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Working with Phenolic Balsa-Foam®

Phenolic Balsa-Foam® is available in three different densities: Balsa-Foam® 5 lbs. per cubic foot (pcf), Balsa-Foam® 10 lbs. per cubic foot (pcf) and Balsa-Foam® 20 lbs. per cubic foot (pcf). Aside from weight and hence, hardness, all 3 densities are essentially the same. The same techniques can be used except that the hardest, 20 lb. density offers much more resistance to cutting or shaping tools, and techniques such as punch cutting or impressing the foam may not be practical with the harder material, Balsa-Foam® 20 pcf.

Hot Wire cutting does not work with Balsa-Foam® because Balsa-Foam® is very resistant to heat. It is resistant to heat up to 300 F. There is also no need for a hot wire because, unlike polystyrene foam for which the hot wire method was developed, Balsa-Foam® can be cut easily with a knife or saw.

Following are some tips and techniques for working with Phenolic Balsa-Foam®. If you have additional ideas, please contact us at info@balsafoam.com

CARVING AND SHAPING: A plan view drawing can be transferred to the surface of Balsa-Foam® by placing carbon paper under the plan and retracing the lines with a pencil or ballpoint pen. You can also make a template of poster board to guide scratch lines etched into the surface of the foam with a stylus. With Balsa-Foam® 5 pcf, a fondue skewer makes an effective stylus or you can visit the AMACO website, http://www.amaco.com/ and order from a large selection of styluses and carving tools.

Any kind of hand saw will cut easily through Balsa-Foam® 5 pcf and Balsa-Foam® 10 pcf. You can also use a steel ruler to make push-cuts. A series of push cuts will enable you to cut out complex interior shapes. Just be careful to keep the ruler at a 90 degree angle. Carving knives and chisels virtually glide through Balsa-Foam 5 pcf and also cut relatively easily through the denser, harder Balsa-Foam® 10 pcf or Balsa-Foam® 20 pcf. Balsa-Foam® 20 pcf cuts more easily than all woods. We recommend experimenting with a variety of tools and methods for shaping the foam.

SANDING: Use a sanding block to smooth the surface. A 1/2 inch dowel with 80 grit sandpaper wrapped around it makes an effective tool for smoothing interior curved surfaces. A sanding block, emery board or file is an effective shaping tool.

MAKING IMPRESSIONS - Since Balsa-Foam® has no "memory" or rebound, it will hold an impression. This means that you can create many different types of surface detail by simply pressing the appropriate object into the surface. Surface texture can be enhanced using a tool to make impressions. The rounded end of a thin paint brush handle, for example quickly dents the foam for a brown stone surface effect. If you need a specially shaped rectangular, triangular or odd-shaped hole, consider carving the positive counterpart from a piece of wood. This technique, which is unique to Balsa-Foam® 5 pcf & Balsa-Foam® 10 pcf, can save a lot of time on repeating detail. Balsa-Foam® 20 pcf is too hard to impress easily, but the right metal tools can make effective small impressions.

FILLING DENTS AND MISTAKES: There are several ways to effectively fill the surface texture of the foam and achieve a smooth coat. Dents and other surface imperfections can be filled with plaster spackle. Harder fillers are not recommended because they will be difficult to sand smooth with the foam's surface. Acrylic Modeling Paste, available in craft and art supply stores, can be thinned with water or clear acrylic and applied with a brush. The surface can then be sanded to achieve a plaster-smooth surface.

GLUING & BONDING: Balsa-Foam® can be glued with hot glue, or wood glue, but the most effective method is to coat one surface with a generous layer of thick CA glue and the opposing surface with a CA accelerator. CA accelerator (Cyanoacrylate glue) which is available from Micro Mark at (800) 225-1066. Users have also told us that the gel-type Super Glues work well and they are available at most large box hardware stores.

When bonding two blocks of Balsa-Foam® to make a larger block for carving, take care to keep your adhesive well inside the ultimate shape of your design to avoid having a glue seam that is difficult to carve across.

HARD COATING: The hardest coat will be achieved with a material that remains slightly pliable over time. We recommend a 2-part resin called Envirotex Lite, which is available in most parts of the country in hardware stores and art supply stores. (For more information, contact Environmental Technologies, Inc. at (800-368-9323). Envirotex Lite can be thinned with ordinary rubbing alcohol. Thinning will increase cure time, but will enable you to exercise greater control over surface detail and texture of the coated foam. You can even clean your brush with alcohol. Unlike Envirotex Lite, epoxy and polyester resins tend to become brittle after a few weeks of continued curing. The brittle epoxy or polyester coating on Balsa-Foam® may crack or cave in under pressure.

PAINTING AND SMOOTH COATING: Balsa-Foam® can be painted with any kind of water-based or solvent-based paint or coating. An initial coating of Krylon spray paint will help to seal the foam. Solvent-based paints tend to leave surface texture intact, while acrylic paints tend to fill the texture.

To achieve a smooth, even glossy surface, start by coating your finished piece with spray paint or any other type of paint or varnish. Then use a soft bristle brush to apply acrylic modeling paste. First thin the paste with acrylic thinner or water to give it the consistency of thick paint. After coating, use a brush wet with water to smooth the paste. When dry, the coating can be smoothed with sandpaper or built up with a second application. Most often, the piece can be as smooth as plaster after one application and a light sanding. A coating of acrylic modeling paste makes a strong shell, which can be built up, sanded, or even tooled.

MOLD MAKING: Balsa-Foam® 10 pcf and Balsa-Foam® 20 pcf have been used effectively to make the positive master for a negative fiberglass or silicone mold. Coat the final original piece with a resin coating for best results. Then wax and use a release agent. Balsa-Foam® 10 pcf and Balsa-Foam® 20 pcf can also be used effectively for vacuum form molds.

CAUTION: Balsa-Foam® has been rated non-toxic by the Arts and Creative Materials Association. However, the Balsa-Foam® dust can be abrasive and can cause mechanical eye irritation if dust from this product gets in eyes. To help prevent this from happening, do not rub eyes when using and wash hands after use to remove any adherent particles. If you note eye irritation, flush your eyes with luke warm tap water. If irritation persists, see your physician. Use of safety goggles when sanding or using power tools can decrease the risk of particles getting into eyes.

In addition, a dust mask is recommended when power tools are used. Also, wipe off metal and steel tools with an oil cloth after using them with Balsa-Foam® Phenolic; prolonged contact will result in rusting or tarnishing if the tools are not cleaned after each use. Phenolic Balsa-Foam® will corrode and tarnish all metals and metal alloys, so wiping the tools off after use with an oil cloth will protect most metal surfaces.