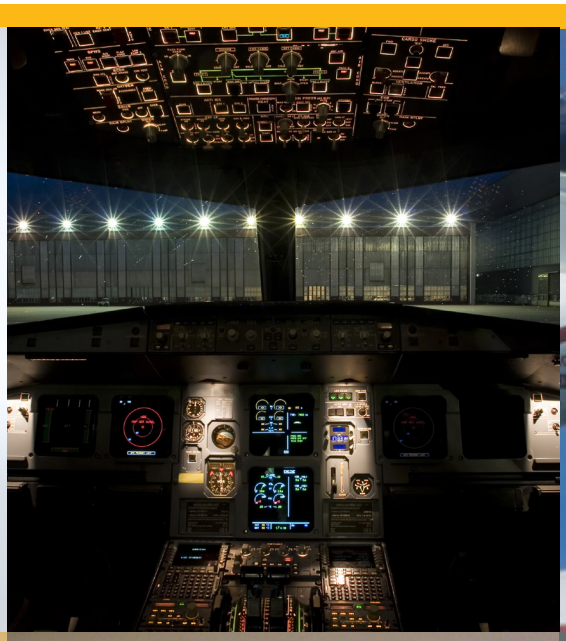
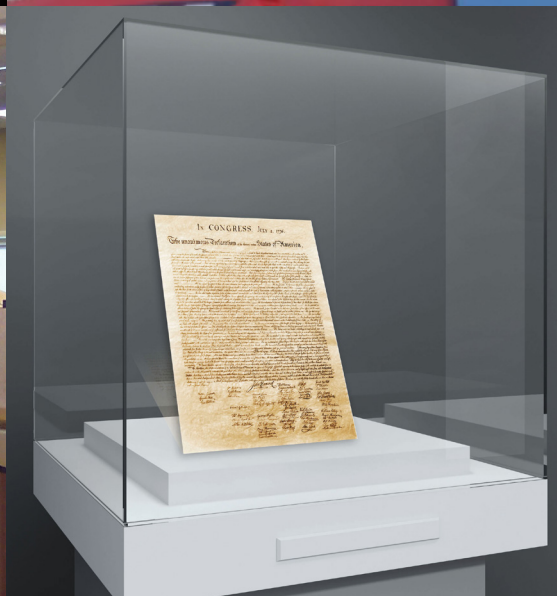
SPARTECH®

POLYCAST®

POLYCAST® FABRICATION GUIDE





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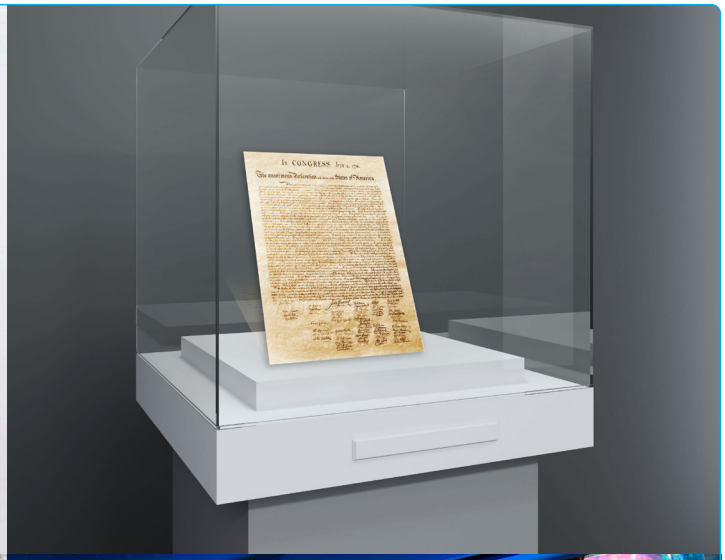


SPARTECH POLYCAST® INTRODUCTION

Polycast® acrylic sheet is a material with unique physical properties and performance characteristics. It weighs half as much as the finest optical glass, yet is equal to it in clarity and is up to 17 times more impact resistant. It can be worked as easily as wood, can be formed into endless, interesting and functional shapes, is resistant to chemicals and industrial fumes, and remains stable under sustained exposure to the elements. Polycast® sheet is made in over 250 colors, in thicknesses from .030” to 4.250”, and can transmit ultraviolet light or filter it out, as required.

Aircraft manufacturers use Polycast® sheet in jets and helicopters. Bullet-resisting Polycast® sheet helps solve security problems for banks and stores. Because of its light and energy transmission properties architects find Polycast® ideal for skylights, sun screens, fascia panels and dome structures. Polycast® material is a favority medium of furniture designers and sculptors. Retailers show off their merchandise in displays made from Polycast® sheet, while signs made from Polycast® sheet light up the nation. Its impact resistance makes Polycast® sheet an outstanding glazing material. It is used in home furnishings, chair mats, lighting fixtures, safety equipment, decorating panels, office partitions and appliances of all kinds. And it’s a favorite material of the do-it-yourself hobbyist.

POLYCAST® CHARACTERISTICS

WEATHERABILITY

Polycast® acrylic sheet has exceptional weathering characteristics. Clear sheet will not yellow even after long years of exposure to sunlight, and colors won't fade.

EXPANSION AND CONTRACTION

Like most plastics, Polycast® acrylic sheet responds to temperature changes by expanding or contracting at a far greater rate than glass. When using Polycast® acrylic sheet for outdoor glazing, cut the sheet approximately 1/16" per running foot **shorter** than the frame size.

FLEXIBILITY

Polycast® acrylic sheet is much more flexible than glass or many other building materials. When using large sheets for windows, it is important that rabbets or channels be deep enough to provide support against high winds (see page 19, "Glazing").

CHEMICAL RESISTANCE

Polycast® acrylic sheet has excellent resistance to attack by many chemicals. It is affected, in varying degrees, by benzene, toluene, carbon tetrachloride, ethyl and methyl alcohol, lacquer thinners, ethers, ketones and esters.

ELECTRICAL PROPERTIES

Polycast® acrylic sheet is an excellent insulator. Its surface resistivity is higher than that of most plastics. Continuous outdoor exposure has little effect on its electrical properties.

LIGHT TRANSMISSION

Colorless Polycast® acrylic sheet has a light transmittance of 92%. It is clearer than window glass and will not turn yellow. Translucent white Polycast® acrylic sheet diffuses light smoothly and evenly, so it's excellent for all types of lighting fixtures and signs. Polycast® acrylic sheet is also available in a large variety of transparent and translucent colors.

FIRE PRECAUTIONS

All acrylic sheet is combustible. Self-ignition temperature range is 830-860°F. Protect it from flames and high heat. Refer to page 20 (fire precautions) for further information.

CLEANING

Wash Polycast® sheet with a mild soap or detergent and plenty of lukewarm water. Use a clean soft cloth, applying only light pressure. Rinse with clear water and dry by blotting with a damp cloth or chamois.

Grease, oil or tar may be removed with a good grade of hexane, aliphatic naphtha, or kerosene. These solvents may be obtained at a paint or hardware store and should be used in accordance with manufacturers' recommendations.

Any oily film left behind by solvents should be removed immediately by washing.

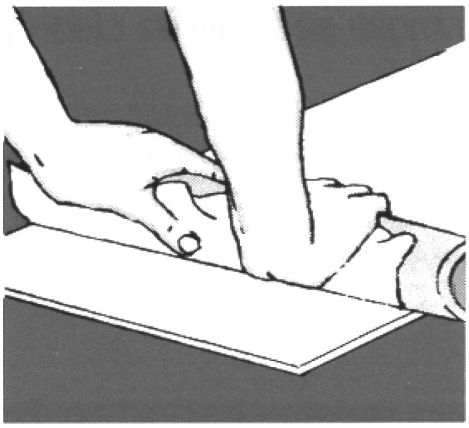
DO NOT USE: Window cleaning sprays, kitchen scouring compounds, or solvents such as acetone, gasoline, benzene, carbon tetrachloride or lacquer thinner.

Static electricity can attract dust to Polycast® acrylic sheet. To reduce it, use an anti-static cleaner which is available from your dealer. Or consider using an inexpensive anti-static gun, such as those commonly sold in Audio stores for removing static from phonograph records.

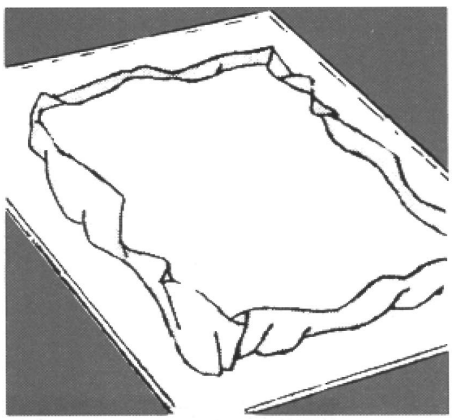
MASKING

Polycast® acrylic sheet comes covered on both sides with a low-tack masking paper. It is also available with a thick-polyethylene film with a low-tack adhesive (Polymask) or with a thin polyethylene film without adhesive (unmasked). The masking protects the sheet from scratching during storage and handling. Be sure to leave the masking in place during all phases of fabrication and installation. Except for intricate detail work, you should remove the masking only when project is completed.

You can remove the masking paper with a cardboard tube - rolling the paper around it. All paper-masked Polycast® sheet should be kept away from heat, sunlight and water. This is not true of Polymask sheet. Masking should be removed soon after installation.



Roll the masking paper onto a cardboard tube.



Roll the masking paper back about 1/2" to allow work on the edges of the sheet.

IMPORTANT DO'S AND DON'TS

Do's

- Keep masking on as long as possible through fabrication operations.
- Always wear safety glasses when working with power tools.
- Use metal-cutting saw blades and drills which are ground for acrylic sheet.
- Make certain all your tools are sharp.
- Use water or an appropriate drilling oil as a coolant when cutting sheets over 1/8" thick or drilling sheets over 3/16" thick.
- Use the proper thickness for glazing blanks.
- Allow 1/16" per linear foot for expansion in glazing applications.
- Wet the surface of Polycast® acrylic sheet before cleaning.
- Ask your Polycast® acrylic sheet distributor for detailed information.

Don'ts

- Don't store Polycast® acrylic sheet near radiators or steam pipes or in direct sunlight.
- Don't remove the masking until all work is finished.
- Don't install large sheet with bolts. Frame them.
- Don't mark with a punch marker.
- Don't use saw blades having side-set teeth. Saw teeth ideally should be ground with 0° rake and be of uniform height and shape.
- Don't bring the material in direct contact with heaters.
- Don't subject sheet to high surface temperatures during polishing.
- Don't use glass-cleaning sprays, scouring compounds or solvents like acetone, gasoline, benzene, carbon tetrachloride, or lacquer thinner on acrylic sheet.
- Don't heat Polycast® acrylic sheet in a kitchen oven.

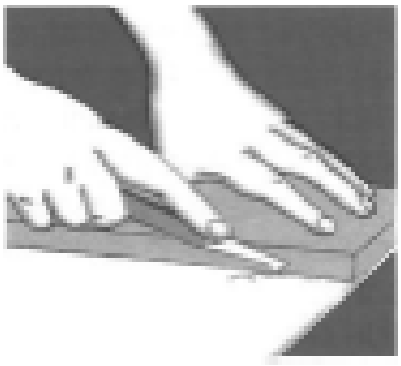
CUTTING

Polycast® acrylic sheet can be cut in many ways with hand tools or power tools. The method you choose will likely depend on the tools available to you. But all tools cannot be used in all cases. Your choice of tool and technique should also be based on the thickness of the sheet, and the shape of the particular cut. This section, though not comprehensive, gives some guidelines for choosing the right method and getting the best results with Polycast® acrylic sheet.

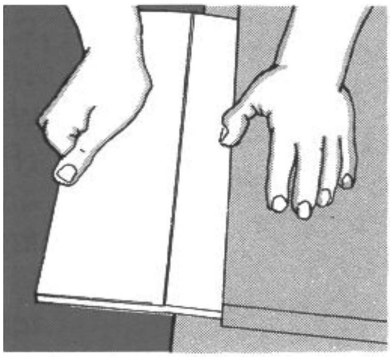
CUTTING WITH KNIFE OR SCRIBE

Polycast® acrylic sheet up to 3/16" thick may be cut by a method similar to that used for cutting window glass. Use a scribe of some kind – a scribing knife such as the one pictured, a metal scribe, an awl, or even a sturdy craft knife – to score the sheet. Draw the scriber several times (7 or 8 times for a 3/16" thick piece) along a straight edge held firmly in place. It is best not to remove the protective masking. Make the cuts carefully using firm, even pressure. For best results make each stroke cleanly off the edge of the sheet.

Then, clamp the Polycast® acrylic sheet or hold it rigidly under a straight edge with the scribe mark facing up and hanging just over the edge of a table. Protect your hands with a cloth, and apply a sharp downward pressure to the top side of the sheet. It will break along the scratch. Scrape the edges to smooth any sharp corners. This method is not recommended for long breaks or thick material.



Always draw the scribing knife along a straight edge.



Break sheet over edge of table after scribing.

CUTTING WITH POWER SAWS

Blades used to cut Polycast® acrylic sheet should be sharp, and free from nicks and burrs. Special blades for cutting acrylics are available for most types of saws. Your Polycast® acrylic sheet Distributor should have them in stock. Otherwise, use blades designed for cutting metals (especially aluminum or copper); they work well. Teeth should be fine, of the same height, evenly spaced, and with little or no set.

Table saws and circular handsaws: Use hollow ground, high-speed blades with no set, and at least 5 teeth per inch, such as those used to cut copper and aluminum. If you intend to do extensive

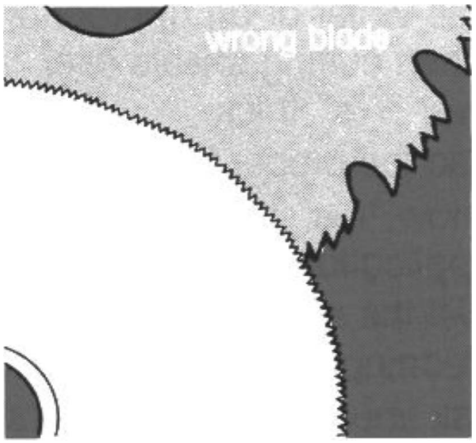
CUTTING WITH POWER SAWS (CONTINUED)

cutting, carbide tipped blades, although more expensive, will last longer without sharpening (a triple chip type tooth design is recommended). They also tend to give a cleaner cut in acrylic sheet. Set the blade to project approximately 1/8” above the surface of the sheet being cut. This will reduce edge chipping.

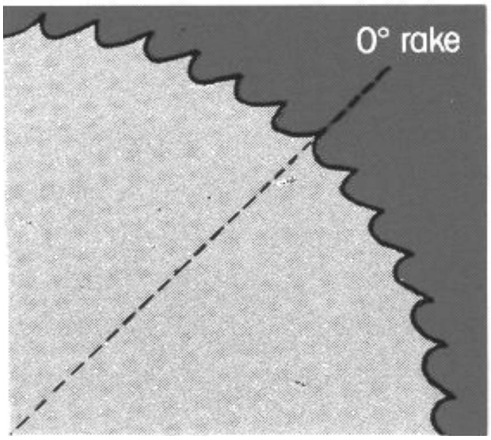
When cutting with a hand-held circular saw, clamp the sheet securely to the work surface to minimize vibration. A wood block l” x 3” clamped on top of the sheet spreads the clamping force and can act as a guide for the saw.

No matter which type of saw you use, the sheet must be held firmly and fed slowly and smoothly to prevent chipping. Lubricating the blade with beeswax or a bar of soap will help keep the masking adhesive from gumming up the blade. Be sure the saw is up to full speed before beginning to cut. Water-cooling the blade is suggested for thicknesses over 1/4”, especially when edge cementing will be performed.

Saber saws: Use blades which have a slight set, such as the blades recommended for cutting metals or other plastics. Be sure they are sharp. The blades you use for cutting acrylic should never be used to cut other materials. Set them aside. Use them only for acrylic sheet.



For circular saaws, use o metal cutting blade – not a combination blade.



Teeth should be ground on the center line, and have 0° rake.

High speed is best for cutting Polycast® acrylic sheet with a saber saw. Always be sure the saw is at full speed before beginning to cut. Press the sawshoe firmly against the material, and don’t feed too fast. Water cooling is suggested for cutting acrylic sheet over 1/4” thick.

Band saws or jigsaws: Band saws and jigsaws are excellent tools for cutting Polycast® acrylic sheet. But because of their relatively thin blades they are not recommended for cutting acrylic sheet over 1/4” thick. Use blades with a slight set and about 10 teeth per inch. Feed acrylic sheet at a rate 10 times faster than you would feed steel. Blades may break easily in acrylic, so operate accordingly.

CUTTING WITH HAND SAWS

Almost any type of hand saw may be used to cut Polycast® acrylic sheet. And while good results are possible with hand saws, the techniques involved are considerably more difficult than with power saws. Practice on scrap material before attempting to make critical cuts.

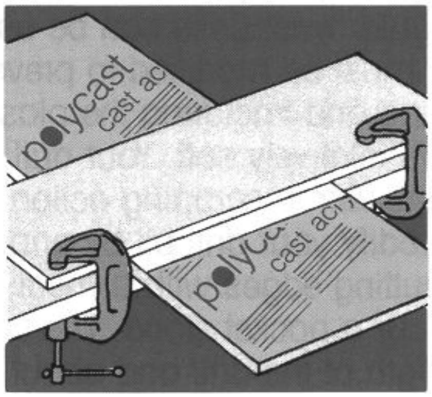
With any hand saw, it is most important that the blades be kept sharp. For best results, the teeth should be of uniform size and shape, and have very little set.

Every effort should be made to prevent vibration or stress while cutting. Flexing at the point of the cut or binding of the saw blade may cause the acrylic to crack. Clamp the material securely. Keep the saw straight when cutting, and apply very little pressure. Let the blade do the work. With practice and proper care, you can get good results.

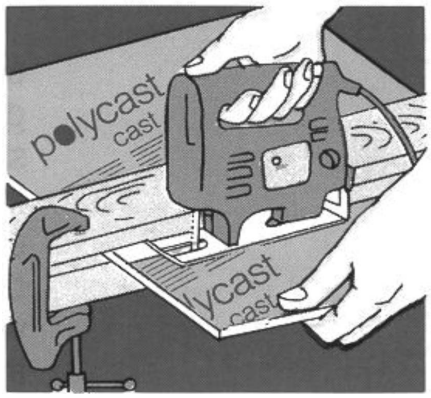
Straight saws: Straight saws or crosscut saws may be used for long, straight cuts on Polycast® acrylic sheet of almost any thickness. The saw should have a hollow-ground blade with very little set and at least 10 teeth per inch. Make certain the material is firmly clamped and supported. Hold the saw at an angle of about 45° from vertical, and be sure to keep it straight.

Coping saws: Coping saws or scroll saws are good for shorter cuts, curved cuts, or even intricate designs. Use very narrow blades with only a slight set.

Hacksaws or keyhole saws: These hand saws for cutting metal may also be used for short cuts in Polycast® acrylic sheet. Choose a blade with approximately 18 teeth per inch. Use a smooth, even stroke. Apply very little pressure.



Clamp material firmly to table before cutting with a saber saw.



Use clamping strip as a guide for the saw.

ROUTING AND SHAPING

Polycast® acrylic sheet can be machined with standard woodworking routers in much the same way as wood. You'll find many uses for portable hand routers and small table routers. Use them to cut patterns into edges, or larger holes out of pieces of Polycast® acrylic sheet.

For best results, use single-fluted bits for inside circle routing and double-fluted bits for edge routing.

Routers are designed to operate at high speeds: 10,000 to 20,000 rpm is recommended for Polycast® acrylic sheet. And because routing speeds are so high, vibration must be scrupulously avoided. Even small vibrations can cause crazing and fractures in acrylic sheet during routing.

FILING

It is easy to file Polycast® acrylic sheet to a surface ready for final polishing. The filing, however, must be done correctly and carefully.

Almost any commercial file can be used. But the quality of the finish will depend on your choice of file coarseness. A 10 to 12 inch smooth-cut file if recommended for filing edges and removing tool marks. Other files - half round, rat tail, triangular files, and even small jewelers' files - are good for smoothing insides of holes, cutting grooves and notches, or finishing detail.

File in only one direction. Keep the teeth flat on the surface of the Polycast® acrylic sheet, but let the file slide at an angle to prevent the teeth from cutting unwanted grooves in your work.

Always keep your files clean and sharp. Wire brush them often to prevent the teeth from filling up. And don't use your acrylic files for working metal or other materials that might dull the teeth.

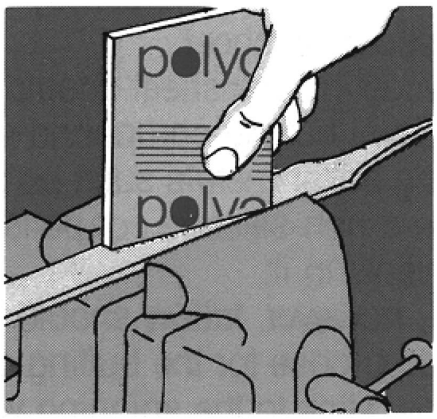
For small work, try clamping the file in a vise and rubbing your work across the file.

SANDING

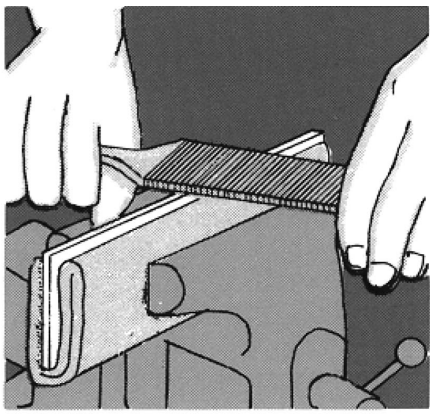
Before Polycast® acrylic sheet is ready to be polished, it should be sanded to a smooth, satiny finish. As with filing, the quality of the final finish will depend on the grades of sandpaper used. The finer the final grit, the smoother the finish. It will usually take at least three steps to get a good finish.

If there are scratches deep enough to require it, start with coarse grit No. 60 sandpaper. Use it dry. When the original scratches are completely removed, sand with a medium grit paper – 220 is good – to remove the scratches from the coarse paper. Use the medium grit paper dry as well. Finally, sand to a satiny finish with a fine grit, wet-or-dry No. 400 paper. Fine grit paper should always be used wet to keep the paper from clogging and obtain a smoother finish. Rinse the paper frequently. Grits as fine as 600 may be used.

Always wipe your work clean when changing to a finer grit. Be sure all deep scratches have been removed.



For small work, clamp the file in a vise and rub the piece across it.



Slide the file at on angle to prevent cutting grooves into your work.

SANDING (CONTINUED)

Sanding by Hand: Hand sanding Polycast® acrylic sheet is very much like hand sanding wood. Most of the same techniques apply. But sanding acrylic must be done with far greater care. You should always use a wooden or rubber sanding block.

When removing scratches, be sure to sand an area that is slightly larger than the scratch. This will help prevent low spots. Sand with a circular motion. Use light pressure and plenty of water with wet-or-dry papers.

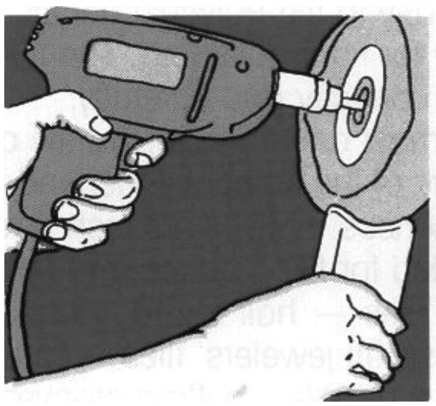
As you get the feel of working with Polycast® acrylic sheet, your own observations and experience will be your best guide to determining how coarse a grade to start with on each particular job and how many different grades will be needed to do the job most efficiently.

Don't be afraid to experiment with different sanding techniques and different types of blocks. You'll learn a lot of new tricks – perhaps the very one you'll need to help solve your next problem.

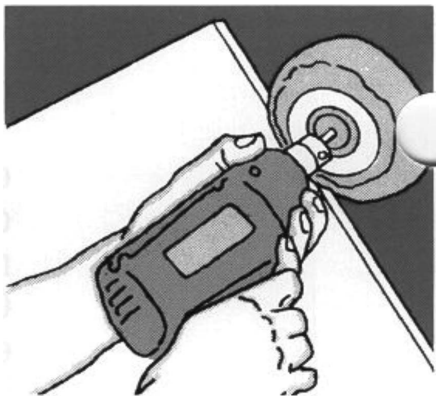
Sanding with power sanders: Almost any commercial power sander can be used to work Polycast® acrylic sheet. Naturally, different types of sanders are preferred for different operations. As a basic rule, use them as you do when sanding wood. They should, however, be operated with lower pressure, and at slower speeds. Experiment on scrap pieces. All wet-or-dry machine sanding should be done wet – especially with grit sizes of 150 or finer.

POLISHING

The original high luster of Polycast® acrylic sheet can be restored to the edges and surfaces by polishing with a power driven buffer. It is quite possible to polish Polycast® acrylic sheet by hand using a soft cloth and a very fine abrasive. But hand buffing is an extremely tedious process. You're likely to get a sore arm long before you get a finely polished surface. Power-driven buffing tools are recommended almost without exception.



Always use a buffing compound for polishing. Use it sparingly.



Edge polishing with a hand drill.

POLISHING (CONTINUED)

Because inexpensive buffing wheels are available as an attachment for any electric drill, equipment should not be a problem.

Buffing wheels and compounds good for acrylics are sold by your Polycast® acrylic sheet distributor, but special wheels are not really necessary.

A good buffing wheel for Polycast® acrylic sheet will consist of layers of 3/16" carbonized felt or layers of unbleached muslin laid together to form a wheel between 1 and 3 inches thick. The larger the wheel, the better. *Caution:* Don't use one too large for your equipment. The wheel should reach a surface speed of at least 1200 feet per minute. Speeds up to 4000 feet per minute are useful for acrylics.

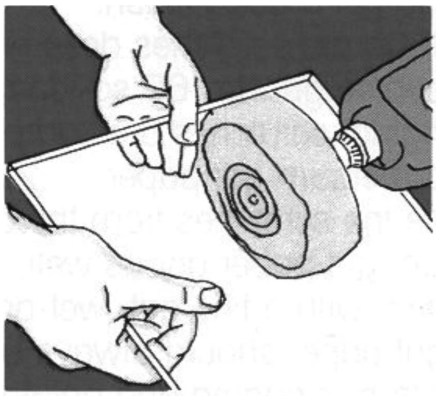
Solidly stitched wheels with rows of concentric stitching should be avoided. They are often too hard and may burn the acrylic.

Never use a wheel that has been used to polish metal. Traces of the metal may remain to scratch the Polycast® acrylic sheet.

Polycast® acrylic sheet should be polished using a commercial buffing compound of the type used for polishing softer metals such as silver or brass. Or you can use a non-silicone car polish that has no cleaning solvents in it.

First, however, tallow should be applied to the wheel as a base for the buffing compound. Just touch the tallow stick to the spinning wheel. Then, quickly apply buffing compound.

To polish, move the piece back and forth across the wheel until you get a smooth, even polish. Be careful not to apply too much pressure. Keeping the work constantly moving across the wheel will help prevent heat buildup which can mar the surface by burning or smearing. It also prevents overheating that will later develop into stress craze.



Do not start at top of piece when polishing surface.

For safety reasons, it is important not to start polishing near the top of the sheet. The wheel may easily catch the top edge, tearing the piece of Polycast® acrylic sheet out of your hands and throwing it across the room . . . or at you. Always wear safety glasses and be extremely careful.

Begin polishing approximately one-third of the way down the sheet, and keep moving it back and forth until you've reached the bottom edge. Then turn the sheet around and repeat the process on the other half.

FORMING

When heated above 275°F Polycast® acrylic sheet becomes soft and pliable, almost like a sheet of flexible rubber. It may then be formed into almost any shape. As the sheet cools, it hardens and retains the formed shape, provided it has been held in place during the cooling process.

Do not exceed 360°F for more than one hour. Excessively high temperatures may cause the sheets to blister and burn.

Never heat Polycast® acrylic sheet in a kitchen oven. Acrylic sheet gives off highly flammable fumes when decomposed by overheating. These gases are potentially explosive if allowed to collect in an unventilated area.

Most kitchen ovens *do not* have accurate temperature controls. Temperatures can be off as much as 75°, possibly allowing the acrylic to overheat.

Because air is not forcibly circulated in a standard kitchen oven, the fumes will accumulate. When they come into contact with the heat source there is likely to be an explosion. ***Repeat: Do not heat acrylic in a kitchen oven.***

FORMING WITH A STRIP HEATER

A strip heater is the most useful acrylic-forming device in the home craftsman's arsenal. Used properly, it is perfectly safe. A correctly assembled strip heater will not exceed safe heat.

Unfortunately, a strip heater can only be used to form straight-line bends. It will allow you to make those bends with a minimum of trouble – and a minimum of electricity.

A strip heater heats only the area to be formed - there's no need to heat the entire sheet if you only intend to make a straightline bend. It heats quickly. And with a little care you'll get excellent results, because the rest of the piece stays cool.

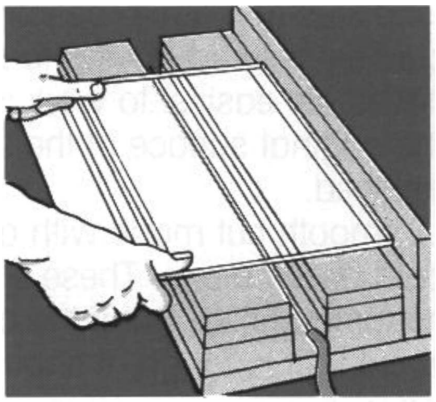
Strip heater kits with complete instructions are available from your Polycast® acrylic sheet Distributor.

Heating and forming Polycast® acrylic sheet with a strip heater is not difficult. When properly heated, the acrylic may be easily bent into smooth, clean corners. With patience and a little practice you will achieve excellent results.

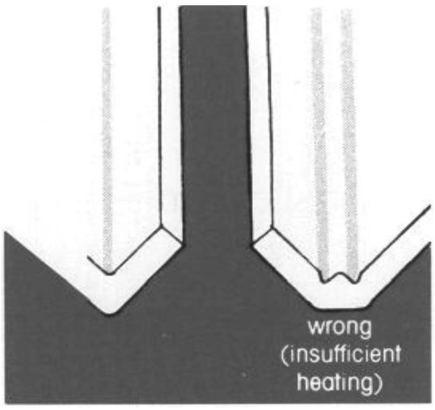
First, remove the masking paper from the line of the bend. The rest of the masking paper should be left in place to protect the unheated area. Then, lay the sheet on the heater with the bend line directly above the exposed heating element so that the bend will be made *away* from the heated side. The length of heating time will vary according to the thickness of the sheet. Polycast® acrylic sheet thicker than 3/16" should be heated on both sides for a proper bend. Heat the sheet until it begins to sag at the bend line. Don't try to bend the sheet before it is fully heated, or after it has partially cooled. This will result in irregular and creased corners and high internal stress.

Heat the bend line very carefully. Uneven heating can cause bowing along the line of the bend. Sometimes this is difficult to avoid – especially with pieces over 24" long. Bowing can be minimized, however, by holding the just-formed material in a clamp or jig until it has cooled.

FORMING WITH A STRIP HEATER (CONTINUED)

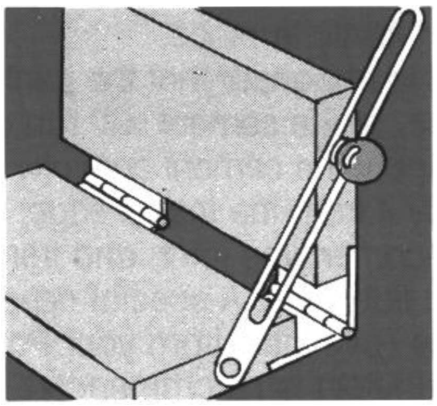


Heating acrylic sheet with a strip heater.

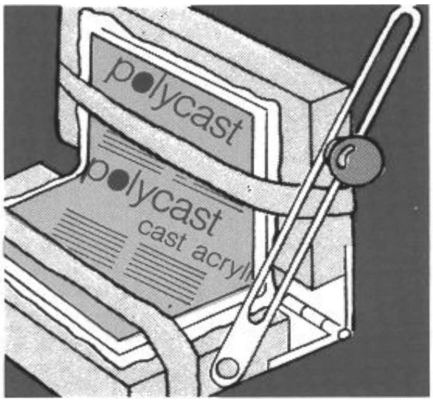


Correct and incorrect bends.

Forming jigs and clamps should be used for best results. They can be very simply made of wood and used over and over. Make preformed jigs for certain angles or even special shapes for individual projects. Variable angle jigs can be made with two pieces of wood hinged together and held at the desired angle with a variable brace, as shown. Felt, flannel, or flocked rubber should be used to line any surfaces that may come into contact with the heated acrylic. Wear heavy cotton gloves when handling heated Polycast® acrylic sheet. They'll protect your hands, as well as the sheet.



Right-angle forming with material taped in place.



Hinged, variable-angle jig.

Other forming techniques: Polycast® acrylic sheet may be formed into almost any shape. But specialized heating and forming equipment is usually required for all but the simplest projects. And while many of the forms and jigs required for two and three dimensional forming can be easily made out of wood in the home shop, such projects are beyond the scope of this booklet. However, many excellent books are available covering all types of acrylics forming. They deal with techniques such as drape forming, plug and ring forming, surface molding, blow and vacuum forming, and even design, construction, and use of ovens for heating acrylic sheet. Your Polycast® acrylic sheet Distributor should have a selection of these books. He can recommend one that will suit your needs.

JOINING

Except for certain specialty acrylics*, Polycast® acrylic sheet can be joined with solvent cements to form strong, durable, transparent joints. But the ultimate strength and appearance of your joints will depend on how carefully you make them. Getting really good joints requires a lot of care and considerable skill. Practice on scrap pieces. The more experience you have, the better your work will be.

Basic cautions to observe when working with acrylic solvents:

- Always work in a well-ventilated area.
- Do not smoke - solvents are highly volatile and may be flammable.
- Protect skin from contact with cement and solvents.
- Do not attempt to cement Polycast® acrylic sheet-in temperatures under 60° F Temperatures from 70° to 75° F are ideal.
- Always follow the cement manufacturer's recommendations.

PREPARATION OF THE JOINT

All surfaces that are to be joined should fit together accurately without having to be forced. Flat, straight surfaces are easiest to work with. Any area that is part of the original surface of the sheet should be left untouched.

A smooth cut made with a cooled power saw also should be left alone. These surfaces need no additional preparation. But if the area to be joined has a saw cut that is rough, it should be wet sanded or finished with a joiner or shaper to get a perfectly flat, square edge. Do not polish edges that are to be cemented. Polishing leaves a convex edge with rounded corners. It will make a very poor joint. Always remove the masking material from around the area to be joined.

*Polycast® Poly 76 and Poly 84 require two-part polymerizable cements. Contact our customer service department for further information.

CAPILLARY CEMENTING

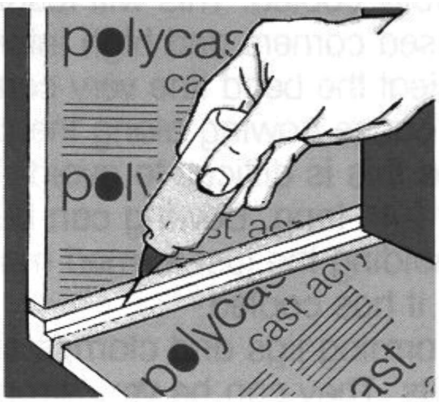
Capillary cementing is probably the most popular method of joining Polycast® acrylic sheet. It works because of the ability of a low-viscosity solvent-type cement to flow through a joint area by capillary action. Properly done, it yields strong, perfectly transparent joints. But capillary cementing won't work at all if the parts do not fit together perfectly.

Solvents and cements are available from your Polycast® acrylic sheet distributor. They can recommend the ones that are best for your particular projects.

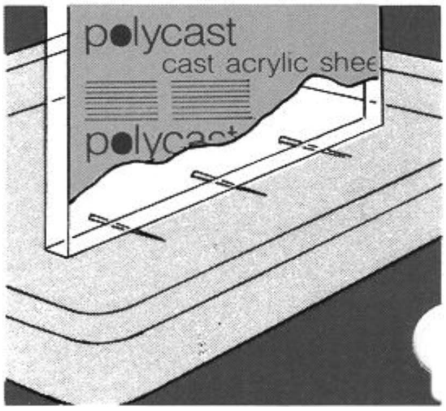
First make sure the parts fit together properly. Then join the pieces together with masking tape. Or clamp them to a form that will support the pieces and hold them firmly in place.

It is important that the joint be kept in a horizontal plane, or the cement will run out of the joint.

CAPILLARY CEMENTING (CONTINUED)



Capillary cementing. Apply solvent to inside edge.



Soak cementing. Material must be supported on pins or wire brads.

Apply the cement carefully along the entire joint. Apply it from the inside edge, whenever possible on a box-corner type joint, and from both sides, if possible, on a flat piece. A special needle-nozzled applicator bottle (available from your Polycast® acrylic sheet distributor) is recommended.

If the cement does not flow completely into the joint, try tilting the vertical piece very slightly (about 1° towards the outside. This should allow the solvent to flow freely into the entire joint.

Always let the joint dry throughly before removing tape or clamps. Maximum bond strength will not be reached for 24 to 48 hours.

DIP OR SOAK CEMENTING

This method of cementing Polycast® acrylic sheet involves dipping the edge of one of the pieces to be joined directly into the solvent. It is very important that only the very edge be dipped. Exposing too much area to the solvent will result in a weak, slow-setting point.

You'll need a shallow tray in which to dip the acrylic. The tray can be made of aluminum, stainless steel, galvanized steel, or glass. Do not use plastic – the solvent may dissolve it.

Place short pieces of wire, pins, or brads into the tray to keep the edge of the Polycast® acrylic sheet from touching the bottom of the tray. The tray must be almost perfectly level. Pour solvent cement into the tray so that it just covers all the brads – and covers them evenly.

Now, carefully place the edge to be cemented into the tray so that it rests on the brads. You can hold the piece upright by hand, but it is better to use some kind of support to hold the piece in place while it soaks. A couple of padded clamps attached to the sheet, and resting on the edge of the tray are fine. Heavy pieces of wood placed against each side of the sheet will also work. Slotted wooden supports are usually used for production work, but anything that will hold the piece firmly upright is sufficient.

DIP OR SOAK CEMENTING (CONTINUED)

The Polycast® acrylic sheet should be left in the solvent from 1 to 2 minutes, depending on the thickness of the sheet, the type of solvent used, and the bond strength required. Soaking time should be long enough to allow the edge of the sheet to swell into a “cushion:’ As soon as an adequate cushion is formed, the piece must be removed. Hold it for a few seconds at a slight angle to allow the excess solvent to drain off. Then carefully, but quickly, place the soaked edge precisely into place on the other part to be joined. Hold the parts together for about 30 seconds without applying any pressure. This will allow the solvent .to work on the surface of the other piece.

After 30 seconds you can apply some pressure to squeeze out any air bubbles. But be very careful not to squeeze out the cement.

When the pieces are joined, the part should be placed in a jig or clamp to maintain firm contact for 10 to 30 minutes. Do not allow the parts to move during this critical time.

Allow the joint to set for another 8 to 24 hours before doing any further work on it.

VISCOUS CEMENTING

Viscous cements are used to cement joints that can’t be easily cemented by capillary or soak solvent methods – either because they ore difficult to reach, or because the parts don’t fit properly together. Viscous cement is thick. It will fill small gaps, and can make strong, transparent joints where solvent cements can’t.

Viscous cements ore available from your Polycast® acrylic sheet distributor. Or you can make your own viscous cement by dissolving chips of clear Polycast® acrylic sheet in a small amount of solvent. Let the solution stand overnight.

Remove the masking material from around the joint area, and carefully apply a small bead of cement to one side of the joint. Then gently join the pieces as described under “Soak Cementing:’

Masking tape may be applied to protect the area around the joint. But it should be removed carefully after about 5 minutes, while the cement is still wet. Don’t touch the parts at all for the first critical 3 minutes, or the joint will not hold. The part may be carefully moved after 10 minutes, but don’t do any additional work on it for 12 to 24 hours.

POLYMERIZABLE CEMENTING

Superior joints ore achieved using polymerizable, or “two part” cements. These cements must be mixed prior to use and must be used immediately, as they “set up”, or harden. Instructions on the use of these cements may vary from manufacturer. Contact your distributor for more information.

GLAZING

Polycast® acrylic sheet is lighter, more transparent, and far more break resistant than glass. Thus glazing with Polycast® acrylic sheet is safe and easy.

Important: *Polycast® acrylic sheet expands and contracts at a much greater rate than glass. To compensate, remember to allow approximately 1/16" per running foot shorter than your frame size.*

The sheet thickness you need depends on the size of your window. Use the chart on page 20 to determine the proper thickness for each application.

SHEET SIZE	RABBET DEPTH
Up to 24" x36"	1/2" to 5/8"
Up to 36" x 48"	5/8" to 3/4"
Up to 48" x 72"	3/4" to 1"

For windows smaller than 24", use an elastic glazing compound which is compatible with acrylic sheet. Your Polycast® acrylic sheet Distributor can recommend one.

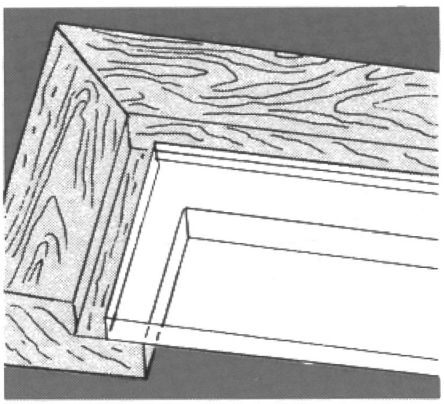
For windows over 24", it is important that you select the proper rabbet depth to allow for expansion and contraction.

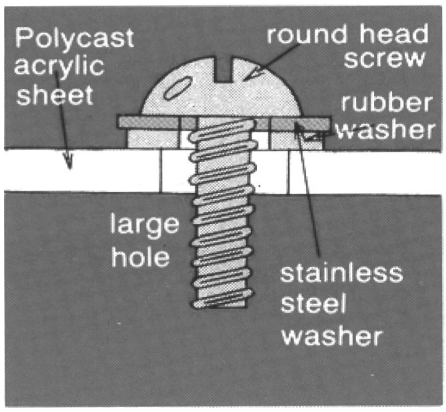
Use a continuous removable stop, and caulk with a polysulfide sealant or butyl tape.

If it is necessary to bolt a small panel to a frame, drill mounting holes larger than the diameter of the bolts or screws. Use round-head screws with rubber washers against the Polycast® acrylic sheet and stainless steel washers against the screw head. After tightening, back off 1/2" turn.

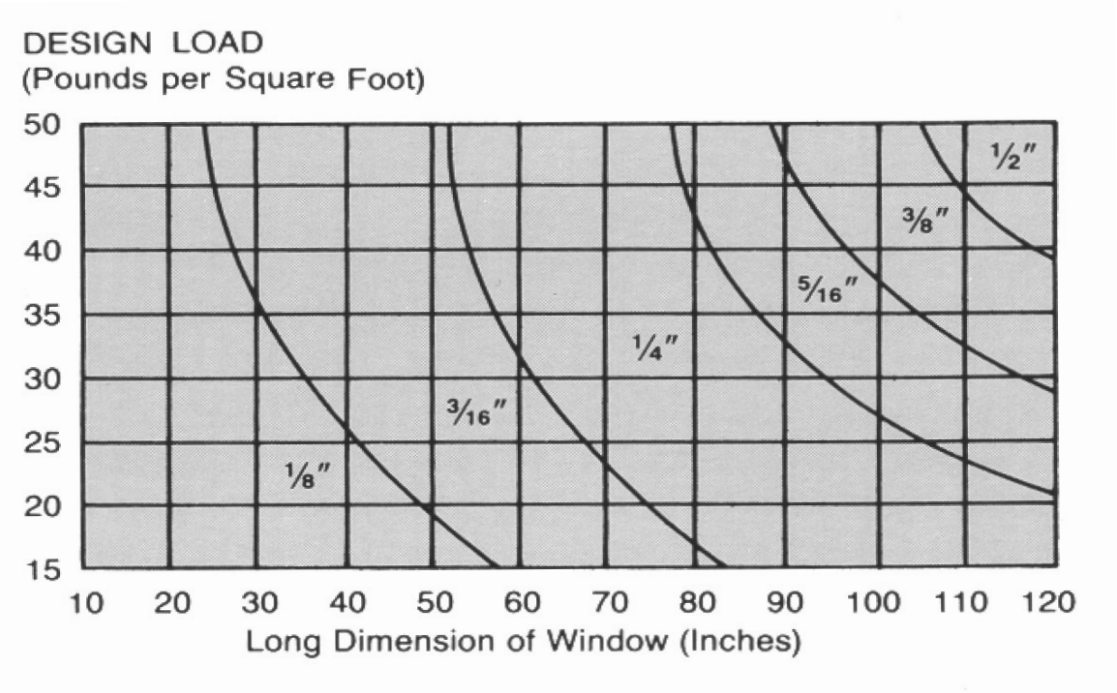
Do not use counter-sunk, flat-head screws. They will fracture the acrylic sheet.

Your Polycast® acrylic sheet Distributor can supply any glazing materials – and any additional information you may need to do the job right with Polycast® acrylic sheet.





RECOMMENDED THICKNESS



FIRE PRECAUTIONS

Polycast® acrylic sheet should be protected from flames and high heat because it is a combustible material. This thermoplastic usually burns rapidly to completion if not extinguished. The products of combustion are carbon dioxide and water if sufficient air is present; if not, toxic carbon monoxide will be formed. Users should follow building codes and exercise good judgment in the use of this material. Access panels may be required for evacuation of areas glazed with Polycast® acrylic sheet. The combustibility properties of Polycast® acrylic sheet can be described by the following - Self Ignition Temperature as measured by ASTM D 1929 for Polycast® acrylic sheet is 860°F. Rote of burning 1/a inch thicknesses as measured by ASTM D 635 is 1.0 inches per minute – Smoke Density as measured by ASTM D 2843 is 3% to 15%. While this text data is based on small-scale laboratory tests frequently referenced in various building codes, these tests do not duplicate actual fire conditions.

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 a particular purpose is made.

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