

Laser Cut PVC

Questions and Answers About PVC

1. What is PVC?

PVC is a lightweight rigid board of moderately expanded closed-cell Polyvinyl chloride.

2. How is PVC used?

Typical applications include screen-printing, signs, exhibits, displays, photo mounting, robotics, models and much, much more.

3. What gauges of PVC are available?

PVC is produced in 9 gauges. 1 to 6-mm, 10-mm, 13-mm, & 19-mm.

4. Does PVC come in colors?

PVC is available in 12 colors.

5. What does PVC weigh in comparison to solid PVC?

PVC is half the weight of solid PVC in gauges of 1 through 6-mm. (0.700g/cm³)
PVC is slightly over 1/3 the weight of solid PVC in 10-mm, 13-mm, & 19-mm gauges. (0.500g/cm³)

6. How do I cut PVC?

The preferred method is laser cutting, but PVC, up to 3-mm thick can easily be cut with a knife. Thicker sheets can be cut on a table saw or with jigsaws. PVC also can be shaped easily using a router.

7. How do I bond PVC to itself?

For bonding PVC to itself, the same solvent type adhesives that are used for rigid PVC give excellent results.

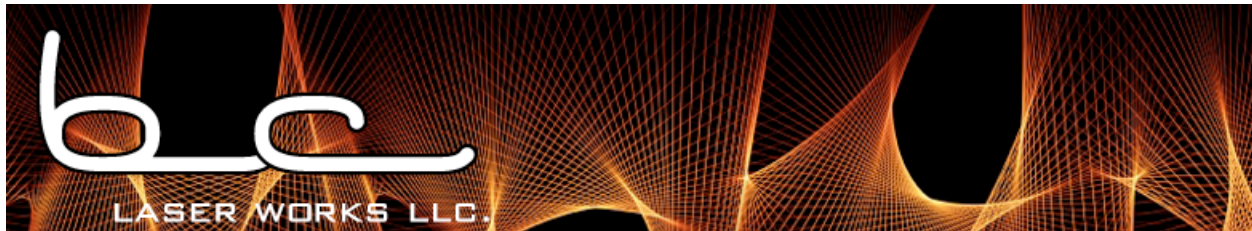
Attributes of PVC

Laser-cut edge of PVC is smooth and discolored; on white it is a dark tan when cleaned. There isn't any edge discoloration on the black, so it can be used without further treatment. Cleaning is required before painting or gluing. Expanded PVC is very economical, lightweight, and takes paint well.

PVC can be sanded and routed.

Recommended for interior use. Can be used exteriorly if appropriately finished by painting.

Glues easily



8. How do I bond PVC to other materials?

For joining PVC to other substrates, solvent-dispersed adhesives formulated for PVC bonding may be used, as can most neoprene-based adhesives.

9. What happens to PVC when used outside?

PVC will change colors when used outdoors. The amount of color change depends on the original color, UV levels, and other exposure conditions. This is true of all materials that use organic pigments.

PVC expands and contracts with temperature changes. This must be taken into account when mounting large sheets of PVC outdoors.

PVC, like most plastic materials, has less impact resistance in cold conditions. Thinner gauges have less impact resistance than thicker ones. For this reason 6-mm should be the minimum gauge used for outdoor signs.

10. Why must I keep PVC under 150F?

Foamed extruded plastics contain internal stresses. These stresses relieve themselves at elevated temperatures. If PVC is allowed to reach 150F it will no longer remain flat and will warp and bow.

11. Can I paint PVC?

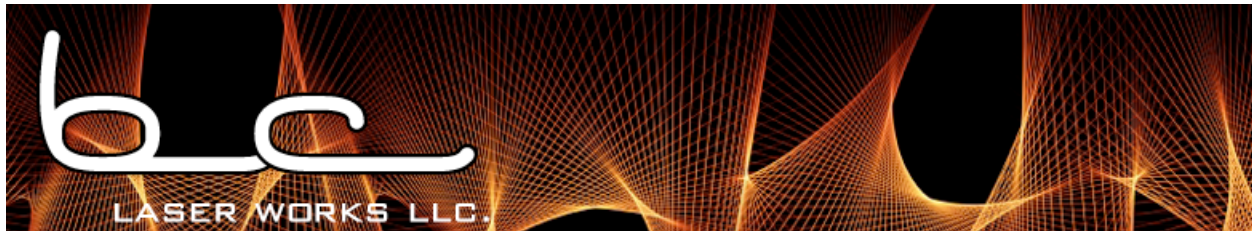
PVC can be easily painted using PVC compatible paints. Recommended paints include: vinyl, acrylic lacquers, and two-component polyurethane. The use of primers is not normally required. The surface should be cleaned with isopropyl alcohol.

12. How can I prepare the edges before painting?

When PVC is cut to size during fabrication, edge cells are exposed. Smooth edges can be achieved with a file, plane, or sandpaper. The use of a PVC solvent will chemically collapse the cells or prior to painting, a filler such as spot putty will produce an edge similar to the surface texture of the sheet.

13. What photo mounting methods can be used with PVC?

Since PVC will warp at temperatures about 150F it cannot be dry or hot mounted. Cold mounting in cold roller laminators, cold vacuum mounting, or hand lamination all give excellent results.



14. Can PVC be screen-printed?

Screen-printing is easily accomplished with PVC due to its excellent surface finish. Vinyl and vinyl/acrylic, solvent-based inks are compatible with PVC. Screen-printing inks should air dry rather than be heat dried. Temperatures above 150F may cause warping of the PVC. UV inks can also be used but care should be taken to keep from overcooking the ink and possibly making the printed PVC brittle.

15. What are the fire characteristics of PVC?

PVC material will not support combustion by itself. It requires a flame source to burn. PVC is a self-extinguishing material and will not continue to burn after the flame source is removed.

All gauges of PVC pass the criteria of UL 94V-0, and UL 94-5V. These are industry standard fire tests.

Thinner gauges of PVC, 1 to 4-mm, also pass ASTM E-84, which is also known as the UL Steiner-Tunner Test.

16. Can PVC be heat bent and thermoformed?

PVC is a thermoplastic that can be heated and bent or formed into various shapes. Once the material cools it retains the shape that was formed when heated.

17. What are the limitations when vacuum forming PVC?

PVC is most suitable for large-faced and smoothly contoured parts. The radius and depth of draw is generally limited to the extent that the surface of the material can stretch.

18. Is PVC recognized by Underwriters Laboratories UL?

Through an ongoing certification program with UL, PVC is recognized as a Component Plastic and Component Sign Accessories. Using UL recognized components could speed the UL listing process when manufacturing electrical signs.