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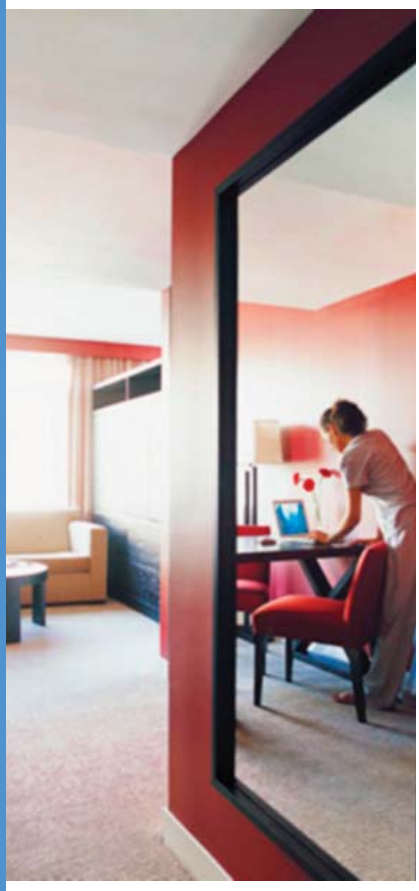
FABRICATION BRIEF

Acrylite® Reflections™ ACRYLIC MIRROR SHEET

ACRYLITE® Reflections™ acrylic mirror sheet can be fabricated using the same machining parameters and equipment that are recommended for use with ACRYLITE® FF acrylic sheet (refer to ACRYLITE FF Fabrication briefs available at www.cyro.com). However, in some instances better results can be obtained if the orientation of the decorative surface is taken into account during fabrication.

Note: *The mirror surface of the sheet is protected with a colorless polyethylene masking. The treated surface can be identified by its gray color.*



Handling and Maintenance

Cleaning

ACRYLITE Reflections sheet can be cleaned with a solution of mild soap or detergent and lukewarm water. Use a clean soft cloth, applying only light pressure.

Storage

Skids of ACRYLITE Reflections sheet are shipped with a polyethylene film overwrap that protects the sheet from dirt and moisture. The overwrap should be left intact during storage to minimize warpage. Sheet can be stored horizontally or vertically. When stored horizontally or at a slight angle from vertical, full support must be provided for the bottom of the sheet. Sheet surfaces should be kept free of saw chips and other debris which can penetrate the protective masking and cause indentations in the sheet. ACRYLITE Reflections sheet should not be stored near heat sources, as heat tends to soften and deform the sheet.

Cutting with Circular Saws

Conventional panel or table saws are recommended to cut ACRYLITE Reflections sheet. Saw blades should be carbide tipped with a triple-chip design for plastics. Moderate feed rates (100 - 300 in/min) insure a proper cut. The blade protrusion should be 1/8 – 1/2" above the top of the sheet. Best results are obtained when the sheet is positioned so that the teeth of the saw blade enter the sheet on the gray mirror backing surface. If positioned so the teeth enter on the other surface, very slight chipping (about 1/64" in size) of the gray mirror backing may occur.

Cutting with Lasers

Laser technology is being rapidly accepted by industry for quickly and accurately cutting, welding, drilling, scribing and engraving plastics. CO_2 lasers focus a large amount of light energy on a very small area which is extremely effective for cutting complex shapes in acrylic sheet. The laser beam produces a narrow kerf in the plastic allowing for close nesting of parts and minimal waste. CO_2 lasers vaporize the acrylic as they advance resulting in a clean polished edge but with high stress levels. Depending on the application, annealing acrylic sheet after laser cutting may be needed to minimize the chance of crazing during the service life of the part.

Routing

ACRYLITE Reflections sheet can be routed with the same equipment used for routing ACRYLITE FF sheet. On most CNC routing equipment, O-flute straight and O-flute up-spiral router bits produce very good results at feed rates of 150 – 300 in/min and spindle speeds of 18,000 – 20,000 RPM. For best results when using an up-spiral bit, position the sheet so that the gray mirror backing faces away from the collet.

Cementing

Methylene chloride-based solvent cements, typically used for acrylic sheet fabrication, work well when cementing to the untreated surface. This permits the use of other acrylic products, including acrylic profiles, in conjunction with ACRYLITE Reflections sheet. Cementing to the treated surface of the sheet will result in weak or inconsistent bonds which can be broken with light pressure.

Mounting

ACRYLITE Reflections mirror sheet can be mounted to most rigid, clean, dry surfaces using adhesive or mechanical methods. Select the proper thickness of ACRYLITE Reflections sheet to avoid unwanted distortion of the mounted mirror. With most adhesives, bare wood should be sealed in order to promote good bonding of the mirror to the substrate. Contact manufacturers for limitations and recommendations.

These silicone sealants have been tested and found to work well if properly used.

795 Builders Sealant
Dow Corning Corporation
Corporate Center
PO Box 994
Midland MI 48686-0994
989-496-7881
www.dowcorning.com

Silpruf
GE Silicones
World Headquarters
260 Hudson River Road
Waterford, NY, 12188
800-255-8886
www.ge.com/silicones

Mechanical fasteners may also be used. Drill oversized holes following the instructions found below in the Drilling section. Avoid over tightening the screws to prevent distortion of the mirror.

Edge Finishing

Edge finishers will produce very smooth edges on ACRYLITE Reflections sheet. However, they will leave very slight chipping (about 1/64" in size) in the gray mirror backing. For most applications this will not be visible. The same depth of cut and feed settings as used with ACRYLITE FF sheet are recommended.

Drilling

ACRYLITE Reflections sheet can be drilled with the same equipment that is used with ACRYLITE FF sheet. Modified drill bits designed for plastics produce the best results. A proper backing material such as plywood or another piece of acrylic should be used when drilling ACRYLITE Reflections sheet. The backing material will help prevent chipping on the bottom surface. Rotational speeds from 500 – 1000 RPMs combined with feed rates in the 3 – 12 in/min range will usually provide good results.

Line Bending

ACRYLITE Reflections sheet can be line bent quickly and easily using traditional line bending equipment. The sheet can be heated on either side with acceptable results. Line bends will have a slightly lighter appearance compared to the rest of the sheet, but this will only be visible under very close scrutiny.

Thermoforming

Thermoforming to moderate draw ratios is possible. However, as the draw ratio increases, the mirror finish becomes correspondingly thinner. This results in its appearance becoming duller or less brilliant. It is recommended that a few test samples be made first to evaluate the appearance of the part. When thermoforming, the sheet can be heated on either side. The protective masking should be removed before heating the sheet. The gray surface will become soft and tacky when the sheet is heated. Therefore if a mold is used, it should be designed to contact the acrylic surface and not the gray surface of the sheet. For a raised decorative part, this means a female mold should be employed.

Buffing

Buffing can change edge appearance from a matte to glossy look. For the best edge finish result, perform an initial wet sanding operation. This will remove any saw cut marks. The same buffing equipment can be used on the edge of ACRYLITE Reflections sheet as used with other acrylic sheet.

ACRYLITE Reflections sheet may not be suitable for use in some outdoor environments. Before using outdoors, contact CYRO's Technical Service department for more information.

For more details on the fabrication methods described above refer to the following publications available at www.cyro.com:

ACRYLITE FF Fabrication Brief		Literature ID #
# 2	Cutting with Circular Saws	1319-2
# 4	Drilling	1319-4
# 5	Routing	1319-5
# 6	Edge and Surface Finishing	1319-6
# 7	Line Bending	1319-7
# 8	Cementing	1319-8
# 10	Thermoforming	1319-10
# 13	Laser Machining	1319-13

For additional product information, or to locate a local authorized CYRO distributor, please call 800.631.5384, visit www.cyro.com or contact the nearest CYRO sales office.

Sales Inquiries

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Parsippany, NJ 07054
800-631-5384
www.cyro.com

Technical Support

Visit the TechKnowlogy Center at www.cyro.com for immediate access to frequently asked questions, technical information, fabrication tips, physical properties, and hundreds of other facts about acrylics from North America's leading acrylic sheet manufacturer.

Fire Precautions

ACRYLITE acrylic sheet products are combustible thermoplastics. Precautions should be taken to protect these materials from flames and high heat sources. ACRYLITE sheet usually burns rapidly to completion if not extinguished. The products of combustion, if sufficient air is present, are carbon dioxide and water. However, in many fires sufficient air will not be present and toxic carbon monoxide will be formed, as it will when other common combustible materials are burned. We urge good judgment in the use of these versatile materials and recommend that building codes be followed carefully to assure they are used properly.

Important Notice

The information and statements herein are believed to be reliable but are not to be construed as a warranty or representation for which we assume legal responsibility. Users should undertake sufficient verification and testing to determine the suitability for their own particular purpose of any information or products referred to herein. NO WARRANTY OF FITNESS FOR PARTICULAR PURPOSE IS MADE. Nothing herein is to be taken as permission, inducement or recommendation to practice any patented invention without a license.