TRANSONYX

DESIGNING AND FABRICATING WITH TRANSONYX

APPLICATIONS

- Backlit Applications
- Wall covering
- Reception desks and bars
- Artwork
- Partitions/Privacy Panels
- Furniture
- Store Fixtures
- Signage

WARNING:

- Do not use TransOnyx in applications where the panel temperature will be over 175°F. As a result, we do not recommend to use the material for kitchen top as high temperature could cause change in color, warp, or even break.
- UV exposure: TransOnyx is less suitable for applications in which the material is subjected to excessive or long-term levels of UV-radiation. Discoloration or yellowing may occur. TransOnyx is used for interiors only. Do NOT apply for exterior applications.
- Avoid larger horizontal surfaces without additional support. A span of 25 inches is max when using 8 mm thick TransOnyx on 2 sides supported.
- Always allow for expansion/contraction with fluctuations in temperature
- TransOnyx is NOT suitable when used with heavy concentrated loads. Do not use it as a bar top or countertop with heavy concentrated loads on it without proper additional support.

1. STORAGE

TransOnyx should be stored at room temperature in a dry environment, not exposed to direct sunlight or heat. The panels should be stored horizontally on a 100% flat surface or pallet. TransOnyx will otherwise occurs warpage.

2. MACHINING

- TransOnyx can be fabricated using tools and machines as is recommended for machining solid surface materials, plastic, and wood.
- Diamond tools are recommended.
- Cooling of the tools by (cool) air is highly recommended.
- The speed of the tools should be such that the material does not melt from frictional heat.
- Best results are achieved at the highest speeds at which the material does not overheat.
- Hold sheets firmly while machining to minimize vibration. Use enough clamps.
- Wear and use proper safe equipment.

DO NOT:

- Cut of drill with a dull blade, cutter or bit.
- Apply excessive clamping pressure.
- Scribe-break the material.

A. SAW CUTTING

Circular saws, band saws, saber saws can achieve reasonable results. However, some saws are better suited because they produce smoother, faster and precise cuts. For linear sawing the circular saw – also the ones that can be attached to a rail – are preferred. For shapes, band saws usually produce the best surfaces.

B. DRILLING

Drills developed especially for plastics are widely available. We suggest that the fabricator uses such drills when drilling TransOnyx. Standard twist drills for wood or metal can be used, however they require slower speeds and feed rates to produce a clean, non-gummed hole.

Twist drills as used for plastics are best. They should have two flutes, a point with an included angle of 60 to 90 degrees and a lip clearance of 12 to 18 degrees. Wide, highly polished flutes are desirable since they expel the chips with low friction and thus tend to avoid overheating and consequent gumming. Drills with substantial clearance on the cutting edge of the flutes make smoother holes than those with less clearance.

Always when drilling: be sure to hold or clamp the part securely to prevent it from cracking or slipping and presenting a safety hazard to the operator.

C.ROUTING

Routing with sharp two-flute straight cutters produces very smooth edges. Routers are useful for trimming the edges of flat or formed parts, especially when the part is too large or irregular in shape for a band saw. Portable, overarm, CNC and under-the-table routers all work well. Feed should be slow to avoid excessive frictional heating and shattering.

The router or sheet, whichever is moving, must be guided with a suitable template. It is recommended to employ compressed air during the routing operation to cool the bit and aid in chip removal. Tool speeds should be such that the TransOnyx panel does not overheat. In general, maximum tool speeds at which overheating of the tool or sheet does not occur gives best results.

It is important to keep cutting tools sharp at all times. Hard, wear-resistant tools with greater cutting clearances than those used for cutting metals are suggested. Diamond coated, HSS or carbide-tipped tools are most efficient for long runs. Bring the equipment to the full correct speed before starting the routing process.

D. REFINISHING

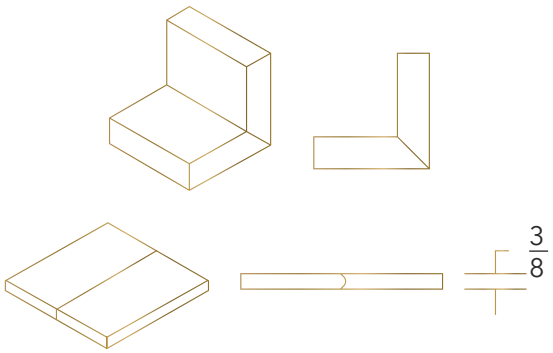
Edge finishing is simply done with a router, in different forms and shapes. In addition to a straight edge, edges may accept beveling and rounding.

TransOnyx can be finished using ordinary sanding paper. However waterproof sanding paper gives better and more efficient results. A double-eccentric rotating sanding machine is preferred. For a high-gloss surface, sand until grain 1000 sanding paper and then polish the surface with a polishing machine (or a soft cloth on the sanding machine) and a polish pasta as used for plastics.

Scratching does occur on TransOnyx surfaces. Light scratches can easily be repaired using sanding and polishing techniques. For very light scratches, polishing with car wax should be sufficient and lead to good results. Heavier scratches may require sanding.

3. JOINERY

ADHESIVE SEAMS



- Miter seem: is an excellent and strong seam for most corner conditions
- Tongue and groove seem: is for connecting flat panels. Minimal visible effect when back lit.

4.FASTENING

DO:

- Drill holes always oversized allowing for thermal expansion and contraction.
- Insure drilled holes have smooth edges.
- Use washers for better load distribution.
- Use light or moderate clamping pressure.

DO NOT:

- Overtighten fasteners
- Hand tightened is sufficient.
- Use self-tapping screws to hang large panels.
- Use cyanoacrylate or solvent type thread locking materials.

5. ADHESIVES & SEALANT

The use of solvent glues or cyanoacrylates is not recommended for bonding or seaming TransOnyx. Additionally, dry glues as used for solid surface materials is not suitable as they are not translucent and often too dry.

RECOMMENDED ADHESIVES

APPLICATION	ADHESIVES	DESCRIPTION
TransOnyx to TransOnyx	Plexus Acrybond Weld-On 55	Acrylic adhesive Urethane adhesive
TransOnyx to wood, metal or drywall	Devcon Plastic Welder II	Acrylic adhesive
TransOnyx to glass, sealed wood and other plastics	3M VHB 4910 Clear Tape	2-sided tape
Sealing applications	Momentive SilGlaze II	Clear silicone sealant
Structural Silicone bonding	Momentive Construction	Clear structural silicone

A bond TransOnyx to TransOnyx will never be invisible due to the simple fact that the TransOnyx is not even and solid colored as is Corian of LG Hi-Macs.

A.SURFACE PREPARATION

Ensure that all substrates are clean, dry and free of oil, dust or other surface contaminants. The amount of surface (or edge) preparation directly influences the final bond strength of adhesive.

B. SILICON SEALANT

Acid-free transparent silicon sealant/kit can be used for lamination of TransOnyx to another transparent surface. Follow the instructions of the silicone-supplier and use if needed a primer. Care should be taken to allow for enough thickness of the silicon layer to allow for the needed difference in expansion and contraction of the different materials due to temperature differences.

Silicon sealant is very useful when making bigger constructions. The parts of the construction should be allowed some space for the expansion and contraction and using silicon kit to join the parts is an elegant and proven way to allow the material to do so.

Silicon kits should not be used underwater or in food contact situations. Also, it is not suitable for bonding with surfaces that can corrode like milled aluminum or bare steel. The cure depth of the silicon layer should not exceed 7 mm from the airside.

6. BENDING PROCEDURE

- TransOnyx is not suitable for blow-moulding
- Warm bending using oven is applicable. However, do not try to bend the panel to any radius smaller than 30 inches.
- Please note that high heat will result in slight color changes.
- Pre-drying is not needed
- Put the mold with the panel in a preheated electric oven with an even temperature distribution at 230˚F during 35 minutes.
- Remove gently from oven and check if the panel completely follows the curve of the mold and is laying in the correct position. If needed, put some well distributed load on it.
- Cover the panel mold with blankets and avoid rapid cooling. Cool for at least 1 hour.
- Recommend to test the procedure with a cutoff before starting the real parts.

7. DEFLECTION

The amount of deflection is largely controlled by load, size, thickness and support structure. Three options are fully framed support, simple support and point support.

Vertical panels will not experience deflection if supported properly with no loads. Best way for using vertical panels is to have them fully fixed at the top and fixed at other points (halve-way) and at the bottom with some possibility for movement in the vertical direction (temperature-differences). A vertical panel not supported by the top of the panel may sag.

It is important to note that panels fixed with point-supports suspended from cables will exhibit more deflection than panels supported by point-supports using threaded rod. This latter is more rigid and prevent lateral movement of the panel at the support location

8. LED BACKLIGHTING

A. LED PANELS

To evenly light the surfaces, the light source has to cover completely. The way that LED panels manufactured allows light to spread across the panel and be directed 90 degrees toward the surface of the panel, thus projecting an even plane of light. They eliminate the need for light boxes and allowed for even lighting of virtually every part of a surface. Light guides are simply placed right next to each other, lying just beneath the TransOnyx panel. This raises the panel just 2-4 in. depending on how much light

transmission you want to achieve. It is important to use only sealed or encapsulated LED light panels. This prevents moisture from damaging the lights under the countertop, a mandatory requirement for kitchen and bath use.

B. LED STRIP LIGHT

Using LED strip lighting perhaps is much more affordable than LED panels, but you can find that any type of rope lighting creating a snake-like effect. LED pucks or panels with LEDs spread across the surface gave the effect of spots of light across the top. However, this effect will not show significantly on a large backlighting surfaces especially wall claddings. Overall, we have good experience with LED strip light. We realized a distance of 4 inches. between the LED strips to the TransOnyx surfaces is the best, while the distance between two LED strips of 6 inches on a rectangular matrix would allow an even distribution of lighting across the surface.

Note: As different TransOnyx series have different transmission and diffusion characteristics, thus a small test is needed. The results with a proper installed lighting are great!

9. CLEANING & MAINTAINING

Rinse the sheets or product with lukewarm water. Remove dust and dirt from TransOnyx with a soft cloth or sponge and mild soap or liquid detergent in water. A 50:50 solution of isopropyl alcohol and water also works well. Rinse thoroughly with lukewarm water.

Always use a soft, damp cloth to blow dry. A nonwoven is perfect. Rubbing with a dry cloth could scratch the material and also help to create a static charge leading to dust-attraction.

DO NOT

- Use squeegees, scrapers or abrasives as they may scratch the material or product.
- Use scouring compounds or solvents such as acetone, thinner, gasoline, benzene, or other strong solvents.
- Use a dry or not-clean cloth or synthetic fiber such as rayon or polyester as they may scratch the sheet
- Use cleaners around edges or holes where the cleaner can wick into the interlayer.

***Disclaimer:** *This paper informs the users how to properly fabricate the TransOnyx. However, the information above cannot cover all possible operations nor applications. It is your own responsibility, fully, in all aspects and dimensions, and in relation to all regulations and laws. Convince yourself that what you do, how you do it and the tools and equipment. We strongly advise our users to perform suitable tests to be sure about the correctness of tools, applications and safety.*