

## ACRYLITE®

### digital print

#### Product

ACRYLITE® digital print is a crystal clear acrylic sheet with enhanced adhesion properties for UV curable inks used in today's flatbed digital printers. ACRYLITE® digital print eliminates the need for costly adhesion promoters or other labor intensive surface preparation.

The optical clarity of ACRYLITE® digital print ensures color accuracy and brilliance on every print. The superior adhesion properties provide additional durability in handling, shipping, and installation. Water clear edge color allows for beautiful exposed edges when polished.

#### Properties

Unique masking configuration allows for laser cutting, routing, and basic inspection with minimal yield loss along edges and no negative effect on adhesion.

- optimal ink adhesion properties for UV cured ink
- superior optical clarity maximizes visual impact
- developed and tested with leading digital UV flatbed printers
- tight thickness tolerance eliminates risk of print head damage

#### Applications

The unique properties of ACRYLITE® digital print make it especially suitable for

- POP display/store fixture
- architectural design prints
- retail signage
- wayfinding signs
- exhibit tradeshow graphics
- artwork
- photography

#### Packaging

ACRYLITE® digital print ships perfectly flat in special packaging that controls moisture and allows for long term storage prior to opening.



## Product Specifications

|             | Sizes     | Thickness      |
|-------------|-----------|----------------|
| 0M007 Clear | 48" x 96" | .118" (3.0 mm) |
|             | 48" x 96" | .177" (4.5 mm) |
|             | 48" x 96" | .220" (5.6 mm) |

- Masking: White reclingable poly on printed side, clear adhesive poly on non-printed side
- Custom sizes quoted upon request. Minimums may apply

### Fabrication

ACRYLITE® digital print 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](http://www.acrylite.net)). However, in some instances better results can be obtained if the orientation of the printed surface is taken into account during fabrication.

### Cleaning

ACRYLITE® digital print 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® digital print 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 must be stored horizontally to maintain flatness. 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® digital print should not be stored near heat sources, as heat tends to soften and deform the sheet, or near source of moisture, as that may lead to warpage.

### Cutting with Circular Saws

Conventional panel or table saws are recommended to cut ACRYLITE® digital print. 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 printed surface. If positioned so the teeth enter on the other surface, very slight chipping (about 1/64" in size) of the printed surface may occur.

### Cutting with Lasers

Laser technology is being rapidly accepted by the industry for quickly and accurately cutting, welding, drilling, scribing and engraving plastics. CO<sub>2</sub> 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<sub>2</sub> 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® digital print 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 printed surface faces away from the collet.

### Cementing

Methylene chloride-based solvent cements such as ACRIFIX® 1S0107, typically used for acrylic sheet fabrication, work well when cementing ACRYLITE® digital print. This permits the use of other acrylic products, including acrylic profiles, in conjunction with ACRYLITE® digital print. Cementing to the printed surface of the sheet is not recommended.

### Mounting

ACRYLITE® digital print can be mounted to most rigid, clean, dry surfaces using adhesive or mechanical methods. Select the proper thickness of ACRYLITE® digital print to avoid unwanted

distortion of the printed acrylic. With most adhesives, bare wood should be sealed in order to promote good bonding of the acrylic 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 Kinsey 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 printed acrylic. 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® digital print. However, this may cause very slight chipping (about 1/64" in size) of the cured ink in printed materials. 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® digital print can be drilled with the same equipment that is used with ACRYLITE® extruded sheet. Modified drill bits designed for acrylics plastics produce the best results. A proper backing material such as plywood or another piece of acrylic should be used when drilling ACRYLITE® digital print. 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® digital print can be line bent quickly and easily using traditional line bending equipment. The sheet can be heated on the non-printed 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 printable surface becomes correspondingly thinner. This may compromise the final printed product. It is recommended that a few test samples be made first to evaluate the appearance of the part.

#### **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® digital print as used with other acrylic sheet.

**ACRYLITE® digital print 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](http://www.acrylite.net).**

#### **ACRYLITE® extruded Fabrication Briefs:**

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

### Technical Data

The table below shows typical values for 3 mm thick ACRYLITE® digital print sheet. Some values will change with thickness.

### Product Specifications

| Test                             | Method     | Typical Values   |
|----------------------------------|------------|------------------|
| Tensile Strength                 | ASTM D-638 | 10,000 psi       |
| Tensile Elongation @ rupture     | ASTM D-638 | 4.5%             |
| Tensile Modulus                  | ASTM D-638 | 400,000 psi      |
| Flexural Strength                | ASTM D-790 | 17,000 psi       |
| Flexural Modulus                 | ASTM D-790 | 480,000          |
| Rockwell Hardness                | ASTM D 785 | M 93             |
| Deflection Temperature (264 psi) | ASTM D-648 | 91°C             |
| Izod Notched Impact Strength     | ASTM D-256 | 0.4 ft-lb/in     |
| Specific Gravity                 | ASTM D-792 | 1.19             |
| Thermal Expansion                | ASTM D-696 | 0.00004 in/in-°F |
| Water Absorption (24 hr)         | ASTM D-570 | 0.20%            |
|                                  |            |                  |

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### 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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Printed in the USA.

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