional stability
- Good electrical properties
- Transparency
- Good machinability

Typical applications include business equipment where gears, rollers, internal mechanical parts, connectors and relays are required. The automotive industry uses polycarbonate materials for pumps, valves, light bezels and instrument panels. It also is applicable to many other industries.

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TYPICAL PROPERTY VALUES

	PROPERTIES	ASTM Test Method	Units	TECANAT™	TECANAT™ GF20
PHYSICAL	Density	D792	lbs/in ³	0.0430	0.0434
	Specific Gravity	D792	g/cc	1.19	1.2
	Water Absorption, @ 24 hours, 73°F	D570	%	0.15	0.16
	@ Saturation, 73°F	D570	%	0.35	0.29
MECHANICAL	Tensile Strength @ Yield, 73°F	D638	psi	8,000	16,000
	Tensile Modulus	D639	psi	300,000	860,000
	Elongation @ Break, 73°F	D638	%	50	5
	Flexural Strength, 73°F	D790	psi	14,200	19,000
	Flexural Modulus, 73°F	D790	psi	340,000	798,000
	Compressive Strength	D695	psi	-	-
	Izod Impact Strength, 73°F	D256	ft-lbs/in	1.7	2.06
	Rockwell Hardness, 73°F	D785	M (R) Scale	70 (118)	-
	Shure Hardness	-	D Scale	-	-
	Wear Factor Against Steel, 40 psi, 50 fpm	D3702	in ³ x 1 / hr PV	2500 x 10 ⁻¹⁰	120 X 10 ⁻¹⁰
	Static Coefficient of Friction	D3702	-	-	-
Dynamic Coefficient of Friction, 40 psi, 50 fpm	D3702	-	0.38	0.22	
THERMAL	Heat Deflection Temperature @ 66 psi	D648	°F	280	298
	@ 264 psi	D648	°F	270	295
	Coefficient of Linear Thermal Expansion	D696	in/in/°F	3.8 x 10 ⁻⁵	1.5 X 10 ⁻⁵
	Maximum Servicing Temperature, Intermittent	-	°F	275	270
	Long Term	UL746B	°F	240	266
	Specific Heat	-	BTU/lb-°F	0.30	-
	Thermal Conductivity	-	-	1.32	-
	Vicate Softening Point	-	°F	310	329
Melting Point	D2133	°F	-	-	
Flammability	UL94	-	HB	-	
ELECTRICAL	Surface Resistivity	D257	ohm/square	-	-
	Volume Resistivity	D257	ohm-cm	1.0 x 10 ¹⁷	1.0 x 10 ¹⁷
	Dielectric Strength	D149	V/mil	380	490
	Dielectric Constant, @ 60 Hz, 73°F, 50% RH	D150	-	3.2	3.17
	@ 1 MHz	D150	-	2.96	3.13
	@ 20 GHz	D150	-	-	-
	@ 30 GHz	D150	-	-	-
Dissipation Factor, @ 60 HZ, 73°F	D150	-	0.0009	0.0009	

This information is only to assist and advise you on current technical knowledge and is given without obligation or liability. All trade and patent rights should be observed. All rights reserved. Data obtained from extruded shapes material. TECANAT™-Ensinger Ind.

MATERIAL AVAILABILITY

Rods: Diameters: 3/16" to 4-3/4" thickness, 10' length
5" and greater thickness, 5' length
Plates: 1/4" to 4" thickness inclusive are 2' x 4'

Primary Specification (Resin) (Typical)

TECANAT™: ASTM-D-3935 PC0110B34720

TECANAT™ GF20: ASTM-D-3935 PC0110G20A00000

Shapes Specification (Typical)

ASTM-D-6098 S-PC0110

ASTM-D-6098 S-PC0100G20

Profiles, tubes, and special sizes are custom-produced on request.



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