



TECHNICAL INFORMATION SHEET 7

## Use of Aristech Surfaces Acrysteel M<sup>®</sup> Acrylic Sheet in Marine Applications

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Aristech Surfaces Acrysteel 'M' acrylic sheet offers many unique advantages over materials normally used for surfacing marine products. The vast majority of small boats produced today are surfaced with polyester gel coat. However, there are still a significant amount of varnished wood boats and painted metal boats. When Aristech Surfaces Acrysteel 'M' is vacuum formed into the shape of a boat hull or boat deck and used as the surfacing material, it provides superior appearance, hardness, weatherability, stain resistance, algae resistance, mildew resistance, insect resistance and is much easier to keep clean. See the attached table for more detail on the advantages of Aristech Surfaces Acrysteel 'M' sheet. Aristech Surfaces acrylic sheet has been successfully prototyped into sixteen foot bass boats. These prototypes were tested extensively and performed exceptionally well. One of the leading amusement parks in the United States produced ten foot boats surfaced with Aristech Surfaces acrylic sheet for use in one of their attractions. Many of these boats are still in use, and it is said they are preferred by the customers because of the bright, rich colors and overall appearance. The process used to produce Aristech Surfaces Acrysteel M' acrylic sheet surfaced boats involves building a vacuum forming mold from epoxy, aluminum or tooling grade polyesters that is an exact replica of the hull and/or the deck. This mold configuration is the reverse of gel coat molds. The acrylic sheet is framed and heated to approximately 340°F (171.0°C) at which point it becomes soft and very flexible. The softened sheet is placed on the mold and vacuum is applied from the mold side. The acrylic sheet is drawn against the mold surface and conforms to the shape of the mold. The part is then removed from the mold and can be inspected for appearance before it is reinforced with polyester resin and fiberglass. This step is extremely important because a gel coat boat cannot be inspected until after it is fiberglassed and removed from its mold. If the gel coat part is rejected, much more time and money has been lost than if the acrylic shell is lost just after vacuum forming. Also, the acrylic shell can sometimes be reheated where it will return to a flat sheet and then reformed, thus salvaging the reject! The vacuum formed acrylic parts are supported on simple jigs and fiberglassed. After fiberglassing, all subsequent process steps would be about the same as for gel coated boats. The acrylic shells should be handled carefully when removing them from the molds. After fiberglassing, they will be very rigid and quite resistant to damage. It is imperative to select good bonding polyesters for this application. In summary, Aristech Surfaces Acrysteel 'M' Impact acrylic sheet offers many advantages to the marine industry not possible with materials currently being used for surfacing. We expect Aristech Surfaces Acrysteel 'M' sheet to be the surfacing material of the future for your marine requirements.

## COMPARISON OF CURRENTLY USED BOAT FINISHES TO ACRYSTEEL M SHEET

### APPEARANCE

Acrysteel 'M' is much richer with more color depth. Currently used finishes can exhibit some orange peel from the spray-up process. Gelcoat surfaces tend to fade and flake after normal use.

### HARDNESS

Barcol hardness for Acrysteel 'M' sheet is 40, which compares well with most gelcoat and painted surfaces.

### WEATHERABILITY

No comparison. Acrysteel 'M' will retain its rich appearance after many years service with little or no change in color. Other finishes can chalk, fade, and sometimes craze in as little as two years.

### STAIN RESISTANCE

Acrysteel 'M' is about twice as stain resistant as gelcoats or paint when tested by ANSI or IAPMO test methods. Acrysteel 'M' retains its stain resistance while other finishes get progressively worse with age.

### CLEANABILITY

This is related to stain resistance. Acrysteel 'M' cleans much easier than gelcoated or painted surfaces. Such things as rust stains, water deposits, and common dirt are particularly difficult to remove from paint and/or gelcoat. These substances are removed from Acrysteel 'M' with little or no effort using mild detergents.

### ALGAE AND MILDEW RESISTANCE

Algae does not stick to Acrysteel 'M' sheet and can be easily brushed or wiped off. It adheres very tenaciously to most other finishes and is extremely difficult to remove from them. Acrysteel 'M' is also not prone to mildew growth like gelcoat and paint finishes.

### THICKNESS

Acrysteel 'M' parts usually have .040" to .050" (1 to 1.3 mm) of average acrylic surface. Painted or gelcoated surfaces ordinarily will not have anywhere near this amount of thickness.

*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.

