Product Data - ESD Acrylic

Description

Antistatic (ESD) acrylic sheets are coated with a transparent metal/plastic material that will permanently prevent formation of static electricity on the surface. The surface has excellent mar and abrasion resistance. Resistance to charge generation, and superior static decay characteristics and cannot be tribocharged.

The product displays excellent control of both electrostatic discharge (ESD) and particulate attraction. Permanent characteristics are not affected by humidity.

Applications

Antistatic (ESD) acrylic plastic is a sound choice for manufacturing applications where effects of ESD could cause rejects or hidden latent damage to sensitive electronic devices. This product is widely used in the semi-conductor, electronic and micro-manufacturing industries.

It is also used in other industrial applications such as screen assembly, packaging, explosive environments where static discharge must be prevented and applications where sensitive process instrumentation and equipment must be protected from static charge.

The acrylic sheet may be fabricated into a wide variety of shapes using the same equipment used for uncoated sheet products. The product is not suitable, however, for most heat-formed configurations because the hard cross-linked polymer surface is not designed for heat bending.

Generally, you may use the same types of fabrication procedures such as cutting and drilling that you would use for uncoated acrylic plates.

When gluing, it is necessary to mechanically remove the coating surface to insure a good bond. More information about fabrication is provided in a Technical Information Bulletin.

Some applications have included covers, guards, access panels, machine windows and doors, static control shields, glove boxes, electronic equipment, process instrumentation, conveyor line covers, cleanroom windows and doors, partitions, and pass through modules.

Features

Electrostatic decay: Less than 0.05 seconds per Federal Test Standard 101C, Method 4046-1. Static decay is only 25% of the standard 2-second maximum. Indicates that product performance will meet or exceed all generally accepted industry specifications.

Surface resistivity: Standard surface resistivity of 10^6 to 10^8 ohms per square plus optional availability of a greater range if needed. Assures ESD control in a wide range of applications without the need for ionization.

Static dissipation: Permanent static dissipation performance. Save high costs of periodic application of temporary topical anti-static coatings.

Humidity: Static charge control not affected by humidity. Reduce costs of humidification – and costs of damage if the humidifier system fails.

Uniform surface treatment: No conductive discontinuities, typical in topical anti-static treatments or inferior sheet products that may cause charged “hot spots.”

Superior impact resistance: Minimizes damage from handling and physical abuse.

Optical properties: Excellent clarity for see through applications.

Tough abrasion-resistant surface: The coated surface is harder than the base plastic while protecting the sheet surface.

Powerful chemical resistance: Reduces damage from solvents and other chemicals.

Rigidity: Extremely rigid even under heat. High thermal resistance features self-extinguishing capabilities equivalent to UL rating 94 V-0 and a flash point of 480 °F and self-ignition of 700 °C.

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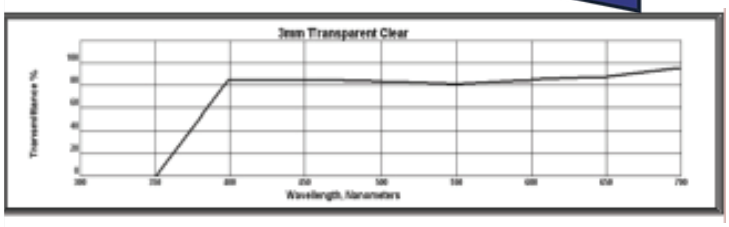

Light Transmission Analysis

By allowing up to 90% of solar energy and 88% of visible light through, clear Acrylic sheet is an excellent glazing material for uses designated to maximize solar gain. Tinted Acrylic should be substituted for requirements where shading or privacy is required.

Hardness

Acrylic coated with a static dissipative coating will perform on the pencil hardness scale at 2B, clearly the hardest coating available today.

Solvent Resistance

Solvent resistance of the test surfaces was determined using ASTM D 1308 (3.3.3 Spot Test, Covered). The solvent was placed on the substrate surface and immediately covered with a watch glass. Solvents were repeatedly applied to keep them in contact with the surface. Tests were conducted at 77°F (25°C).

The surface was examined at intervals of 1, 4, 8 and 16 hours for signs of attack such as blistering, peeling or discoloration. The test was terminated at 16 hours. The table indicates the time at which the visual attack of the surface becomes evident.

	Time to visual attack (hours)		
Solvent	**A&C™**	**Lucite® SAR**	**Margard® MR-4000**
Acetone	> 16	< 1 min	< 1 min
Chlorine bleach	> 16	> 16	> 8
Fantastic	> 16	> 16	> 16
Gasoline	> 16	> 16	> 4
Methanol	> 16	> 16	> 16
Methyl ethyl ketone	> 16	< 1	< 1
Methylene chloride	> 16	< 1 min	< 1 min
10% sodium hydroxide	> 16	< 1	> 1 min
40% sulphuric acid	> 16	> 16	< 1

Stain Resistance

Stain resistance of the test surfaces was determined using ASTM D 1308 (3.3.3 Spot Test, Covered). The stain was applied to the substrate surface (a saturated one-inch piece of tissue paper was used for the liquid stains) and immediately covered with a watch glass. The test was conducted at 122°F (50°C).

The stain was allowed to remain in contact with the surface for 16 hours. At the end of this period, excess stain was removed with dry tissue. The degree of staining was observed and recorded based on a scale of 0 to 5 where 0 represents no staining and 5 represents severe staining. The table shows the results of this evaluation.

	Degree of staining		
Stain	**A&C™**	**Lucite® SAR**	**Margard® MR-4000**
DuPont Yellow Dye N (#4957)	0-1	0-1	2
Ink (blue/black)	0	0	0-1
Ketchup	0	0	0
Kiwi Cordovan Shoe Polish	0	0	1
Mustard	0	1	2-3
1% Potassium Permanganate	0-1	0	2-3
Tincture of iodine	2-3	5	3-4

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