

## MICRO-SURFACED PLASTICS CUTTING

### Table of Contents

- ➔ [Raster Engraving Micro-Surfaced Plastic](#)
- ➔ [Vector Cutting Micro-Surfaced Plastic](#)

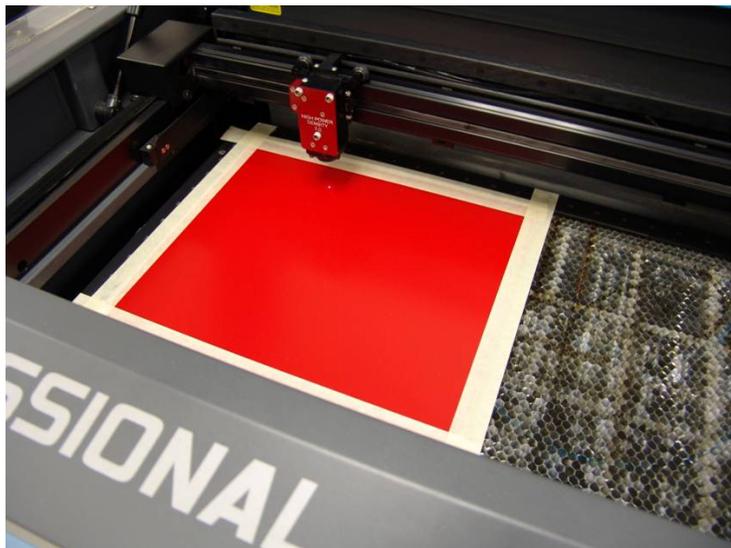
Micro-surfaced plastic – also known as engraver’s plastic – is specifically designed for laser engraving. It is available in 1/8-inch, 1/16-inch and 1/32-inch thicknesses in various colors, coatings, and surface textures. The plastic has a top layer, or “cap,” that is about 0.001 - 0.002 inches thick. The cap is fragile and can be easily damaged: flames can scorch it, smoke and fumes can stain it; and super-heated debris from laser processing can distort it. Fortunately, micro-surfaced plastic can be cut and engraved quickly and cleanly once you know how. Here are some tips and techniques for processing the material on a 30-watt PLS3.60 Universal laser system.

Tip #1: If you are using the Print Merge feature in Corel Draw™, run micro-surfaced plastic cutting and engraving operations as separate files. It is extremely difficult to get good results when cutting and engraving in a single file using this method.

### Raster Engraving Micro-Surfaced Plastic

Micro-surfaced plastic has a clear protective mask that protects it during shipping and handling. Remove this mask before engraving.

Position the micro-surfaced plastic front (color) side up on the work table. Tape the material securely to the table so that it won’t move (See Graphic 1).



**Graphic 1**

**MICRO-SURFACED PLASTICS CUTTING (Cont.)**

Focus the laser and adjust the power and speed settings so that the material engraves cleanly (See Graphic 2).

Use a can of compressed air or a soft, dry towel to gently remove dust and debris from the engraving.

Tip #2: Never use a damp or wet towel to clean dust from the surface of micro-surfaced plastic – it can result in stains that will ruin the engraving.

Tip #3: You can sometimes improve engraving results by making a second pass at a lower power setting with the laser out of focus by about 0.01". This produces a slightly larger beam spot that can smooth out any ridges or imperfections in the engraving.

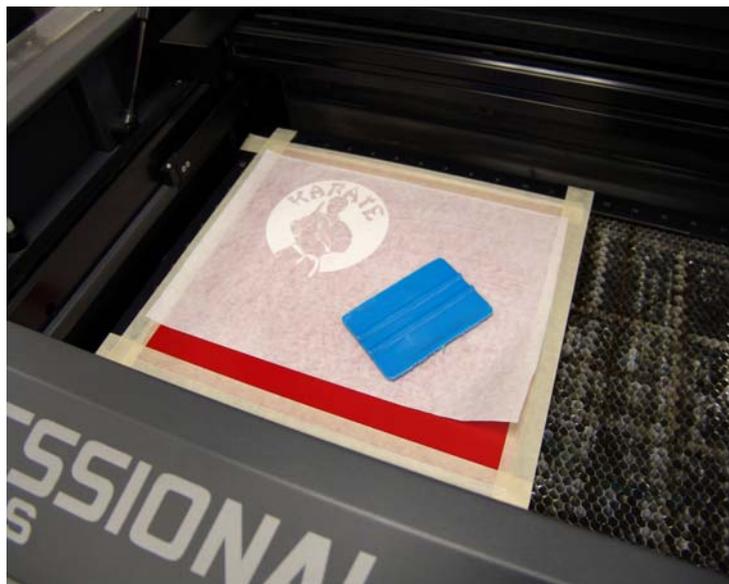
Leave the material taped securely in place for the next operation.

**Vector Cutting Micro-Surfaced Plastic**

Apply a sheet of high-tack transfer tape to the front of the material. This will protect it from smoke residue and flaming during vector cutting. Working from the center outward, gently brush the transfer tape with a squeegee tool to completely remove any bubbles or wrinkles (See Graphic 3). Air trapped under the bubbles or wrinkles can cause flaming.



**Graphic 2**



**Graphic 3**

**MICRO-SURFACED PLASTICS CUTTING (Cont.)**

Tip #4: Vector cut micro-surfaced plastic using the Downdraft Honeycomb Cutting Table. This will minimize reflections that can burn the back side of the plastic and aid in drawing smoke and fumes away from the material. If you do not have a Downdraft Table, use spacers to elevate the material 1/8-inch to 1/4-inch above the work surface.

Tip #5: If you are vector cutting micro-surfaced plastic that has a textured surface, omit the transfer tape and rub a thin film of household dishwashing detergent onto the surface of the material and allow to air dry. After vector cutting, remove the material from the cutting table and allow to cool completely. Rinse away the remaining detergent and any cutting debris under cool tap water.

Adjust the power and speed settings so that you can cut through the material cleanly in one pass. Micro-surfaced plastic that is 1/16-inch thick can usually be cut in a single pass. Thicker micro-surfaced plastic may require two passes. If this is the case, adjust the speed and power setting so the first pass cuts about 90-95 percent through the material. Reduce the power setting for the second pass so that it is sufficient to cut through the remaining material (See Graphic 4).



**Graphic 4**

Tip #6: Focus is critical when cutting micro-surfaced plastic. Always double-check focus before vector cutting a fresh sheet of material.

Tip #7: As a general rule of thumb when cutting micro-surfaced plastic, keep power settings high and speed and PPI settings low to minimize damage from smoke and residue.

Tip #8: If you are having trouble cutting through the material in one pass, decrease the speed.

**MICRO-SURFACED PLASTICS CUTTING (Cont.)**

Tip #9: If you are able to cut through the material in one pass, but are experiencing damage due to heat or smoke residue, increase the speed.

Tip #10: If you are experiencing damage due to the material curling or warping, reduce the PPI.

Allow the micro-surfaced plastic to completely cool before removing the transfer tape. Any soft or "gooey" edges should solidify in about a day.



**Graphic 5**

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