

# MAKING SENSE OF LASER-MARKABLE METALS

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## Ready to test your metal? Pick the right one for the job.

More engraving shops are using metals for such high-end applications as corporate awards, diploma reproductions, newspaper reproductions, industrial labels, and wayfinding signage. Contrary to popular belief, laser-markable metals sometimes are less expensive than engravable plastics. When they are more expensive than other materials, the extra cost may not be an issue if the high perceived value of metals makes it possible for you to charge more for the finished product.

Laser-markable metals are used because of their durability and perceived value, both of which can increase business. Various laser-markable metals are imaged differently with a CO<sub>2</sub> laser and used for assorted profitable applications.

### METAL TYPES

Laser-markable metals (LMMs) refer to those materials that appear metallic and can be marked with a CO<sub>2</sub> laser. Fiber lasers and nD YAG lasers mark some metals but are more expensive and less common. LMMs are best categorized by the four ways they are marked by a CO<sub>2</sub> laser:

- **Engraving:** The surface color is ablated or burned away by the laser (FIGURE 1). **Examples:** Rowmark Metalgraph Plus, IPI LaserMetallic Brush, lacquered aluminum, Laser-It, DuraBlack
- **Bleaching:** The metal is turned white by the heat of the laser (FIGURE 2). **Examples:** Black anodized aluminum, LazerWhite
- **Ceramic bonding:** A coating is sprayed onto the metal and bonded by the heat of the laser (FIGURE 3). **Examples:** CerMark, TherMark

- **Positive image transformation:** Pre-coated metal is imaged through a chemical transformation on its surface (FIGURE 4). **Examples:** AlumaMark and laserable anodized mirrored aluminum (LAMA)

### CHOOSING A METAL

Each metal and marking method has pros and cons, making the most important consideration the look and feel of the finished product. Your customer doesn't care how you engrave the plaque as long as the finished product looks amazing. Three factors must be taken into account when selecting an LMM:

1. **Base material:** What is the material made of? LMMs are made of aluminum, steel, brass, or even plastic that looks like metal. Each has its place, but you need to consider which material your customers expect for a particular application.



FIGURE 1



FIGURE 2



FIGURE 3



FIGURE 4



**Black Positive Mark**



**White Negative Mark**

FIGURE 5

**2. Mark appearance:** Most LMMs appear metallic, though some are dyed or painted to have a nonmetallic color. When imaged with a CO2 laser, some form a black “positive” mark (black mark on metallic background) and some are imaged to a white “negative” mark (white mark on a black or metallic background). The marks are shown in **FIGURE 5**. Choose the material that creates the appearance best suited to each customer’s needs.

**3. Durability:** We are conditioned to think that if something is metal, it is durable. That simply is not the case for LMMs. Some are certified for outdoor use; some are not. When picking a durable LMM, be sure you find one made for outdoor application. If you plan to work with industrial or military suppliers, make sure your LMM is military specified.



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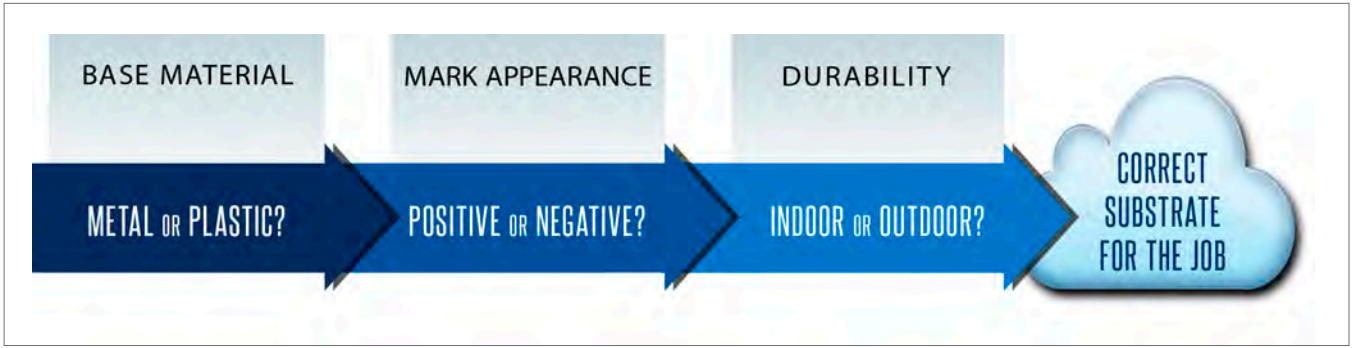


FIGURE 6

After you have identified an LMM that meets your requirements for material, durability, and appearance (FIGURE 6), you can then focus on how to mark them with a CO<sub>2</sub> laser.

### START YOUR LASERS

All lasers are different. Even if you have two identical models from the same manufacturer, you may find differences between the speed and power required for a certain material. Power settings will also be affected by how long your laser has been running that day.

The settings common to all lasers are power, speed, and dots per inch (DPI). When choosing settings, refer to the instructions provided by the manufacturer of the LMM. Many manufacturers provide laser settings on their websites.

As a starting point, DPI should be set to 600 or higher. Likewise, the speed can be set at 80 percent for most lasers. All that remains is power. Here are settings we found worked well on our 35-watt laser. Again, every laser is different so use the settings in FIGURE 7 as suggested starting points, but refer to the manufacturer's guide to fine-tune your settings.



LMMs are durable and have high perceived value.

Some materials require product-specific adjustments. The recommended starting point for lasering JDS Industries' LazerBlak is 10 percent less power than laser manufacturer's setting for painted brass. We have had good results with a 2 percent setting for LazerBlak. For Horizons' AlumaMark, try taking the laser out of focus 1/8 in. by simply adding 1/8 in. to the material thickness for your z-axis (bed height). For a .02-in. thick material, for instance, the z axis would be set at .145 in.

### MAKING MONEY

Using metals can add value to your current offerings or allow your shop to enter new markets, such as those shown in FIGURE 8 and FIGURE 9.

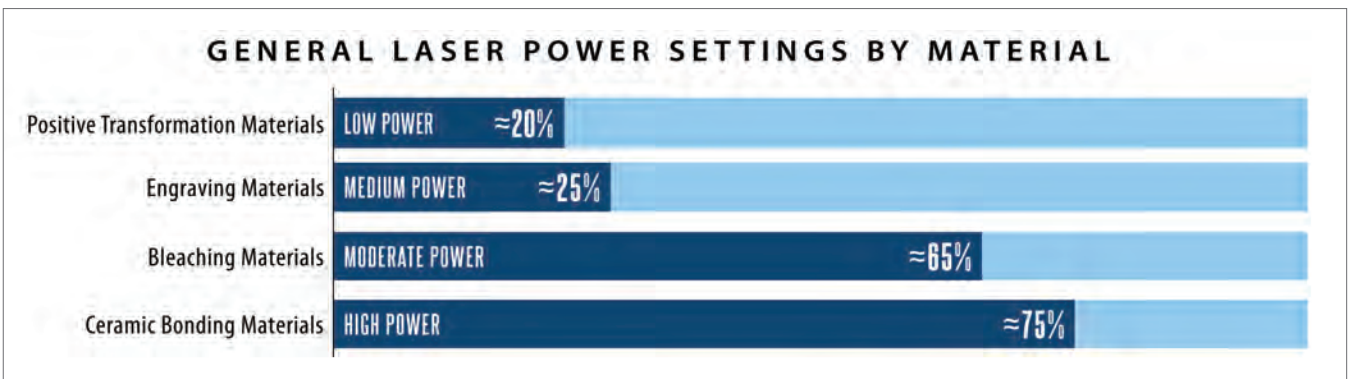


FIGURE 7



	Real Metal	Positive Black Image	Outdoor Durable
Traditional Items	Maybe	Yes	No
High Quality Reproductions	Yes	Yes	Maybe
Corporate Recognition	Yes	Yes	Maybe
Durable Items	Maybe	Maybe	Yes

FIGURE 8

### Traditional Items

- Trophy plates
- Child team/club sport awards
- Name Badges/pet tags

### High Quality Reprints

- Newspaper articles
- Diplomas
- Photograph
- Certification plaques

### Corporate Recognition

- Corporate Awards
- Donor Plaques

### Durable Items

- Wayfinding signage
- Property Tags
- Engineering Diagrams
- Barcode & UID tags

FIGURE 9

Corporate recognition jobs can be especially beneficial if they are “annuities.” These opportunities for repeat business come with awards that are given out more than once, such as those recognizing employees’ work or donors’ philanthropy. ■■■



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