Color Filling Fact Sheet

Description

Color filling is a term used within the awards and engraving industry to describe a variety of techniques used to add color or contrast to engraving. Even though there are a wide variety of engraving materials available in a multitude of colors, thicknesses, and finishes, there are often times when it is desirable to color the engraving to make it stand out or enhance the overall appearance of the product.

Oxidizing

There are three basic processes or applications that fall under the category of color filling. The most common, which is used to blacken engraving on brass and aluminum is actually an oxidation process done with a mild acid that blackens the exposed metal upon contact. Since this oxidizing process isn't selective as to where it works, it can only be used on metals that have some kind of coating that is removed in the engraving process.

For example, the commercially prepared brass common to the industry is coated with lacquer or some other durable finish. Aluminum can be coated in a similar manner, or it can be anodized. Anodizing is an electro-chemical process that seals the surface of the metal and prevents natural oxidation. When we remove any of these finishes with a diamond graver, burnisher, or a rotary cutter, the exposed areas can be blackened with the oxidation solution without having it affect the rest of the plate.

Oxidizers are available for both brass and aluminum. They are reasonably effective and the only consideration is that it is fresh and free of contaminants. While most oxidizers are supplied with a dauber, this may not be the best way to apply it since you would be continuously putting the dirty applicator back in the solution. A better method is to use cotton swabs and discard them after each use. It is equally important that the engraving be clean and free of any oil or even fingerprints. Since the bare metal goes through a natural oxidation when it is exposed to the air, it is a good idea to oxidize it soon after it is engraved so the full effect of the oxidizer is achieved.

Apply the oxidizer liberally to all of the engraving. It sometimes helps to actually "scrub" it into the letters with the swab. Allow the engraving to darken and when the desired effect is achieved, rinse the plate with water. Rinsing will dilute the acid and stop the oxidation process. If the oxidizer is left on too long, the process will continue and the blackened areas may turn gray and chalky and even flake out of the engraving.

After rinsing, blot the plate softly with a cloth or paper towel - don't wipe it because it is possible to rub the black out of the letters. You can make a final clean-up after the plate has dried. If there are any areas that didn't take, you can go back and repeat the process. Oxidized engraving tends to have a dull,

lusterless appearance. It is possible to enhance the appearance by applying silicones, spray lubricants, or even furniture polish to the plate but while these methods tend to darken and add gloss to the lettering, their effects usually diminish in a relatively short time.

Paint Stick

Actual color filling where a fill material is applied into the engraving can only be done on rotary engraved plates with sufficient depth and is usually done with paint or a paint stick. A paint stick looks like a large crayon, is available in a variety of colors, and is simple to use.

First, shave the end of the stick with a knife or razor blade to remove any skin that has formed. Next, rub the stick back and forth across the engraving until the letters are filled, and then wipe off the excess with a cloth or paper towel. On some surfaces, the paint stick will leave an oily residue that can stain the surface of the plate. Sometimes alcohol or paint thinner is effective in removing this film, but the easiest way to completely clean the template is to allow it to dry overnight and then wash it using warm water and a non-abrasive cleaner. While this method of filling is easy and reasonably durable, it never gets completely hard and doesn't offer the smooth, glossy appearance that paint does.

Paint Filling

Paint filling, while a little more difficult than other methods, offers the broadest number of options in terms of materials, colors, and applications. For metals and rigid plastics (phenolics and acrylics), it is best to use a fast-drying, oil based enamel to fill and mineral spirits for the cleaning operation. On soft plastics such as flexible engraving stock and other materials that may be affected by caustic solvents, use latex or acrylic paints and water or alcohol for clean-up. Other than this, the procedure essentially the same for both. In addition to the paint, all that's required is an inexpensive brush, an old phone book, and some pieces of stiff paper or cardboard (about the size and weight of a business card).

The engraving should be smooth, free of burrs, and have sufficient depth to hold the paint. As a rule of thumb, with characters up to 1/4" high, engrave to a depth of .010" - .012". On larger characters, it is advisable to go .015" - .020" deep depending on the line width and filling technique used.

The paint should be thick enough so that it does not allow the cutter marks to show through after it has dried. Using the brush, apply the paint liberally so that the engraving is completely filled. Immediately after filling, hold one edge of the cardboard so that its straight edge rests against the plate and scrape off the excess paint leaving just a thin film. Allow the plate to dry for several minutes until the paint has started to set-up and the surface can be wiped without disturbing the paint in the engraving. The time varies depending on the paint being used, but 5-10 minutes would be a good starting point.

The next step is the initial clean up of the surface of the plate. Wrap two or three thicknesses of a lint-free cloth tightly around a wood or plastic block and dampen it with thinner. Wipe the surface of the plate lightly, in one direction, until the paint residue is removed. On small plates, an easier method of cleaning is to wipe the plate across the cloth. A widely used and effective alternative to the cloth method is to use pages from a telephone book. Their texture allows them to absorb the thinner, and any problem with lint is virtually eliminated.

There are two key things to remember that can mean the difference between success and failure. One is not to use too much thinner. If the cloth or paper is too wet, thinner will seep into the engraving and attack the paint, ruining the appearance. Secondly, when wiping, do it lightly to prevent the cloth from coming in contact with the paint in the characters.

After the plate has been wiped clean, there may still be haze that requires some additional cleaning. It is best to allow the plate to dry, preferably overnight, and then to do the final clean-up when the paint in the characters has completely set. You may want to use soap and water or a cleaner that will remove any oily residue left by the paint and thinner.

When filling larger letters, it is possible to eliminate most, if not all, of the cleaning and wiping by using an applicator that allows you to apply the paint directly into the engraving. Some systems utilize small plastic squeeze bottles with needle-like nozzles while others are more elaborate mechanical dispensing systems. With either method, paint is squeezed through the fine nozzle directly into the engraved character. With a little practice, it's easy to become adept enough to eliminate the need for major clean-up.

Some of the best sources for small amounts of paint in a rainbow of colors are touch-up paint from the automotive store, and paint sold at hobby and art supply stores. Always test the paint before applying it to your finished engraving to make sure it will not affect the plastic.

Step 1: Fill engraved letters with paint.	**Step 2:** Scrape off excess paint with card stock.	**Step 3:** Wipe clean with block wrapped with cloth dampened with thinner.