

PC-300[™] Polycarbonate Static Dissipative Plastic

Description

PC-300[™] Polycarbonate is a plastic sheet product designed to control static electricity for a wide range of end uses. It is a premium quality polycarbonate sheet which has been surfaced with SciCron Technologies proprietary, clear, C-300[™] static dissipative surfacing. This unique technology prevents charge generation on the sheet surfaces, thereby controlling particulate attraction and preventing electrostatic discharge (ESD) events. This performance is permanent and totally independent of humidity. **PC-300 Polycarbonate** offers exceptional design versatility since it fabricates simply, is light in weight and is available in large sheet sizes. It also exhibits superior impact resistance and flame spread properties, plus excellent clarity, chemical resistance, and mar resistance.

Applications

PC-300 Polycarbonate resists tribocharging under all circumstances and cannot generate a charge when properly grounded. This makes it ideal for use in manufacturing and assembly operations for charge sensitive electronic components where it can help prevent both immediate and latent ESD caused defects. Since it resists charge build-up it does not attract contaminants, so it can also help prevent contamination-related rejects in ultra-clean manufacturing operations. Consequently, it is suitable for use in the semi-conductor, electronic, and micro-manufacturing industries. Typical applications include; guards, covers, windows, doors, and access panels for electronic equipment, assembly machines and instruments; conveyor line covers; transparent room partitions; process equipment enclosures; and mini-environment glazing panels. The product also has many general industrial uses, including protection for static charge sensitive manufacturing devices and control of spark discharge in explosive environments.

Fabrication

PC-300 Polycarbonate is easily fabricated into flat surface configurations using the same equipment and fabrication techniques generally employed with unsurfaced polycarbonate sheet products. It should not be used for heat formed bent configurations since the hard, cured C-300 surface is not designed for heat bending. When solvent welding, it is necessary to remove the C-300 surface mechanically to achieve a good bond. For more information on fabrication refer to SciCron Technologies Technical Information Bulletin No. SP-01.

Features and Benefits

- *Cannot be tribocharged when properly grounded*
Prevents build-up of static charge and accumulation of harmful contamination.
- *Electrostatic decay in less than 0.05 second per Federal Test Standard 101C, Method 4046.1*
Results in rapid static dissipation without arcing.
- *Surface resistivity of $10^6 - 10^8$ ohms per square*
Provides for ESD control without the need for ionization.
- *Permanence in static dissipation performance*
Avoids cost of application of temporary topical anti-stats.
- *Humidity independent static charge control*
Avoids inconvenience of maintaining high levels of humidity and damage caused by such humidity.
- *Advanced technology, uniform surface treatment*
Avoids conductive discontinuities (charged "hot spots") often found with non-uniform temporary topical anti-stats.
- *Superior impact resistance*
Provides exceptional shatter resistance for safety.
- *Superior flame spread properties*
Provides additional protection for equipment in a fire.
- *Hard, mar resistant, durable surface*
C-300 surface, harder than the base plastic, reduces risk of damage to the sheet surfaces.
- *Superior chemical resistance*
Reduces risk of solvent or chemical surface damage.
- *Excellent clarity*
Premium optical quality polycarbonate with clear C-300 surface minimizes visible distortion.

Availability

PC-300 Polycarbonate is available in clear and transparent gray and bronze tints. Other colors are available by special order.

Standard Dimensions (Nominal)

Thickness: 3mm (1/8"), 4.5mm (3/16"), 6mm (1/4"), 9mm (3/8"), 12mm (1/2") plus films 10-90 mils

Standard Sheet Size: 48" x 96"

Other sizes and thicknesses available upon request.

Made in USA

The information and statements contained herein are believed to be accurate, however, users should perform their own testing and verification to determine the durability, applicability and suitability of the products for their own purposes. NOTHING CONTAINED HEREIN SHALL BE CONSTRUED AS A REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, or as permission, inducement, or recommendation to practice any patented invention without license. IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY EXCLUDED. While SciCron Technologies' surface is more mar resistant than the original substrate, the term "Permanent" or "Permanence" is not intended as a guarantee of durability in any particular application. It is used to distinguish SciCron Technologies' surface from topical anti-stats which must be reapplied on a regular basis.

PC-300™ Polycarbonate

Typical Physical Properties (Typical but not guaranteed values for 0.25 inch material)

Property	Test Method	Units	PC-300 Polycarbonate
Physical			
Specific Gravity	ASTM D792	--	1.20
Pencil Hardness	ASTM D3363	Hardness Scale	B
Mechanical			
Tensile Strength	ASTM D638	psi	9,500
Ultimate Elongation	ASTM D638	%	100
Tensile Modulus	ASTM D638	psi	340,000
Flexural Strength	ASTM D790	psi	13,500
Flexural Modulus	ASTM D790	psi	340,000
Compressive Strength	ASTM D695	psi	12,500
Izod Impact Strength (milled notch)	ASTM D256	ft-lb/inch of notch	16
Thermal			
Deflection Temperature (264 psi load)	ASTM D648	°F	270
Vicat Softening Point	ASTM D1525	°F	310
Maximum Continuous Service Temperature	--	°F	180
Coefficient of Thermal Expansion	ASTM D696	in/in/°F	3.8×10^{-5}
Coefficient of Thermal Conductivity	Cenco-Fitch	BTU•in/hr•ft ² •°F	1.35
Flammability			
Horizontal Burn (Flame Spread)	ASTM D635	in/min	Less than 1.0
UL 94 Rating	UL 94	UL Classification	V-2 0.118 - 0.236 in V-0 > 0.236 in
Optical			
3mm Transparent Clear Transmittance - Total Haze	ASTM D1003	%	75
	ASTM D1003	%	Less than 3.0
Electrical			
Surface Resistivity	ASTM D257	ohms/sq	$10^6 - 10^8$
Surface Resistance	EOS/ESD S11.11	ohms	$10^5 - 10^7$
Electrostatic Decay	FTS 101C, Method 4046.1*	sec	Less than 0.05

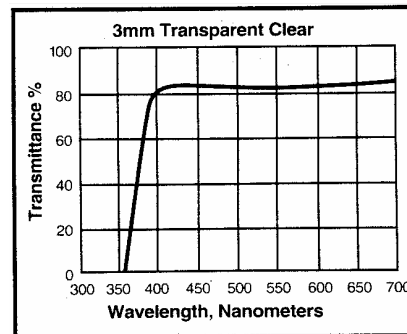
* Federal Test Standard 101C, Method 4046.1 as described in EIA-541, Appendix F, Measurement of Electrostatic Decay Properties of Dissipative Planar Materials

Chemical Resistance ASTM D543

Samples immersed in the specified chemicals for 24 hours at room temperature and visually examined.

Chemical	Surface Attack	Visual Evaluation
Deionized Water	None	Clear
30% Sodium Hydroxide	None	Cloudy
30% Sulfuric Acid	None	Clear
30% Nitric Acid	Some Pitting	Clear
48% Hydrofluoric Acid	Pitted Coating	Clear
Methanol	Slight Pitting	Clear
Ethanol	None	Clear
Isopropyl Alcohol	None	Clear
Acetone	Severe Pitting	Opaque
Methylene Chloride	Sample Dissolved	Sample Dissolved

Light Transmission Spectral Analysis



Precautions:

- Polycarbonate plastic is a combustible thermoplastic. Avoid exposure to flame and excessive heat. Observe fire precautions appropriate for comparable forms of wood and paper.
- For building applications, comply with applicable code regulations.
- Clean with soap and water. Do not use abrasives. Avoid inappropriate contact with solvents.