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# TorZo Products Fabrication Guidelines 3.3

## Fabrication Basics

Included in this document are guidelines for standard material machining techniques such as cutting, sanding, routing and gluing for the TorZo surface products.

We welcome suggestions from experienced fabricators as they work with the TorZo materials, and will incorporate new techniques and information in future updates.

## Material Composition and Handling

All five TorZo based boards (Indure, Orient, Seeta, Durum and Tiikeri) are infused with an acrylic resin material that can be cut, machined and sanded with standard tooling. This is because even after the infusion process, the material composition is still over 65-75% wood or cellulose based.

Similar to other surface materials, including wood, rock, granite, and all other 100% acrylic resin based materials, TorZo recommends the fabricator wear a dust mask to prevent inhalation of any fine particles. The MSDS is available online at www.torzosurfaces.com or can be provided by the distributor.

Material should be kept flat at all times, with a top and bottom cover sheet, to prevent the introduction of "bowing" to the panels.

Material should be kept clean from particles that could cause small nicks or scratches to the material surface during the fabrication process, and/or be included into a surface coating if coating is to be conducted post fabrication.

Material should be kept from direct contact with water, especially if the sheets do not have a finished top coat. This will prevent any potential discoloration due to water spot damage.

## Material Properties

All boards are sanded to 220 grit, and have a tolerance of +/- 5,000 inch. Material thickness is relatively uniform.

TorZo materials that are less than 1" thick have a certain amount of flex associated with the material sheets. It is recommended when fabricating tabletops and countertops with thinner materials that the fabricator glue or screw the material to a ¾" plywood or MDF template backer board in order to insure a flat surface. This also significantly reduces the costs associated with the thicker (1" and greater) material.

Currently, sheets come standard in 36" x 10' dimensions (Indure & Seeta), in 36" x 8' dimensions (Orient & Durum) and 36" x 6' dimensions (Tiikeri). They come from the manufacturer in the following forms;

Indure (MDF): sanded to 220 grit, both sides
Seeta (Sunflower seed hull): UV filled and sanded to 220 grit
Orient (OSB): fill and sanded to 220 grit
Durum (Wheat stalk): filled and sanded to 220 grit
Tiikeri (Sorghum): filled and sanded to 220 grit

**Indure Characteristics:** TorZo Surfaces purchases a formaldehyde free and now FSC base MDF board material from a local supplier. These MDF boards are made from natural wood fiber and therefore contain some variation across the board, ***which is normal and should be expected.*** A percentage of these un-infused raw boards have "watermark" like spots. TorZo QCs the boards to the best of it's capabilities before the infusion process in order to prevent boards that have these marks on both sides from being processed. Our procedure states that we can have marks on one side but not both. Therefore, some Indure boards will have a "good" side, and a side with visible "watermarks." Some sheets will not have watermarks on either side. Most sheets will have some material variation on the good side, which is normal. This is due to the random makeup of the recycled wood fiber material that makes up the raw MDF material. Before shipping, TorZo will mark the boards to indicate which is the "good" side. Make sure to inspect the board before fabrication in order to verify the good side is facing up.

**Orient, Seeta, and Durum & Tiikeri:** TorZo Surfaces purchases these other composite board materials: Timber Strand (Orient), sunflower seed hull (Seeta), wheat stalk(Durum) and Kirei (Tiikeri) from their respective suppliers. Like Indure, these composite board materials will have some natural variation across the board, and from board to board. However because of the different texture and overall wide variation, the color variation is much less noticeable. The good news is to date there has not been a complaint relating to this variation. It is seen as a positive and adds a more organic look to the product.

## Cutting

TorZo can be cut using standard carbon tip blades. Avoid feeding the material too fast to prevent binding or too slow to prevent burning.

## Machining

TorZo can be routered using standard carbide router tips. Material can be hand routered or routered on a CNC machine. Also, standard V-groove units with carbide based tips can be used for dropped edge applications.

Following the fabrication process the material should be sanded (see below) before the coating process.

## Sanding

TorZo recommends the material be sanded using a random orbital sander to a 400 grit finish. This will fully eliminate sanding marks left by the belt sanding process.

These sanding marks are more visible on the Indure material. Indure can be sanded as much as desired, as long as it is sanded evenly across the board. The TorZo infusion process is a density-based process, and as you sand increasingly into the Indure product it will become slightly darker. This is caused by a density gradient (higher to lower) going from the face to the center of the board. More polymer is infused in the center compared to the face of the board. This causes the material to take on more of the actual polymer color.

Care should be taken ***NOT*** to over sand the Seeta, Orient, Durum or Tiikeri materials. If too much material is sanded off these products, the material to fill voids in the board during manufacturing will be removed. This will result in surface cratering. Once this occurs, the only way to eliminate these craters is to apply clear epoxy filler, followed by a sanding step. *However, if possible it might be easier to reverse the board side and re-fabricate the piece.*

If material has been over sanded, no amount of sanding will eliminate or remove the voids associated with the material. A clear epoxy resin application step is required to fill these voids.

## Gluing

Due to the water resistance of the material, the manufacturer does not recommend any moisture cure adhesive.

Titebond II or II can be used for gluing all TorZo based materials. However for lighter based material colors, this glue appears darker after it dries and has a tendency to show glue lines. Hence, for V-groove applications, a two part solid surface epoxy system that best matches the TorZo materials color, or a clear epoxy, is recommended. Also keep in mind that the epoxy systems dries within 15-30 minutes, much faster than a Titebond II or III adhesive which requires a substantially longer cure time.

## TorZo Fabrication Recommendations

TorZo recommends using ½” thick TorZo material, and plywood template, that incorporates a V-groove drop edge for best edge results and economics. A built up edge can work and look good, but does require significantly more time filling in the voids that are present on the edges of the Orient, Seeta and Durum surface products. In this case, fabricators can fill in these voids using

**multiple** top spray coats, or use a clear epoxy before applying a final top coat. The plywood template also provides a stable backing and allows it to be moved and installed safely.

**V-Grooving Application**

All TorZo Surfaces solid surface products are capable of being V-grooved using standard V-groove techniques used for any other type of solid surface acrylic surface materials. CNC machines are great for this application, especially for larger jobs.

A clear solid surface two part epoxy system can be used to glue the drop edge pieces together. The clear epoxy system actually takes on the color of the panels being glued and thus eliminates or minimizes glue lines.

**Under Mount Sealing/Installation Instructions**

Currently, TorZo **does not recommend Seeta, Durum or Tiikeri product lines for under mount sink applications**. Though it can be done successfully, the porous nature of these material's cores causes the sealing of the exposed edges in water environments to be very tricky and difficult. Top mounted sink bowls work great for these product lines.

For under mount sink applications for the Orient or Indure product lines, apply either a solid surface or granite clear epoxy, then let dry and then sand smooth. Then spray finish the entire piece, including the exposed drop mounted sink edge area, with the selected spray coating using the finishing instruction outlined below.

**Sink & Faucet Sealing/Installation Instructions**

Installing a top sink mounted bowl would be identical to installing the faucet. After cutting out the hole with the appropriate size cutting bit, apply a liberal amount of silicon caulking on the exposed edge and then install the sink bowl, faucet, etc.

**Seaming Application**

All TorZo Surface products can be seamed using standard techniques with a great results. These techniques include straight edge-edge gluing, and incorporates either biscuits or splines. The template backing should come just short of the edge seaming that is to be done.

A "dog bone" clamp assembly, similar to what is used for prefab counters tops, can be used to butt the edges up. A solid surface epoxy, using a best match color, can be used to glue the edges together. Once the fabrication and seaming has been completed, the seams should be sanded smooth. After this step is completed, the sealing and top coat spray application can done.

For cases where the seaming has to be done in the field at installation, then the following is recommended. Using the same dog bone assembly clamps mentioned above, bring the edges together without applying the adhesive to the edges. Sand the seamed area smooth, and then complete the sealer and top coat spray coats. Once the fabricated piece has dried, then it can be transported to the installation site in pieces and glued on site. In this case, the fabricator can apply the solid surface adhesive to the edges and then using the dog bone clamps butt the edges together. Once dried, the adhesive acts as both the sealer to the edges and the bond of the edges.

## Finishing

Before applying any coating, it is important to wipe the material clean with a damp rag using mineral spirits. This will remove residual sanding dust and other types of particles. The advantage of the TorZo products is that they are very hard. This allows the fabricator to use very hard coatings, which is better for high wear applications.

Most any type of acrylic based coating can be applied successfully, however please check with manufacturer before applying. These include urethanes, varnishes, and UV coatings. Just remember, the harder the coating, the better the wear.

For all types of coatings, including polyurethanes and conversion varnishes, we recommend a minimum of three coats for top side high wear applications such as countertops, vanities and tabletops. This can be accomplished with two sealer coats and one top coat, or one sealer coat and two top coats.

Note: In order to ensure product performance, TorZo Surfaces requires a single coat spray application for the back side of any fabricated projects. The reason for this is two fold: during our process, we make sure to keep the boards balanced. What we do to one side, we automatically do to the other. This includes the sanding step and the fill and sand step (when applicable). Second, the idea is to seal all six sides, regardless if the application is low wear vertical or high wear horizontal.