

Technical information

ACRYLITE® Reflections

Acrylic mirror, frosted mirror, smooth frosted mirror

Product

ACRYLITE® Reflections acrylic sheet is the highest quality acrylic mirror available. With a reflective finish and tough protective backing, our family of mirrorized products meets or exceeds the quality, durability, and performance of any mirrorized acrylic product on the market today. ACRYLITE® Reflections is light weight, shatter resistant, and easy to fabricate.

ACRYLITE® Reflections are either classic silver or colored. In addition to smooth and high-gloss surfaces, several metallic satin grades are available which are resistant to finger prints and scratches.

The classic silver sheet is also available with a one-side hard coated surface which offers excellent resistance to abrasion and chemicals.

Applications

- P-O-P displays and store fixtures
- Interior design and architectural applications
- Consumer/household
- Recreational vehicles (interior applications)
- Commercial transportation, lavatories, gyms, staterooms and crew quarters



Product Specifications

	Sizes	Thickness
Mirror- Colorless		.060" (1.5mm)
		.080" (2.0 mm)
		.118" (3.0 mm)
	48" x 96"	.177" (4.5 mm)
Mirror- Colorless	49" x 97"	.220" (5.6 mm)
	61" x 97"	.118" (3.0 mm)
Mirror- Colorless	73" x 97"	.118" (3.0 mm)
	49" x 121"	.118" (3.0 mm)
	61" x 121"	.118" (3.0 mm)
Mirror- Colors: Bronze, Gold, two shades of Red, Yellow, two shades of Green, Dark Blue, Medium Blue, Purple, Pink, Slate Grey	49" x 97"	.118" (3.0 mm)
		.118" (3.0 mm)
Frosted Mirror Silver		.177" (4.5 mm)
		.220" (5.6 mm)
	49" x 97"	.354" (9mm)
Frosted Mirror Gold, Glass Green	49" x 97"	.118" (3.0 mm)
Smooth Frosted Mirror (Silver Dust)	48" x 96"	.118" (3.0 mm)

- Masking: Standard poly on one-side; 2-sided also available
- Custom sizes quoted upon request

Fabrication

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

Cleaning

ACRYLITE® Reflections can be cleaned with a solution of mild soap or detergent and lukewarm water or ACRIFIX® AC1010 cleaner. Use a clean soft cloth, applying only light pressure.

Storage

Skids of ACRYLITE® Reflections 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 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. 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. CO₂ 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. CO₂ 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 can be routed with the same equipment used for routing ACRYLITE® extruded 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 such as ACRIFIX® 1S010, 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. Cementing to the treated surface of the sheet will result in weak or inconsistent bonds which can be broken with light pressure and damage to the protective paint.

Mounting

ACRYLITE® Reflections mirror can be mounted to most rigid, clean, dry surfaces using adhesive or mechanical methods. Select the proper thickness of ACRYLITE® Reflections 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-SCS1000 or SCS2000

GE Silicones
9930 Kincey Avenue
Huntersville, NC 28078
877-943-7325

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. A soft washer is highly recommended to be used between any metal fastener and the acrylic surface.

Edge Finishing

Edge finishers will produce very smooth edges on ACRYLITE® Reflections. 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® extruded sheet are recommended.

Drilling

ACRYLITE® Reflections can be drilled with the same equipment that is used with ACRYLITE® extruded sheet. Modified drill bits designed for acrylics produce the best results. A proper backing material such as plywood or another piece of acrylic should be used when drilling ACRYLITE® Reflections. 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 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. The gray painted surface can be easily damaged when hot.

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 as used with other acrylic sheet.

ACRYLITE® Reflections may not be suitable for use in some outdoor environments. Before using outdoors, contact Evonik 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.acrylite.net.

ACRYLITE® extruded Fabrication Brief

- # 2 Cutting with Circular Saws
- # 4 Drilling
- # 5 Routing
- # 6 Edge and Surface Finishing
- # 7 Line Bending
- # 8 Cementing
- # 10 Thermoforming
- # 13 Laser Machining

Fire Precautions

ACRYLITE® sheet is a combustible thermoplastic. Precautions should be taken to protect this material 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 available and toxic carbon monoxide will be formed, as it will when other common combustible materials are burned. We urge good judgement in the use of this versatile material and recommend that building codes be followed carefully to assure it is used properly.

Compatibility

Like other plastic materials, ACRYLITE® sheet is subject to crazing, cracking or discoloration if brought into contact with incompatible materials. These materials may include cleaners, polishes, adhesives, sealants, gasketing or packaging materials, cutting emulsions, etc. See the Tech Briefs in this series for more information, or contact your ACRYLITE® sheet Distributor for information on a specific product.

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