TECHNICAL INFORMATION SHEET 2

Testing Aristech Acrylic LLC Signs, Skylights, Solar Covers, Etc. for Wind Resistance

Circumstances sometimes require demonstration that an Aristech Surfaces Acrylic sign face will, in fact, withstand the design wind load (See Table 1) especially when the design calls for formed faces. Full size, prototype signs can be tested without difficulty using differential air pressure by drawing a vacuum against one surface of the Aristech Surfaces acrylic or by loading the face with sandbags.

Vacuum Testing

Vacuum testing for negative or suck-out wind load resistance is generally done by placing the sign on top of a plywood box, weighted by a layer of sand in the bottom. The sign box assembly is sealed into the plywood box by means of masking tape around the rim as shown in Figures 1 & 2. Positive wind load resistance can be measured by sealing the entire sign box, having first prepared an outlet to the vacuum system. Methods of sealing must be devised so that the tape will not restrict the Aristech Surfaces acrylic from withdrawing from its edge engagement.

A water manometer is required to measure air pressure differentials in vacuum testing. Conventional pressure gauges are not suitable. The F.W. Dyer Manufacturing Co., Michigan City, Indiana, is a source for a complete manometer assembly. However, such a manometer can be constructed from glass or polyethylene tubing as shown in Figure 3. When connected to the vacuum testing equipment, each inch difference in the water level between the two arms of the manometer represents 5.2 lbs/ft^2 (25.4 kgs/m^2) loading of the Aristech Surfaces acrylic. If the manometer is scaled in centimeters, each centimeter represents 2.05 lbs/ft^2 (10 kgs/m^2). Separate connections to the test equipment should be made for the vacuum gauge and the vacuum pump, as shown in Figure 1.

Figure 1

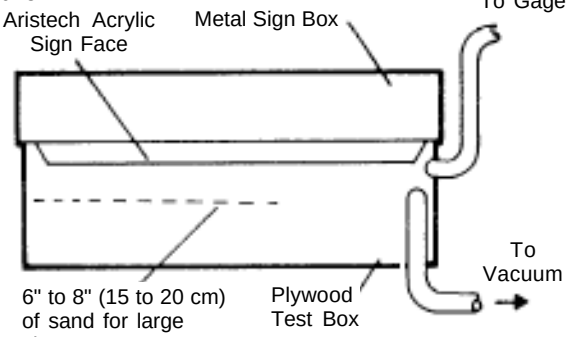


Figure 2

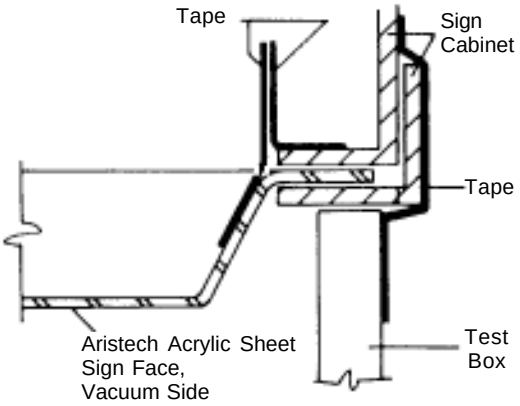
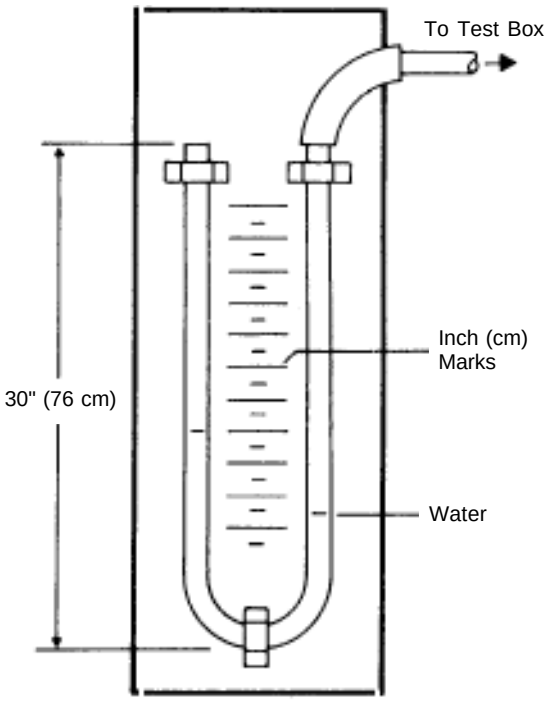


Figure 3



Sandbag Testing

Small vinyl, polyethylene or canvas bags are filled with sand and securely tied. The sign cabinet, with only one face panel in place, should be placed faceup on level supports high enough to permit observation of the inside surface. The surface of the Aristech acrylic is ruled into one foot (30.5 cm) squares with a china marking pencil, working from the center outward so that fractional squares fall at the edges. Sandbags are placed gently in each square, starting at the edges and working as uniformly as possible toward the center. Fractional squares at the edges can be loaded with lighter bags or by bags placed midway between fractional areas.

Observations

The most important part of the test procedure is observation of the Aristech acrylic during testing even though the object is to show that the face will withstand the design load.

Very often excessive deflection in some area or quite apparent edge withdrawal indicates potential failure before maximum loading can be applied. Time and expense can be saved by stopping the test at this point and correcting the defect. Corrective steps such as relocation or addition of bumpers or provision for more positive edge retention, will be apparent.

Table 1

Approximate Wind Velocity

Uniform Load lbs/ft² (kgs/m²)	Approximate Wind Velocity MPH (kms/hr)
20 (98)	75 (121)
30 (146)	90 (145)
40 (195)	100 (161)
50 (244)	130 (209)

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.

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