

AC-300™ Acrylic Static Dissipative Plastic

Description

AC-300™ Acrylic is a plastic sheet product designed to control static electricity for a wide range of end uses. It is a premium quality acrylic 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. **AC-300 Acrylic** offers exceptional design versatility since it fabricates simply, is light in weight and is available in large sheet sizes. It also exhibits excellent optical properties, chemical resistance, surface hardness and mar resistance.

Applications

AC-300 Acrylic 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; covers, windows, doors, and access panels for electronic equipment, machines and instruments; fabricated desiccators, cabinets, and boxes; transparent room partitions and pass-thru modules; 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

AC-300 Acrylic is easily fabricated into flat surface configurations using the same equipment and fabrication techniques generally employed with unsurfaced acrylic 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.
- *Excellent optical properties*
C-300 surface provides excellent clarity for optimum use of available light.
- *Superior chemical resistance*
Reduces risk of solvent or chemical surface damage.
- *Hard, mar resistant, durable surface*
C-300 surface, harder than the base plastic, reduces risk of damage to the sheet surfaces.
- *Superior fabrication characteristics*
Results in optimum workability during part fabrication.

Availability

AC-300 Acrylic, in cell cast type, is available in clear and a variety of standard transparent colors including tints which filter wave-lengths that can interfere with processing operations. White translucent and colored opaque grades are also available. Continuously cast and extruded types are available in some sizes and thicknesses upon request.

Note: Cell cast is a premium form of acrylic plastic but it has a wider thickness variation than other acrylic types. *Therefore, continuously cast or extruded material should be specified if a narrow thickness tolerance range is required.*

Standard Dimensions (Nominal)

Thickness: 3mm (1/8"), 4.5mm (3/16"), 6mm (1/4"), 9mm (3/8"), 12mm (1/2") - Note: 9mm and 12mm - cell cast only.

Standard Sheet Size: 48" x 96"

Other sizes and thicknesses, including oversize sheets, 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.

AC-300™ Acrylic

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

Property	Test Method	Units	AC-300 Acrylic
Physical			
Specific Gravity	ASTM D792	--	1.19
Pencil Hardness	ASTM D3363	Hardness Scale	5H
Mechanical			
Tensile Strength Ultimate	ASTM D638	psi	10,000
Elongation	ASTM D638	%	4.2
Tensile Modulus	ASTM D638	psi	400,000
Flexural Strength	ASTM D790	psi	16,500
Flexural Modulus	ASTM D790	psi	475,000
Compressive Strength	ASTM D695	psi	18,000
Izod Impact Strength (milled notch)	ASTM D256	ft-lb/inch of notch	0.4
Thermal			
Deflection Temperature (264 psi load)	ASTM D648	°F	210
Vicat Softening Point	ASTM D1525	°F	239
Maximum Continuous Service Temperature	--	°F	180
Coefficient of Thermal Expansion	ASTM D696	in/in/°F	3.5×10^{-5}
Coefficient of Thermal Conductivity	Cenco-Fitch	BTU•in/hr•ft ² •°F	1.3
Flammability			
Horizontal Burn (Flame Spread)	ASTM D635	in/min	1.1
UL 94 Rating of the Uncoated Substrate	UL 94	UL Classification	HB
Optical			
3mm Transparent Clear Transmittance - Total	ASTM D1003	%	80
Haze	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

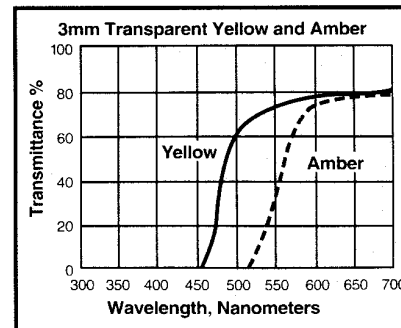
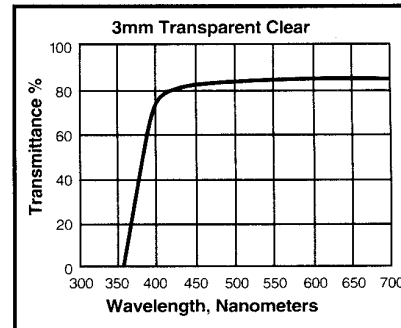
* Federal Test Standard 101C, Method 4046.1 as described in EIA-541, Appendix F, Measurement of Electrostatic Decay Properties of Dissipative Planar Materials

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	Clear
30% Sulfuric Acid	None	Clear
30% Nitric Acid	Slight Pitting	Clear
48% Hydrofluoric Acid	Severe Attack	White, Rubbery
Methanol	Slight Pitting	Clear
Ethanol	None	Clear
Isopropyl Alcohol	None	Clear
Acetone	Severe Pitting	Coating Clear-Plastic Attacked
Methylene Chloride	Sample Dissolved	Sample Dissolved

Light Transmission Spectral Analysis



Precautions:

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