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ULTRABOARD™

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UltraBoard Core™ Application Guide

Manual Cutting

Straight Cuts

We recommend using the X-Acto #1 knife with #11 blades for simple, straight cuts. Other suitable manual cutting tools include the: X-Acto Utility Knife, X-Acto Board Cutter, single-edge razor blades, mat cutters and powered cutters.

The tool choice isn't as critical as keeping the blade clean of adhesive or paint residue and changing blades frequently.

A dulled, burred, or broken tip will damage the foam and tear the paper facing. Using a soft surface support – for example the X-Acto Self-Healing Mat under the foam board will prolong the life of a blade. To make a cut, use a straightedge or metal ruler as a guide. Hold the blade at a 30°angle to allow more of the cutting edge to do the work. Use steady pressure, pulling the knife along the entire length of the cut. Don't use a sawing motion or force the blade back and forth. Sometimes, it may be necessary to make more than one pass, particularly with ½" boards.

Recommended Cutting Tools:

- X-ACTO Board Cutter- #11
- X-ACTO #1 Knife- #11
- X-ACTO #8R Knife
- Standard Utility Knife- Single-Edge Razor
- Logan Mat Cutter- Standard Size 12
- Alto™ EZ Mat- X-ACTO #19
- Dexter Mat Cutter #3306800
- X-ACTO Mat Cutter- X-ACTO #19
- Fletcher 2000 Mat- Cutter Size 15
- C & H Mat Cutter- Single-Edge Razor

Holes

To cut out a circular hole, penetrate through the board with your knife blade, cutting carefully. Unless a circular hole is mandatory, you'll find it easier to cut a square opening. Proceed as you would for making a straight line cut, as described above.

Circles and Curves

To cut circles, use an X-Acto Knife with a #11 blade and circular guide or template to help maintain a smooth, even edge throughout the cut. For curves, first draw a guide line on the board surface. Make a shallow cut, then gradually and smoothly deepen the cut through the other side of the board. Remember, let the sharp edge of a clean blade do the work for you. We always recommend performing a trial test before a production run.

Machine Cutting

Die-Cutting

You can achieve a variety of effects by adjusting the various aspects of the process. It's a good idea to make a test run before working on the actual piece. Ideally, the die should be constructed with a ½" die board, 2-3 point center bevel. For embossing, to add dimension within an image, use a 2-3 point blunt or creasing rule with a medium-hard temper. We do not recommend die cutting 3/8″ or 1/2 " thickness foam board. For best results, use 1/8" or 3/16″ thickness. Ideally for die-cutting use a 2-3 pt. rule with soft center bevel ejection rubber.

Guillotine Cutting

In general, guillotine cutting is not recommended. Satisfactory results may be obtained by cutting 3 or 4 sheets at a time with a sheet of cardboard on top of the stack to dissipate blade pressure and minimize surface marking. Proper machine upkeep and a sharp cutter blade are essential.

Machine Cutting

For intricate patterns we suggest using the Black & Decker Piranha carbide saw blade-40 teeth, fine crosscutting (www.blackanddecker.com) on a table, radial, or circular saw. You can also use a band saw with a very fine blade or the Cutawl K-11 with 21D or 23D blades (www.cutawlmachine.com) for intricate cuts. Corrugated board or chipboard placed beneath the foam board will minimize rough edges. It's a good idea to sand the cut edges with fine-grit paper for a cleaner finish.

Flatbed Cutting

When cutting shapes and digitally printed materials UltraBoard Core provides excellent results when using the following flatbed cutters:

- Gerber M3000 (www.gspinc.com)
- Zund G3 (www.zund.co.uk)
- Mimaki CF3, CF2

Routing

Looking for cutter profiles?

Click here to visit our cutter profiles page.

Routing In general, routing is generally not suitable for laminated paper products. But you can

produce a clean, finished edge with the proper bit, a “compression spiral” or an “up-shear/ down shear” router bit. Sand all machine edges with a fine-grit paper. See www.cronsrud.com for more information on router bits.

Screen Printing

The brilliant white surfaces of UltraBoard Core foam boards are perfect for screen printing, roller coating, flexography, and many other printing processes designed for flat board stock. The UltraBoard Core foam core board clay-coated surfaces make them very receptive to printing inks, providing sharp definition, superior ink holdout, and exceptional coverage. The ripple-free, ultra-smooth surface does not require any preparation or priming. Be sure that the surface is clean and free of dust or debris, especially for boards that have been cut down to size. Major screen-printing ink manufacturers have recommended the following types of ink for use with our UltraBoard Core foam boards:

- Water soluble inks
- Acrylic water-based inks
- UV inks
- Gloss vinyl inks
- Puff inks
- Poster inks

Choose screen mesh sizes according to the fineness of line detail required. (Your ink supplier or manufacturer is a good source for recommendations.) Air drying generally takes about 30 minutes or less, while jet drying takes only seconds. Gloss enamels will require longer drying times. Use solvent-based inks with caution to avoid damaging the polystyrene core.

When printing on UltraBoard Core foam boards with darker surface colors, you may need a white base coat to endure opacity

Digital Flatbed Printing

Flatbed printers print any digital image directly to rigid surfaces within a matter of seconds. Most use UV Curable or Solvent Inks which form a thin layer on the surface and are cured by a UV lamp. UltraBoard has worked with major flatbed manufacturers to test our foam board/ machine compatibility.

Mounting & Laminating

You can use wet glues, spray adhesives or, with suitable equipment, adhesive tissues and films having various activating temperatures. Custom Framers also use hinge-mounting for original art, signed limited edition prints, etc. For more information, visit our website, www.encoreproducts.com. When mounting large, oversize items, it’s good practice to use a counter-mount of comparable size and strength on the reverse side of the mounting board to help maintain flatness. If you notice a slight bow, turn over the board and mount artwork to the other side.

Wet Glues
Wet glues can be applied to UltraBoard foam board with a spray gun, brush or roller system. Manual equipment, such as cold mechanical and vacuum presses, are useful to provide consistent, even pressure. Automated equipment is available that will efficiently coat boards and mount images. Whether you use manual or automated methods, the glue you select should have a low-water content and high-solids content to avoid bowing the board from excessive moisture. PVA glues are recommended.

Pressure Sensitive Mounting
Apply pressure sensitive adhesive with a squeegee or roller press. A roller laminator, used with UltraBoard Pressure Sensitive foam board will greatly facilitate pressure-sensitive mounting of wide format images.

Spray Adhesives
Carefully follow manufacturer instructions for successful, problem-free mounting. Using a cold vacuum press with such products as Elmer's Spray Adhesive, Elmer's Mounting Spray, Elmer's Extra Strength Spray Adhesive, 3M Vacu-Mount or 3M Super 77, greatly facilitates spray mounting.

Dry Mounting
The first consideration is choosing the right adhesive for the particular artwork to be mounted. This is usually determined by the artwork and the substrate being used.

Keys to Successful Mounting

Time
Dwell time in the press is determined by the selected adhesive and the size of the project. Check the instruction sheet included with each adhesive.

Temperature
The correct temperature is determined by the adhesive being used. Different materials need different temperatures, ranging between 150°F (66°C) and 210°F (99°C). Check the instruction sheet with each adhesive.

Pressure
Proper pressure on the assembled materials for mounting is essential. Mechanical dry mount presses have provision for manually adjusting the pressure; vacuum presses make the adjustment automatically.

Moisture Reduction
If the humidity is 50% or more, the artwork and mount board should be pre-dried in mechanical presses by placing them in press between two sheets of Kraft paper for 15-30 seconds. Moisture is

automatically reduced in the vacuum press. We do not recommend dry mounting with MightyCore. High temperatures can deform the product and cause it not to perform as intended.

Mechanical Presses
Mechanical Presses require an operator's attention to all of the preceding elements. However, temperature, once set, is held constant by a thermostat; mounting pressure may need adjustment when mounting extra-thick materials. Adjustments to the pressure are possible by following the instructions located in your Owner's Manual.

Vacuum Presses
Control all four elements in one step, using a digital control panel for setting time, temperature and pressure; moisture content is automatically reduced in the first 30-45 seconds while the vacuum is being created. That's why the dwell time for given adhesive is longer for vacuum presses than it is for mechanical presses.

After-mounting Cool-down
Immediately upon removal from the press, the mounted materials should be cooled under a weight or plate glass for 30-60 seconds. This improves the bond and keeps the board flat, minimizing the tendency to bow. The weight or glass should entirely cover the mounted materials to prevent denting them.

Laminating
Heat-activated laminating films eliminate the need for glass and prevent fading caused by ultraviolet light. Ideal for ink jet, photographs, and plain paper images. Mounting and laminating in dry mount presses can be done in one easy step in 5-7 minutes at 215°F (102°C).

Roller Laminators
UltraBoard Core foam boards, with their ultra-smooth surface papers, are well suited for hot or cold roller laminating equipment.

For heated laminators, use a heatactivated adhesive foam board, such as SingleStep.
For cold laminators, use a pressure sensitive adhesive foam board. UltraBoard offers Permanent Adhesive and Premium Tac Repositionable Adhesive foam boards.
The nip between the rollers of the laminator should be set to accommodate the thickness of the board being used. Roller pressure, tension, speed and temperature (if applicable) should be set in accordance with the manufacturer's recommendations found in your Owner's Manual.

Gluing
Most glues work well with UltraBoard foam boards for edge-to-edge and surface-to-surface joining.

These are the most commonly used glues:

- Hot Melt
- Contact Cement
- Carpenter's Glue
- Craft Glue
- Rubber Cement
- Spray Adhesives Modeling cements and "super" adhesives should be used with caution.
- Solvent-based adhesives may react with and damage the polystyrene core.

Edge-to-Edge Applications
Apply a thin coat of glue to one edge and press firmly against the edge of the other piece to be joined. Hot glue will set up almost immediately. Wet glues, which will have variable drying times, require clamping or use of straight pins to secure the edges in place until the glue has dried. Curves, angles, and corners should be reinforced with interior supporting ribs, when possible.

Surface-to-Surface Applications
Apply sufficient adhesive for a firm bond and press one surface firmly against the other, using a clamp or weight to maintain good contact between the two pieces. Also, if the surface area is large, you should counter-mount a similarly sized board on the back to prevent bowing. If you use rubber cement or contact cement, be sure to use a slip sheet between the surfaces to prevent accidental gluing before the pieces are properly positioned. Do not attempt to reposition surface-mounted materials after the glue has set. The paper face of the foam board will be damaged.

Finishing

Painting
UltraBoard Core white foam boards can be painted to a perfect finish using a sprayer, roller or brush, without any special surface preparation. Suitable paints include flat, semigloss and enamel acrylics, poster paints, tempera, acrylic lacquers, latex paints, 3-dimensional and glitter paints. Airbrush inks, India ink, traditional markers and oil paint markers also yield excellent results on the boards' claycoated paper surfaces. When applying spray lacquers and enamels, it's best to seal the surface with a light coat initially, then apply a second and even a third coat to assure thorough coverage. If the project will be subjected to frequent handling or other sources of potential soiling, you might want to protect the finish with a clear acrylic varnish.

Fire-retardant Coatings
You can apply fire-retardant coatings. Two appropriate products are Flame Control 10-10 and 20-20 Flat Latex Fire Retardant Paints. Both are recommended for UltraBoard Core foam board by the manufacturer, Flame Control Coatings, Inc. (www. flamecontrol.com) If you want to use other products of this type, be sure to get the specific fire-retardance data from the manufacturer. To minimize bowing, apply light coats on both sides to balance the two paper liners.

Decorative Coverings
Contact papers, coated papers, wallpapers and fabric can be applied to UltraBoard foam board

with spray adhesive, contact cement, rubber cement, white glue and by dry mounting. As with other processes described in these pages, large size projects should have a counter-mount on the back of the board to minimize bowing.

Proper Handling

The information summarized here will help you keep your company's UltraBoard foam board products in peak condition, both in inventory and in the intended end use.

Storage

Store foam boards flat, not leaning on edge or standing vertically.
Keep boards in the original shipping box, with the lid closed or store wrapped and sealed on a pallet until delivered to the end user.
Store away from loading docks and exterior doors.
Ideally, store in a controlled environment at 68°F – 75°F (20°C-24°C) and at a relative humidity between 45-50% to prevent excessive expansion and contraction of the board's paper fibers.
Allow approximately 24 hours to acclimate to a new workplace.
Pre-cut foam board before direct printing.
Clean the working area and cover the materials to avoid dust and static electricity.

Display

Use structural supports for larger sized items to minimize the potential for bowing.
Keep out of extended exposure to direct sunlight.
Don't install close to heating and cooling units or sources of moisture.
Avoid installing near exterior doors or open windows.
Don't use near an open flame or other ignition source.
Paper by its very nature, is an absorptive medium. In high humidity, as typically experienced in summer months, paper will absorb moisture from the atmosphere. As a result, the paper swells; it grows in all three dimensions creating a waviness which we call cockling. To protect from humidity, boards should be stored in a controlled environment.

Preventing Bowing

Bowing occurs when different conditions exist on opposite sides of the foam core board including temperature and coating applications. Potential for bowing is also much higher in thinner boards at larger sizes such as 4' x 8' sheets. Upon unpacking, panels that display bowing may be corrected by simply inverting the panel on a flat surface for up to 24 hours, allowing bowing to dissipate.

To insure maximum flatness in installation environments, it is ideal to utilize a thicker panel. If using a thinner panel, wood frames or extruded aluminum channels may be affixed to the sheet perimeters to maintain even tensioning.

If panels have a coating applied to more than 50% of one side's surface area, ideally the coating is equally applied to the opposite panel side to achieve equal surface tensioning, thus avoiding potential bowing.

Outdoor Use

UltraBoard Core is not recommended for outdoor use.

Flammability

UltraBoard Core is flammable and may constitute a fire hazard. Do not expose to an open flame or other ignition source.