

Physical Properties of ACP Noxtat Base Substrate Screen Materials - (.236” thickness)

Property(a)	ASTM Method	Typical Value (.236”Thickness)(b)	
Mechanical			
Specific Gravity	D 792	1.19	
Tensile Strength	D 638	10,000 psi	(69 M Pa)
Elongation, Rupture		4.20%	
Modulus of Elasticity		400,000 psi	(2800 M Pa)
Flexural Strength (Rupture)	D 790	16,500 psi	(114 M Pa)
Modulus of Elasticity		475,000 psi	(3300 M Pa)
Compressive Strength (Yield)	D 695	18,000 psi	(124 M Pa)
Modulus of Elasticity		430,000 psi	(2960 M Pa)
Shear Strength	D732	9,000 psi	(62 M Pa)
Impact Strength		0.4 ft.lbs/in.of	notch
Izod Milled Notch	D 256	(21.6 J/m	of notch)
Rockwell Hardness	D785	M-94	
Barcol Hardness	D 2583	49	
Residual Shrinkage(c)(Internal Strain)	D 702	2%	
Optical (Clear Material)			
Refractive Index	D 542	1.49	
Light Transmission, Total	D 1003	92%	
UV Transmission		0 at 320	nanometers
Haze		Less than 1%	
Thermal			
Forming Temperature	—	340-380°F	(170-190°C)
Deflection Temperature			
under load,264 psi	D 648	210°F (99°C)	
Vicat Softening Point	D 1525	239°F (115°C)	
Maximum Recommended Continuous			
Service Temperature	—	180°F	(d)(82°C)
Coefficient of Linear Thermal Expansion	D 696	0.000040 in/in-°F	(0.000072 m/m-°C)
Coefficient of		1.3 BTU/(Hr)	(Sq.Ft.) (°F/in.)
Thermal Conductivity (k-Factor)	Cenco-Fitch	(0.19 w/m.K)	
Flammability (Burning Rate		1.2 in/min.	
3mm thickness)	D 635	(30.5	mm/min.)
Self-Ignition Temperature	D 1929	910°F(490°C)	
Specific Heat @ 77°F	—	0.35 BTU/(lb.)	(°F)
		(1470 J/Kg.k)	
Smoke Density Rating (3mm thickness)	D 2843	11.40%	
Electrical			
Dielectric Strength			
Short Time (0.125”-thickness)	D 149	430 volts/mil	(17 KV/mm)
Dielectric Constant			
60 Hertz	D 150	3.5	
1,000 Hertz		3.2	
1,000,000 Hertz		2.7	
Dissipation Factor			
60 Hertz	D 150	0.06	
1,000 Hertz		0.04	
1,000,000 Hertz		0.02	
Volume Resistivity	D 257	1.6 x	1016ohm-cm

<u>Water Absorption</u>	Surface Resistivity	D 257	1.9 X 10 ¹⁵ ohms	
	24 hrs @ 73°F	D 570	0.20%	
	Weight Gain during Immersion		0.20%	
	Soluble Matter Lost		0.00%	
	Water Absorbed		0.20%	
<u>Long Term Water Absorption</u>	Dimensional Change during Immersion		0.20%	
	Weight Gain during Immersion	D 570		
	7 days		0.50%	
	14 days		0.60%	
	21 days		0.80%	
	35 days		1.00%	
<u>Odor Taste</u>	48 days		1.10%	
		—	None	
		—	None	

NOTES:

(a) Typical values: should not be used for specification purposes.

(b) Values shown are for 6mm thickness unless noted otherwise. Some values will change with thickness.

(c) Difference in length and width, as measured at room temperature, before and after heating above 300°F.

(d) It is recommended that temperatures not exceed 150°F for continuous service, or 170°F for short, intermittent use.

Expansion and Contraction

Like most other plastics, ACP Base substrate sheet will expand 3 times as much as metals and 8 times as much as glass. The designer should be aware of this rather large coefficient of expansion. A 48" panel will expand and contract approximately .002" for each degree fahrenheit change in temperature. In outdoor use, where summer and winter temperatures differ as much as 100°F, a 48" sheet will expand and contract approximately 3/16". Glazing channels must be of sufficient depth to allow for expansion as well as for contraction.

ACP Base substrate sheet also absorbs water when exposed to high relative humidities, resulting in expansion of the sheet. At relative humidities of 100%, 80%, and 60%, the dimensional changes are 0.6%, 0.4% and 0.2%, respectively.

Flammability

ACP Base substrate sheet is a combustible thermoplastic. Precautions should be taken to protect the material from flames and high heat sources. ACP Base substrate sheet usually burns rapidly to completion if not extinguished. The products of combustion, if sufficient air is present, are carbon dioxide and water. However, in many fires sufficient air will not be available and toxic carbon monoxide will be formed, as it is from other combustible materials. We urge good judgment in the use of this versatile material and recommend that building codes be followed carefully to ensure it is used properly.

Other properties related to flammability:

- Burning rate is 1.2 inches per minute (for 3 mm thickness) according to ASTM D 635.
- Smoke density: Measured by ASTM D 2843 is 11.4%.
- Self-ignition temperature is 910°F (488°C) when measured in accordance with ASTM D 1929.

While these test data are based on small scale laboratory tests frequently referenced in various building codes, they do not duplicate actual fire conditions.

ACP Base substrate sheet meets the requirements of the following building codes for use as a Light Transmitting Plastic:

NES (See National Evaluation Services, Inc., Report # NER-582)

ICBO (See ICBO Evaluation Services, Inc., Evaluation Report #3715-CC2 Classification)

BOCA and SBCCI (Accept National Evaluation Services, Inc., Report # NER-582)

Heat Resistance

ACP Base substrate sheet can be used at temperatures from -40°F (-40°C) up to +200°F (93°C), depending on the application. It is recommended that temperatures not exceed 150°F for continuous service, or 170°F for short, intermittent use. Components made of ACP Base substrate sheet should not be exposed to high heat sources such as high wattage incandescent lamps, unless the finished product is ventilated to permit the dissipation of heat.

Thermal Shock and Stresses

ACP Base substrate sheet is more resistant than glass to thermal shock and to stresses caused by substantial temperature differences between a sunlit and a shaded area of a window, or by temperature differences between opposite surfaces of a window.