



TECHNICAL BULLETIN 130

General Properties — Grades GPA, I-300 & S-300

Aristech Surfaces Acrylic Sheet products are continuous cast and derived from unique formulations. Aristech Surfaces Acrylic Sheet GPA is a general purpose acrylic sheet. It is solvent cementable, and inventoried in many standard colors, thicknesses and sizes. GPA is ideally suited for signs, fabricated products and general distribution. Aristech Surfaces Acrylic Sheet 300 is a cross-linked solvent resistant acrylic sheet with exceptional thermoforming characteristics making it ideally suited for applications such as sanitaryware. Aristech Surfaces Acrylic Sheet 300 is available in standard colors and is produced to customers' orders in many thicknesses and sizes.

Unlimited Length

Because Aristech Surfaces Acrylic Sheet is continuously cast, it can be produced in either reels or sheets of lengths limited only by the practicality of shipping and handling weights and sizes. This eliminates unsightly and costly seams and joints in finished products.

Reel Concept

Aristech Surfaces Acrylic Sheet is available in reels, providing additional savings, a variety of efficient handling and fabricating techniques, and allowing reduced inventories—permitting the use of storage space for production.

Closer Thickness Tolerance

A thickness tolerance of $\pm 10\%$ or $\pm .015"$ (0.4 mm), whichever is greater, is maintained in Aristech Surfaces Acrylic Sheet, assuring uniformity. This uniformity reduces the rate of rejections attributable to breakage, thinning out or variances in light transmission.

Availability

Aristech Surfaces Acrylic Sheet can be supplied in widths from 24" to 110" (60 to 280 cm). Sheet thicknesses range from 0.080" to 0.500" (2 to 13 mm). Aristech Surfaces Acrylic Sheet can be cut to fractional sizes to comply with close tolerances required by MilSpecs or customer specifications.

Design Freedom

With larger sizes, better uniformity and superior properties, Aristech Surfaces Acrylic Sheet opens new horizons for product designs never possible with conventional cell-cast acrylic sheet. Aristech Surfaces Acrylic Sheet gives designers freedom in colors, too. Aristech Surfaces Acrylic Sheet is supplied in a variety of standard and marbled colors and, by request, the Aristech Surfaces color laboratory can develop other colors that may be required.

Formability

Aristech Surfaces Acrylic Sheet can be cold formed at room temperatures to yield generous curved surfaces. If unusual shapes or smaller

curvatures than those possible with cold forming are desired, Aristech Surfaces Acrylic Sheet can be thermoformed. This involves heating the material to approximately 380° F (195° C), and forming the desired shape with vacuum or air pressure.

Fabrication

Unlike glass and other materials, Aristech Surfaces Acrylic Sheet can easily be sawed, drilled, routed, filed, cemented, and machined. It behaves similar to hardwood or brass.

Resistance To Breakage

Aristech Surfaces Acrylic Sheet has 10 to 17 times greater breakage (impact) resistance than glass in equivalent thicknesses. Unlike other plastics used in glazing, Aristech Surfaces Acrylic Sheet does not lose its outstanding breakage resistance because of degradation from weathering.

Light Weight

Aristech Surfaces Acrylic Sheet is about 46% as heavy as ordinary glass.

Safety

The resistance to breakage and lighter weight of Aristech Surfaces Acrylic Sheet make it a safer material to handle and work with. If breakage should occur, the material does not shatter and splinter. Usually the break is local (a hole) or a clean single break. The broken edges are dull compared to glass fragments. Several state and local building code agencies specify acrylics over ordinary glass for storm door and other glazing applications where safety is the main criterion.

Weather Resistance

Aristech Surfaces Acrylic Sheet has outstanding weathering resistance. Even in areas such as Florida and Arizona, acrylics are virtually unaffected after 15 or more years exposure. Acrylics have been used successfully in aircraft glazing since before World War II and for more than 40 years in outdoor sign applications.

Optical Clarity

Light transmittance for clear Aristech Surfaces Acrylic Sheet is about 93% compared to 88% for ordinary glass.

Resistance To Temperature Extremes

The continuous use temperature for Aristech Surfaces Acrylic Sheet is up to 180° F (82° C). Higher temperatures can be tolerated for short periods of time without permanent damage occurring. At extremely low temperatures (-30° F (-34.4° C), Aristech Surfaces Acrylic Sheet remains very serviceable with only a slight reduction in breakage resistance occurring.

Insulating Values

Aristech Surfaces Acrylic Sheet is a better insulator than glass. Its heat transfer characteristics are similar to those of rubber. The coefficient of thermal conductivity (K Factor) or ability to conduct heat is 1.4 compared to 5 to 6 for ordinary glass. This means with zero wind velocity on both sides of the window pane, ordinary glass conducts heat more than 4 times as fast as Aristech Surfaces Acrylic Sheet. The overall coefficient of heat transmission (U Factor) is 1.04 compared to 1.25 for glass. At these conditions, Aristech Surfaces Acrylic Sheet is still approximately 20% better insulator than ordinary glass.

Standards

Aristech Surfaces Acrylic Sheet will meet and/or exceed the following specifications:

- ASTM D 4802-02 Category A-2, Finish 1 and 2, Type UVF. Exception: Thickness tolerance shall be as listed on front page of this bulletin.
- American National Standards Institute Specifications
ANSI-Z-124.1—Plastic bathtub units.
ANSI-Z-124.2—Plastic shower units.
ANSI-Z-124.3—Plastic lavatories
- International Association of Plumbing & Mechanical Officials (IAPMO)
Material and Property Standards for Acrylic-Faced Bathtubs, Tub-showers and Lavatories.
Material and Property Standard for Acrylic-Faced Spas

For cautions and other information relating to handling of an exposure to this product, please see the applicable material safety data sheet published by Aristech Surfaces.

These instructions are based upon experience with Aristech Surfaces products only. Experience with products of other manufacturers is specifically disclaimed. For most uses, check for local code approval and test for application suitability. These procedures, techniques and suggested materials should only be used by personnel who are properly trained in the safe handling of the chemicals and the equipment with which they are working. Avoid aromatic solvents, clean with mild soap and water, avoid abrasives. These suggestions are based on information believed to be reliable, however, Aristech Surfaces makes no warranty, guarantee, or representation and assumes no obligations or liability as to the absolute correctness or sufficiency of any of the foregoing, or that additional or other measures may not be required under particular conditions or circumstances.

