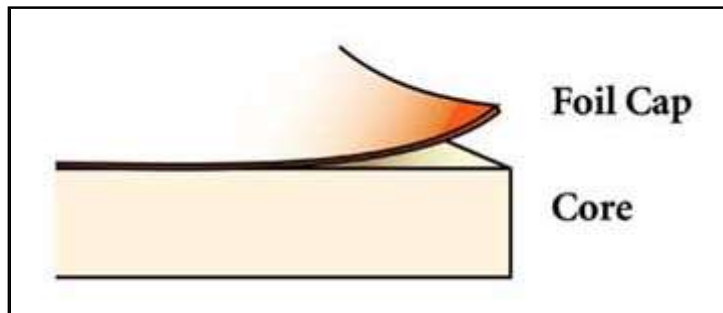


What Makes a Product Laserable?

Lasering involves the use of a highly concentrated light beam to burn into certain materials. Depending on the type and wattage of the laser, it is possible to burn into or through a variety of materials from paper to steel. Laminated plastics, such as Rowmark materials, can be engraved and/or cut through using low wattage lasers (25 to 100 watts), taking into account the power of the laser when adjusting the settings.

However, the laser beam generates heat. Since plastic is very heat sensitive, success in lasering plastics depends on the thickness of the cap, the heat tolerance of the plastic being used, and the control exercised over the laser settings.

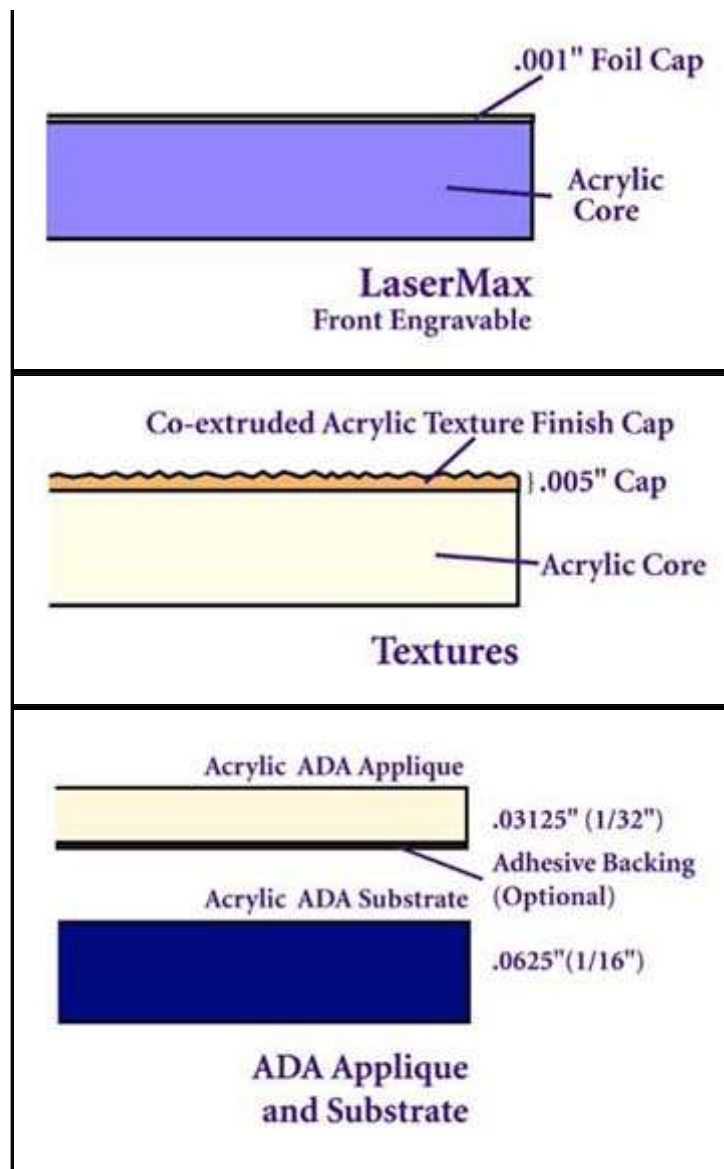
Rowmark products were initially developed for rotary engraving. When laser technology was perfected, we developed new products and adapted some standard product lines for lasering. Rowmark materials are still widely used by rotary engravers, and some of these traditional materials do not laser well. Other products, however, are regularly cut and engraved with lasers even though they are not advertised as laserable because they need special attention to achieve optimum results (such as lasering with two passes instead of one). Most of the products Rowmark recommends for lasering have one thing in common — they are made with foil caps (.001" thick).



This thin foil cap allows the product to be engraved easily and with an extremely high degree of detail, because so little heat is required to penetrate the cap. Cutting through the .010" cap of other product lines is possible but usually needs to be done in more than one pass and even then, depending on the core material, can cause heat damage to the product.

Some of our core materials are made of modified acrylic, while other core materials are made from a softer ABS plastic with a lower heat tolerance. There are certain advantages to using a softer core material in several product lines, but laserability is not one of them.





The ideal material for lasering has a .001" cap over an acrylic core. The following materials qualify in this rapidly expanding category:

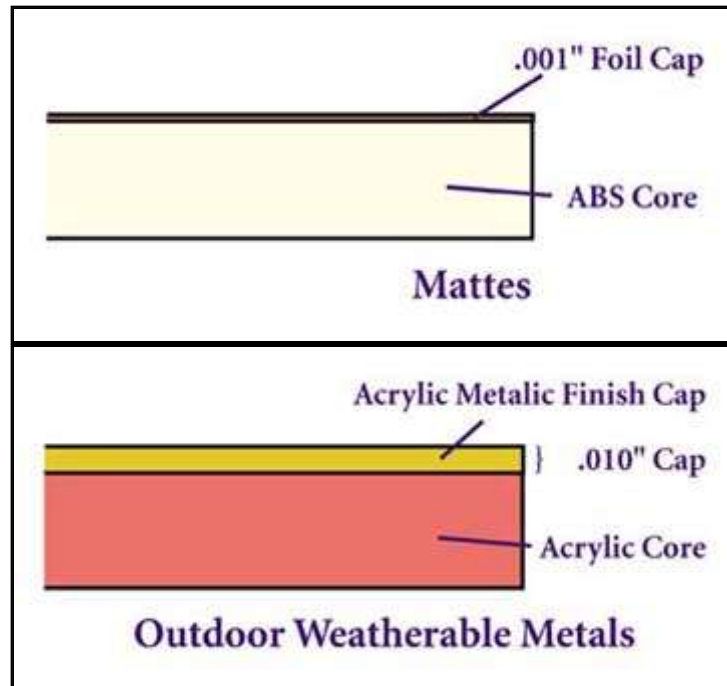
.001" cap over acrylic: LaserMax (includes metallic finishes); LaserMark Front Engravable (includes wood and marble finishes) and LaserMark Reverse Engravable; FlexiBrass and FlexiColor; Granites.

.005" cap over acrylic: Textures - The thickness of the cap usually requires two passes for effective engraving, but because this product is co-extruded acrylic and highly durable, it has proven to be an excellent choice for lasering.

Single-ply acrylics: Cutting - ADA Alternative Appliqué and Substrate; model making material; and Ultra-Mattes clear. These products are excellent for laser cut-outs. Since there is no contrasting cap, only rare applications would suggest a need for raster engraving; but, should the need arise, these products are easily engravable as well.

Transitional Product Lines

Although Rowmark only recommends the above product lines for lasering, several products will, with some care and often more than one pass, accept lasering. Most products with a .001" cap and an ABS core can be effectively laser cut and engraved, but may burn and/or melt because of the soft core. In addition, products with a .010" cap on an acrylic core can also be lasered with care and with more than one pass.



Because of the heat generated when engraving through the thicker cap, these products are also prone to heat damage in spite of the more heat tolerant core. Both categories are listed below.

.001" Cap and ABS Core: NoMark Plus; Standard Metals; and Mattes with dark cores.

.010" Cap on an Acrylic Core: Outdoor Weatherable Metals; Lacquers; Slickers; and Ultra-Mattes Front and Reverse Engravable.

Traditional Products Not Recommended for Lasering

The following products do not laser well. They were originally designed for rotary engraving and are still excellent products for that application. Because these products have a softer core and thicker cap, it is difficult to control overheating and burning.





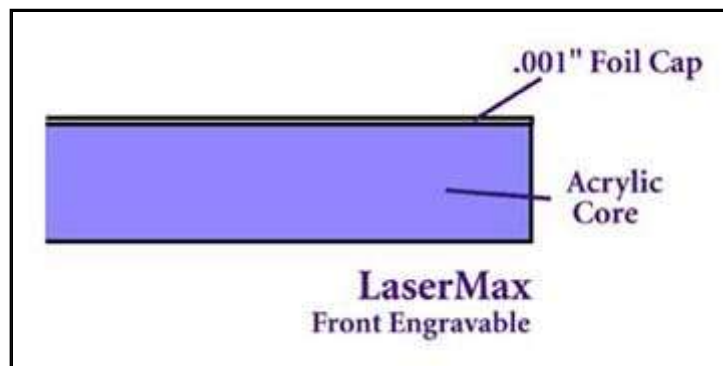
The Woods and many Mattes have a .001" cap over a white ABS core, and because the core color is white and ABS, it shows heat damage more readily than black ABS. Therefore, these are not recommended for lasering

.010" Cap over ABS Core: Satins

.005" Cap over ABS Core: Silks.

.001" Cap over white ABS Core: Mattes with a white core.

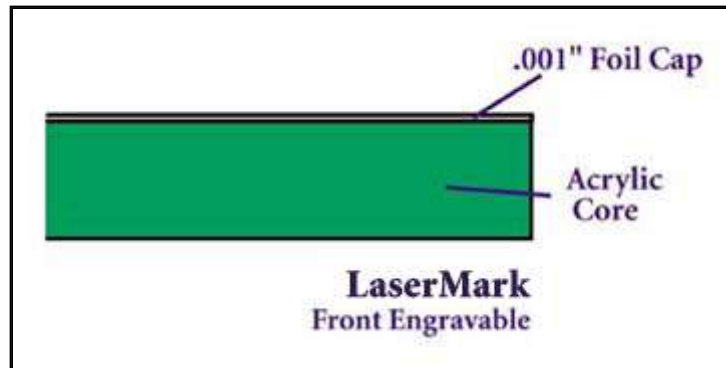
True Laserables



LaserMax

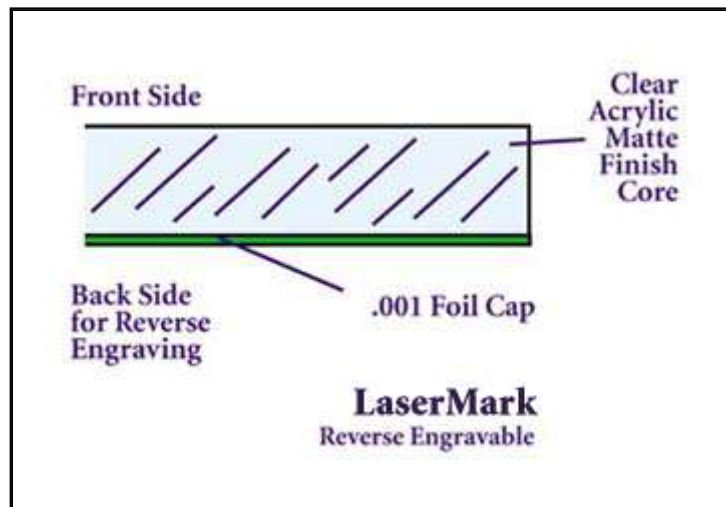
Our LaserMax line includes 18 matte finish color combinations and six metallic finishes. Introducing a new foil formulation with exciting color additions, LaserMax offers the greatest ease in laserability of all our product lines. The .001" foil cap

over an acrylic core makes it the ideal choice for laser engraving and cutting, but it can be rotary engraved as well. The white/black and black/white are particularly effective for photo laser engraving. (See **Photo Laser Engraving** in the contents bar.)



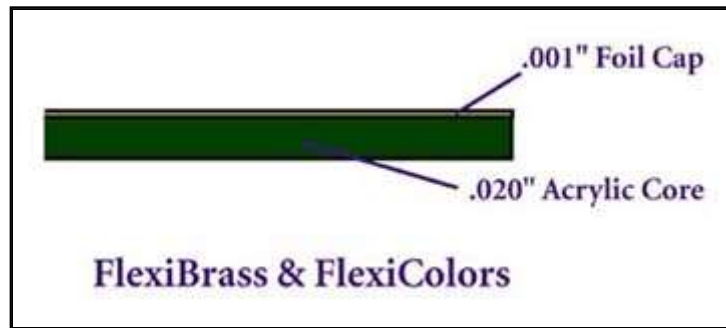
LaserMark Front Engravable

Our LaserMark line includes 16 matte finish color combinations, including two marble finishes and one wood finish. LaserMark was designed for lasering but can be rotary engraved as well. The .001" foil cap over an acrylic core makes it the ideal choice for laser engraving and cutting. The white/black and black/white LaserMark are also excellent for photo lasering.



LaserMark Reverse-Engravable

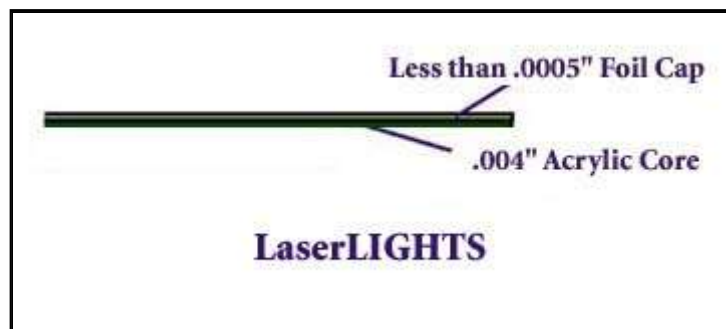
This material is similar to Ultra-Mattes Reverse-Engravable or Slickers (see below) except that the cap material is a foil (.001") over the front-facing, clear acrylic core, making it ideal for laser engraving and cutting. It is currently available in ten colors and two metallics with matte finish. We also offer a clear gloss black and two clear gloss metallics (similar to Slickers). All can be back filled using any color of paint (**See Special Uses/Reverse Engraving**). It is rotary engravable but not outdoor weatherable.



FlexiBrass and FlexiColors

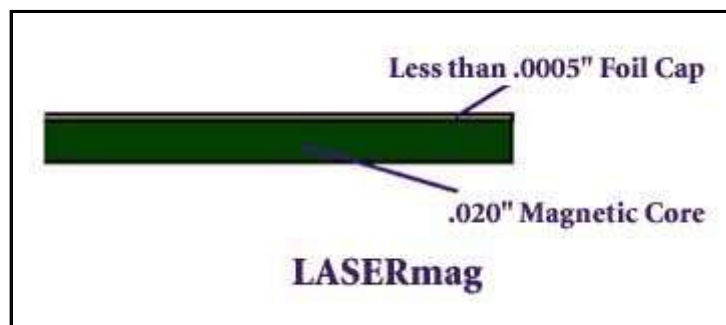
This thin (.020"), flexible material (.001" cap on acrylic core) is ideal for laser engraving and cutting. Available in five metallic, three marble, and five matte color finishes, the FlexiBrass and FlexiColor can also be successfully rotary engraved. Their strength and flexibility make them ideal for unusual applications, such as adhering to rounded surfaces or placing in hard-to-reach industrial applications.

FlexiBrass and FlexiColor can be ordered with an adhesive backing for ease in fabricating. The thinness of this product together with the low power settings possible for cutting allow for highly detailed cut-outs.



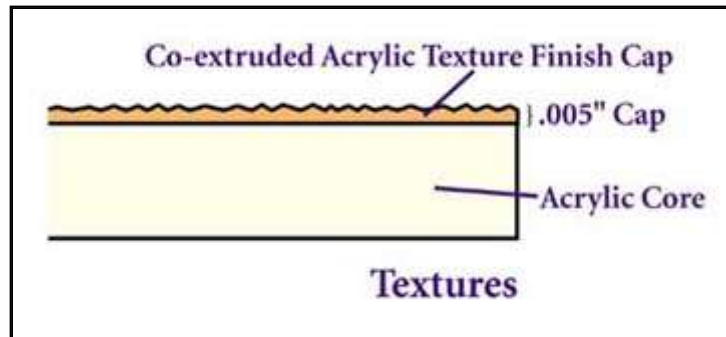
LaserLIGHTS

This product is an ultra thin laminate plastic with adhesive backing. The cap of this product is less than .0005" and is laminated to a .004" core, making it by far the thinnest engravable product that we offer. It has the look and feel of a label, but can be personalized through either laser or rotary engraving. It is available in 12 combinations of color and metallic finishes.



LASERmag

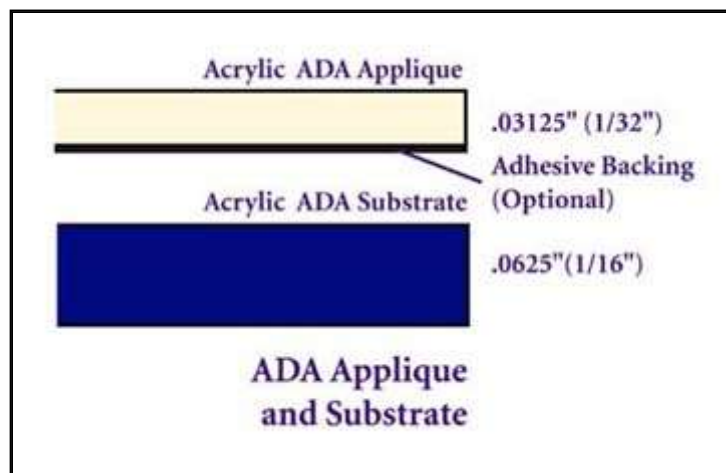
This magnetic material is .020" thick and has a cap thickness of less than .0005". It is available in 3 combinations of metallic finish and black. This product can be personalized through laser cutting and engraving in addition to its magnetic properties.



Textures

Textures are available in 20 color combinations and are co-extruded with a surface texture to help the materials resist scratching, dirt, grease, and other foreign substances. Widely used for industrial applications, Textures are a rugged, durable acrylic product with a cap thickness of .005". Although they sometimes require two passes with a laser, Rowmark recommends this product for laser engraving and cutting. It can also be rotary engraved and is outdoor weatherable.

Because the thicker cap contains more pigment than other true laserables, some pigment may cause staining when used with a white core. The second pass will eliminate this residue particularly if the settings are well controlled. In some cases it may be necessary to clean the engraved area with either a medium strength solvent or a citrus cleaner.

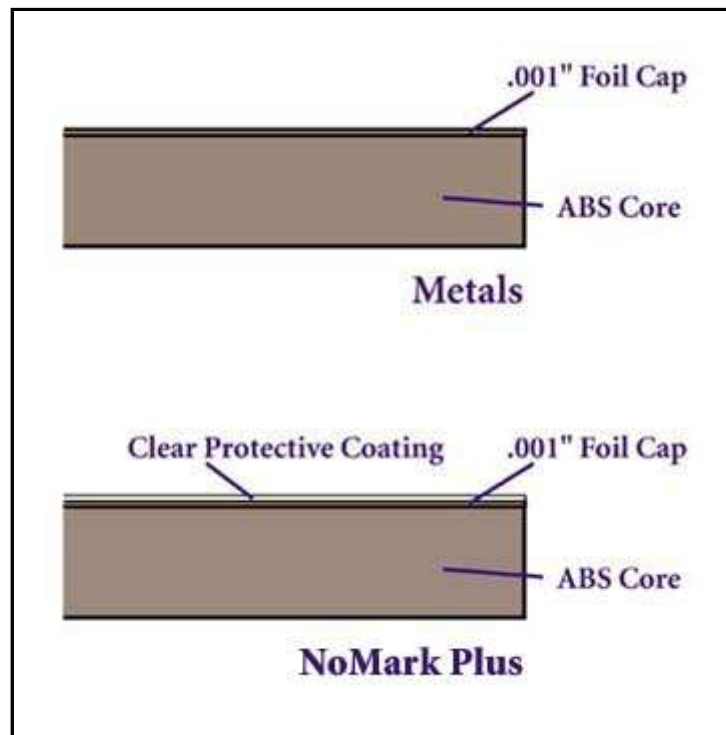


ADA Alternative Applique and Substrate

Rowmark's ADA product line was designed for the production of architectural signage to comply with the Americans with Disabilities Act (ADA). It is available in two components. The substrate material (1/16" or 1/8") and the appliqué material

(1/32" available with or without adhesive), is applied in a contrasting color to provide raised lettering and graphics wherever required. The matte finish of both products is essential to ADA signage and can be mixed with our Ultra-Mattes Reverse-Engravable line as mentioned below. This material can be either lasered or rotary cut and is available in 22 substrate colors and 21 appliqué colors.

Transitionals



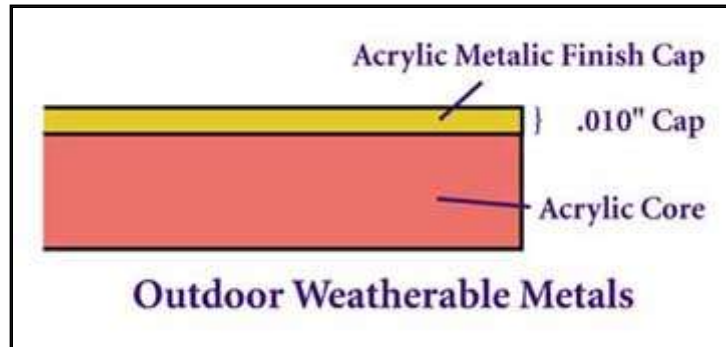
Standard Metals

The Standard Metals are manufactured with a foil cap. The foil cap is a true metallic surface that is hard to distinguish from a solid gold, brass, silver, or aluminum plate. The foil cap is .001" over an ABS core and is ideal for detailed engraving using a rotary engraver. This product can be laser engraved, but care should be taken because of the soft core. Whenever possible, Rowmark recommends using LaserMax metals instead.

NoMark Plus

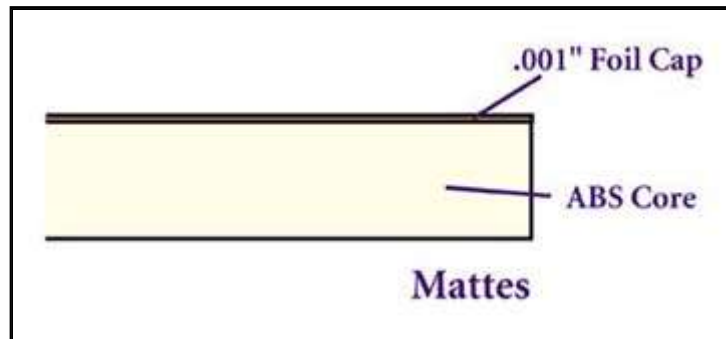
NoMark Plus products are the same as our Standard Metals, but are hard coated with a special formulation that provides durability without losing the metallic sheen. They are also manufactured with a foil cap that is scratch-resistant due to the hard coat application. The foil cap is a true metallic surface that is hard to distinguish from a solid gold, brass, silver, or aluminum plate. The foil cap is .001" over an ABS core and is ideal for detailed engraving using a rotary

engraver. This product can be laser engraved, but care should be taken because of the soft core. Whenever possible, Rowmark recommends using LaserMax metals instead.



Outdoor Weatherable Metals

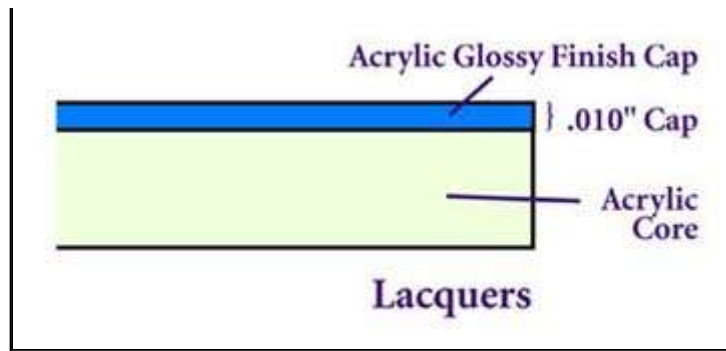
Our Outdoor Weatherable Metals are designed to withstand outdoor elements while providing a true metallic color. The .010" acrylic cap on acrylic core works well with a rotary engraver. Although Rowmark does not recommend this product for lasering because of its thick cap, we have found that with some care and using two passes, it can be successfully lasered.



Mattes

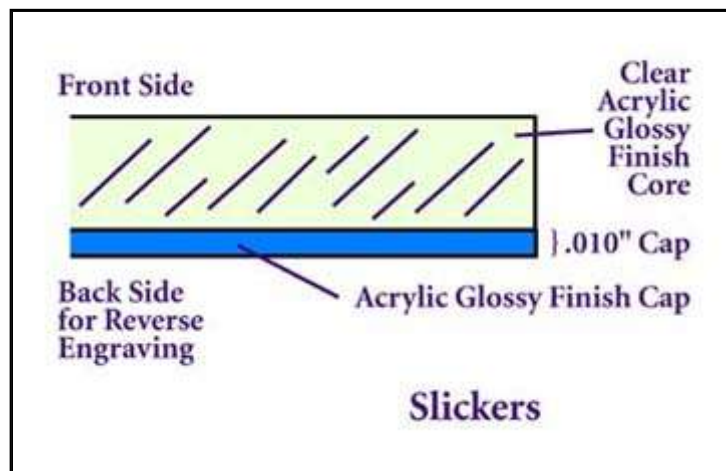
Mattes are available in 30 color combinations, and have a soft matte finish. Because of the ultra thin (.001") cap on an ABS core, Mattes allow highly detailed engraving, even on a rotary engraver. Although we do not recommend lasering Mattes, we have found that, with some care and two passes, the Mattes with dark cores can be successfully lasered. The white core Mattes readily show the effects of heat stress and are not recommended for lasering.





Lacquers

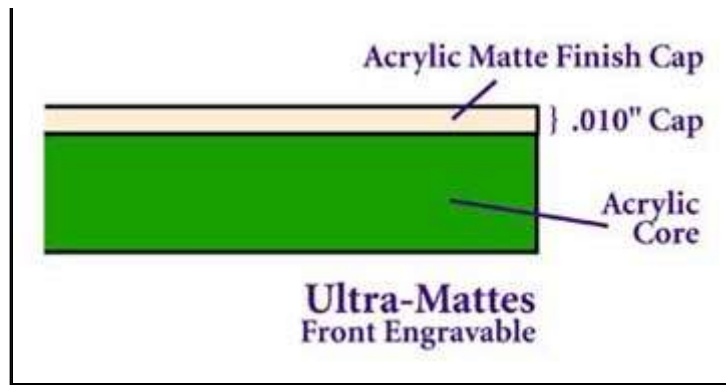
Lacquers are available in 22 color combinations and have a high gloss, glass-like appearance. The cap is .010" thick on an acrylic core, and this material is primarily suited to rotary engraving. This product can be lasered using special care and two passes. Lacquers are recommended for outdoor use.



Slickers

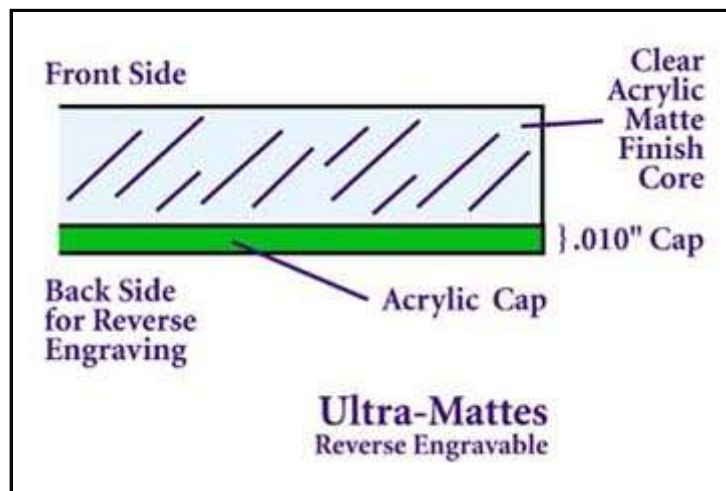
Slickers are available in 17 colors. Because this is a reverse engravable product, the engraved artwork can be back-filled with any color(s) of paint. The high gloss, glass-like surface of the clear core material is this time positioned to the front of the cap sheet which forms the back field of color. When this cap is engraved from the back (with the image in reverse), that same image, viewed from the front, is right reading and clear where the material is removed. This clear area can then be backfilled with paint. Slickers can be lasered if care is taken but will require two passes because of the .010" cap thickness. The core material is acrylic, and this product line is outdoor weatherable.





Ultra-Mattes Front-Engravable

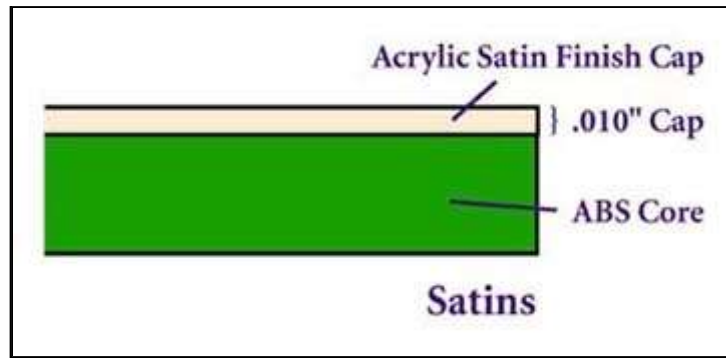
Another outdoor weatherable product is Ultra-Matte Front-Engraveables. These are available in 31 color combinations this time with a soft matte finish. They have a .010" cap which can be lasered if done with care and two passes.



Ultra-Mattes Reverse-Engravable

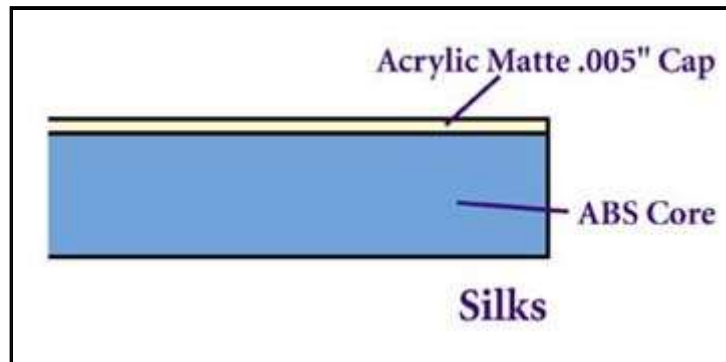
The Ultra-Matte Reverse-Engravable, product line is available in 25 colors and is capable of being reverse engraved and back filled with color(s). The clear, matte finish surface is part of the core with the color cap laminated to the back. When this cap is engraved from the back (with the image in reverse), that same image, viewed from the front, is right reading and clear where the material is removed. This clear area can then be back-filled with paint. This material, because of its matte surface and single color appearance, is often interchanged with the ADA product line and is fully ADA compliant. Like the ADA material, it is also available in 1/32" and 1/16" thicknesses. The .010" cap under acrylic core makes it possible to laser using care as well as two passes. It is rotary engravable and outdoor weatherable.

Traditionals or Non Laserables



Satins

Satins are available in 47 color combinations and have an elegant brushed satin finish that gives a special quality to any project. The .010" cap is laminated to an ABS core, and the material is primarily suited to rotary engraving.



Silks

Silks have a soft matte finish and are available in 7 color combinations. Silks have a .005" cap on an ABS core, which makes them unsuitable for laser engraving. This product allows for greater detailed rotary engraving than is possible with Satins or other products whose cap is .010". This product is primarily suited to rotary engraving.