

Polycarbonate Solid Sheet

- Virtually unbreakable
- High resistance to weathering
- Easily Fabricated and installed
- Low Flammability
- Excellent sound insulation
- High light transmission
- High impact strength-Hail proof
- Low temperature performance-will not brittle
- UV resistant

Polycarbonate sheet finds extensive use in building and construction. Because of the high impact strength and clarity polycarbonate can replace glass for many applications.

Available in solar gray, solar bronze as well as clear. Standard widths are 48,60 and 72 inches. Standard lengths are 60 and 120 inches . Thickness of 1/32 inch to 1 /2 inch are available for extruded grades. Molded grades are available up to 4” thickness.

TYPICAL PROPERTIES OF POLYCARBONATE

PROPERTIES	TEST	UNIT	VALUE
PHYSICAL			
Specific Gravity	ASTM D792	lb/ft ³	74.85
Water absorption 24 hr., 73.4 °F	ASTM D570	lb	22.03 x 10 ⁻⁶
OPTICAL			
Light Transmission	ASTM D1003	%	Up to 88
Refractive Index	ASTM D542A	-	1.586
Haze	ASTM D1003	%	0.5 - 2.0
MECHANICAL			
Tensile Strength at yield	ASTM D638	Psi	>8700
Tensile Strength at break	ASTM D638	Psi	> 10140
Tensile Modulus	ASTM D638	Psi	333173
Elongation at yield	ASTM D638	%	7
Elongation at break	ASTM D638	%	> 100
Flexural strength	ASTM D790	Psi	13,500
Flexural Modulus	ASTM D790	Psi	340,000
Compressive strength	ASTM D695	Psi	13,500
Izod notched impact strength	ASTM D256	j/m	750
Izod impact strength (1/8", notched)	ASTM D256	ft-lbs/inch of notch	16
Charpy Impact	ASTM D256	ft-lbs/1/2x1"section	No break (0.125" specimen)
THERMAL			
Vicat Softening Temp B/120	ASTM D1525	°F	≥ 293
Heat deflection temperature(DTUL) (260 Psi)	ASTM D648	°F	≥ 275
ELECTRIC			
Dielectric constant	ASTM D149	volts/mil	380@77°F (0.125" specimen)
Volume resistivity at 73.4 °F	ASTM D257	ohm/cm	10 ¹⁶

Properties measured on injection molded sample.

PROPERTIES

TECHNICAL VALUES

PROPERTY

TEST

UNIT

VALUE

PHYSICAL

Density

ASTM D792

lb/ft³

73.66-76.16

LIGHT TRANSMISSION

ASTM D1003

Clear

%

≥ 80

Bronze

%

50 ± 3

Solar Bronze

%

35 ± 3

Opal

%

50 ± 3

Gray

%

50 ± 3

Green

%

Custom

Others

%

Custom

MECHANICAL

Tensile strength at yield

ASTM D638

psi

≥ 11,600

Elongation at break

ASTM D638

%

≥ 80

Dart Impact strength

ft-lb

≥ 147.5

THERMAL

Vicat softening temperature (B/120)

ASTM D1525

°F

≥ 293

Heat deflection temperature (261 psi)

ASTM D648

°F

≥ 275

DIMENSIONAL TOLERANCE

Thickness

Up to 0.118"

%

± 10

Above 0.118"

%

± 5

Length

Up to 118

inch

-0, +0.4

118.1" to 196.8

inch

-0, +1.0

196.9" to 236"

inch

-0, +1.6

Width

inch

-0, +0.2

Deviation between diagonals

Up to 49.0" width

inch

≤ 0.3

49.1" to 81" width

inch

≤ 0.6

Warpage

(On a sample of 20" length & full widths)

Extrusion Direction (Length)

inch

≤ 0.4

Extrusion Direction (Width)

inch

≤ 2.0

WEATHERABILITY (as per request)

Standard Sheet

UV Enriched

Weather protected (One/both sides)

Co-extruded UV layer

MASKING

PE or Paper with EX-CEL® running tape

All properties measured on extruded sheet sample.

Polycarbonate Tube Sizes

ID	OD	Wall	Approx. Lbs./ft.
1/4	3/8	1/16	0.0320
3/8	1/2	1/16	0.0450
1/2	5/8	1/16	0.0570
5/8	3/4	1/16	0.0700
3/4	7/8	1/16	0.0830
3/4	1	1/8	0.1790
7/8	1	1/16	0.0960
1	1 1/8	1/16	0.1090
1	1 1/4	1/8	0.2300
1 1/8	1 1/4	1/16	0.1210
1 1/4	1 1/2	1/8	0.2810
1 3/8	1 1/2	1/16	0.1470
1 1/2	1 3/4	1/8	0.3320
1 5/8	1 3/4	1/16	0.1720
1 3/4	2	1/8	0.3830
1 7/8	2	1/16	0.2000
2	2 1/4	1/8	0.4340
2 1/8	2 1/4	1/16	0.2240
2 1/4	2 1/2	1/8	0.4850
2 3/8	2 1/2	1/16	0.2490
2 1/2	2 3/4	1/8	0.5360
2 5/8	2 3/4	1/16	0.2750
2 3/4	3	1/8	0.5870
2 7/8	3	1/16	0.3000
3	3 1/8	1/16	0.3130
3	3 1/4	1/8	0.6390
3 1/4	3 1/2	1/8	0.6900
3 3/4	4	1/8	0.7920
5 3/4	6	1/8	1.2000

Product Data Sheet **POLYCARBONATE**

Superior impact and toughness characterize HYDEX 4301 polycarbonate and 4320BK, 20% glass filled polycarbonate rod and slab.

PRODUCT DESCRIPTION

HYDEX 4301 is a natural unfilled polycarbonate that has transparency, excellent impact strength and tensile properties. HYDEX 4320BK is a 20% glass filled polycarbonate with higher temperature and tensile properties than the unfilled 4301, it is supplied in a black color.

Polycarbonate is an amorphous thermoplastic. 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 slab sizes.

NOTE: This data sheet shows both 20% glass filled and a unfilled grade of polycarbonate. Additional loading levels of glass filler may be available on a custom basis.

PROPERTIES

Engineering thermoplastic with an excellent combination of physical properties:

- Superior Impact
- Outstanding Mechanical Strength and Stiffness
- Excellent Dimensional Stability
- Good Electrical Properties
- Transparency
- Good Machinability

TYPICAL APPLICATIONS

- Business Equipment
 - Gears
 - Rollers
 - Internal Mechanical Parts
 - Connectors
 - Relays
- Automotive
 - Pumps
 - Valves
 - Light Bezels
 - Instrument Panels

PHYSICAL PROPERTIES	ASTM	UNITS	HYDEX 4301 (unfilled)	HYDEX 4320BK (filled – 20% glass)
• Specific Gravity	D792	—	1.20	1.35
• Water Absorption (24-hours)	D570	%	.15	.16
• DTUL, 66 psi	D648	°F	280	300
• CTE, Flow – 40 to 200° F	E381	in./in. °F	3.75	1.49
• Izod Impact (Unnotched)	D256	ft•lb/in.	60	19
• Izod Impact (Notched)	D256	ft•lb/in.	14	2
• Falling Dart Impact	D3029	ft-lbs	125	4
• Tensile Strength, Break	D638	psi	9500	16,000
• Tensile Elongation, Break	D638	%	110	4-6
• Tensile Modulus	D638	psi	345,000	860,000
• Flexural Strength	D790	psi	13,500	19,000
• Flexural Modulus	D790	psi	340,000	800,000
• Compressive Strength	D695	psi	12,500	16,000
• Hardness, Rockwell M scale	D785	—	70	91
• Flammability	UL94	—	V-2	V-1

POLYCARBONATE

HYDEX™ 4301, 4320BK ROD AND SLAB

ELECTRICAL PROPERTIES	ASTM	UNITS	4301	4320BK
• Volume Resistivity	D257	ohm – cm	1.0E17	1.0E17
• Dielectric Strength in air, 0.125 in.	D149	V/mil	380	490
• Dielectric Constant, 60 Hz	D150	—	3.17	3.17
• Dielectric Constant, 1mHz	D150	—	2.96	3.13
• Dissipation Factor, 60 Hz	D150	—	.0009	.0009
• Dissipation Factor, 1 mHz	D150	—	.0100	.0073

PROPERTY COMPARISONS

