

WORKING WITH ROWMARK'S COLORCAST ACRYLICS

Product Attributes

ColorCast Acrylics is a cell-cast acrylic sheet with excellent optical characteristics, UV stability, exceptional surface hardness and machines more cleanly than Continuous Cast or Extruded acrylic materials. This material is perfect for interior and exterior signage where a tough surface and resistance to the elements are required. ColorCast Acrylics are an ideal product for exterior & interior signage, awards, and merchandising displays. Acrylic is inherently more light-stable and scratch-resistant than other plastic materials. Other plastics require stabilizers or surface coatings to match the weatherability and scratch resistance of acrylic. This is why acrylic is primarily used in applications that take advantage of its superior clarity, scratch resistance and UV stability characteristics. Acrylic is also more transparent than glass, lighter in weight, and is used in many applications where glass has been traditionally used.

Care and Storage

- Store the sheets flat on a level surface, as the polymer can cold flow. Do not store upright as the material can easily take a set and will warp.
- Use china markers or water-based markers to draw patterns or mark for saw cutting.
- Leave protective mask in place until you are ready to cut, route, laser or engrave.

Cleaning and Maintenance

- ColorCast Acrylics are designed to maintain their color and finish. Should the surface become scratched, minor scratches may be removed with Novus or a similar acrylic scratch repair product.
- Avoid the use of abrasive nylon or metal scrub pads, as excessive force will mar the surface finish.
- Use citrus cleaner, mild alcohol cleaner or mineral spirits to remove grease or oil stains.
- Automotive silicone spray products or household furniture polish may help to hide scratches in the surface.

Project Planning

- Acrylic sheets are combustible thermoplastics. Precautions should be taken to protect these materials from flames and high heat sources.
- When used for large exterior signage, provide structural support every 16-18”.
- Test applications for unforeseen complications, such as expansion/contraction issues.

- Unless framed, use ColorCast Acrylics only in applications where the finished edge is not important.

Fabrication

- ColorCast Acrylics may be cut with a circular saw at high speeds in the range of 8,000-12,000 linear feet per minute. A blade 7 ¼" diameter, 40 teeth (carbide tipped cutoff) at 4,500 rpm is recommended. A circular saw is preferable to a band saw for straight cuts, because a smoother cut can be achieved. It is important to have a good supporting edge on the table when making a cut.

Circular Saw Troubleshooting

Problem: Melting or Gumming

Possible Solutions:

1. Increase tooth size
2. Reduce saw speed
3. Provide better clamping
4. Reduce feed-rates
5. Change to a different blade geometry
6. Check blade for sharpness

Problem: Chipping

Possible Solutions:

1. Different saw blade
2. Decrease tooth size
3. Increase saw speed
4. Increase feed-rates
5. Check blade for sharpness

Band Saw Troubleshooting

Band saws are useful for cutting irregular shapes. Band saws should be run at 2,000 feet per minute and have between 6-10 teeth per inch. Because of the vibration caused during cutting, proper support of the part/sheet must be down to achieve the cleanest cut.

Problem: Melting or Gumming

Possible Solutions:

1. Increase tooth size
2. Reduce saw speed
3. Use air to cool blade
4. Check blade for sharpness



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Problem: Chipping

Possible Solutions:

1. Decrease tooth size
 2. Slow down feed rates
 3. Provide better hold-down and clamping to eliminate vibration
 4. Check blade for sharpness
- When using a safety saw, a reduced feed rate is necessary to avoid overload of the saw motors or blown fuses/circuit breakers. This is especially true with cutting thickness' greater than ¼". Draw the motor/cutting blade through the material at an even feed rate. If you detect a heavy load on the system, stop the motion to allow the blade to reach its maximum RPM.
 - No surface finishing is required. ColorCast Acrylics come with a durable matte or gloss finish.
 - Edges may be finished with by flame buffing or polishing.
 - Use standard fasteners with oversized holes when mounting. Drill pilot holes first, followed by an oversized hole to allow for expansion and contraction. Use press-in thread inserts for applications where repetitive motion is expected, such as a hinge, or where removal of the sign is frequent.

Routing

- Special care must be used when routing. Use proper guarding and eye protection. Stock feed rates need to be monitored. Feeding sheet at fast rates can result in shattering. It is important to feed the sheet against the rotation of the router bit and to provide a fence for sizing. Router bits must be kept sharp. Cooling the bit with compressed air during operation will aid chip removal and prolong sharpness.
- Use standard carbide or high-speed steel bits. Carbide bits with straight flutes are recommended. Bits should be 3/8" to ½" diameter for best results.
- With a ½" diameter router bit, feed rates of 12-16 feet per minute are normal. Larger bits have higher tip speeds and RPM adjustments may be necessary. 20,000 rpm recommended.
- Mechanical hold down of the sheet when cutting is recommended.

Engraving

Engravers will find ColorCast Acrylics easy to work with. Compared to similar extruded sheets, the hardness of the material will permit very clean cuts and excellent chip removal.

"Cell Cast Acrylics have thickness variations that may present difficulties in applications where thickness tolerance is important (i.e.: fitting into extrusions, thermoforming applications where walls must maintain uniform thickness, and assembly of complex structures.) Remember to check gauge when non-contact engraving takes place and to periodically re-check focal lengths when laser engraving. In some cases, thickness variations may require the operator to make multiple passes during laser engraving."



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- ColorCast Acrylics can be cut easily using standard reverse engraving techniques. The colored layer is approximately .002” thick so depth settings of .003”-.005” are recommended. Fine detail engraving is possible. No protection of this surface against scratching is necessary however chip removal is highly recommended.
- Mechanical hold-down of the sheet when engraving is recommended. Standard table clamps are generally sufficient. Double-faced “table” tape will work; however, it is advisable to increase the amount of tape used to secure the sign blank, especially during deep cuts where lateral forces are greatest.
- Carbide bits work well. Use of ACR and FLX (acrylic and flexible engraving stock) bits are recommended.
- It is strongly recommended that a vacuum system and large diameter nose cone (vacuum boot) be used. Deep cutting results in larger chip sizes and clean removal is necessary to maintain proper cutting depths.

Lasering

- It is recommended that the protective mask be removed before laser engraving. Masking can be left on for vector cutting to keep the surface protected from burn residue. Make sure the lens is accurately in focus before vector cutting.
- For fine detailed laser engraving, take time to focus the lens carefully to minimize the spot size. For general engraving, a slightly out-of-focus lens will work as a smoother cut can be achieved.
- Multiple passes will create a smoother glass-like appearance. Multiple passes can be used to achieve a deeper engraved area giving a 3-D like appearance when viewed from an angle.
- Its important to note that ColorCast Acrylics is a denser thicker material so greater engraving depth can be achieved without warping or distorting the finished side of the material.
- Typical settings based on a 60-Watt Laser are: DPI = 500, PPI = 1000, Power = 40, Speed = 60, x 2 or more passes till desired smoothness and depth is reached. (Only to be used as a starting point. In some cases, faster engraving speeds will blur the image and will not allow penetration of the material. Finer detail and smoother engraving results can be achieved by slowing the laser speed down.)



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