

Achieving high-quality marks on metal can be accomplished using proper laser engraving settings.

On Your Mark...

The different aspects of marking metal

By Cassie Green

It's no secret: there are a variety of ways to mark metal. Engraving, both laser and rotary, are among some of the most popular ways to do so, but let's not forget that metal can also be printed using sublimation or even sandcarved. Each has its own unique end result depending on what your customer is looking for.

For the purposes of this article, we explore the engraving side, taking a look at how to mark metal using the ever-popular methods of the laser machine. Experts from around the industry weigh in on what it takes to achieve high marks in the metal substrate side of the market.

MANY METHODS

Of course, not all customers will want their metal substrates decorated using engraving. "There are many processes for marking on metals; the appropriate method will depend on the desired outcome," Bob Henry, Epilog Laser, notes. In fact, there are a variety of options to fulfill every taste.

"There are many other forms of marking metal like etch and fill, inkjet printing using UV, and solvent based inks, such as

AlumaJet," says Karly Baldi, Horizons ISG. But she also points out the obvious: metal can be marked with a CO₂ laser engraver as well as rotary machines. "Metal marking is often perceived as being harder to mark than plastics or wood, but that is not the case," she continues.

That being said, each decoration technology yields unique results when it comes to marking metal. For example, rotary engravers will produce depth into metals, says Henry.

With all the metal marking technologies out there, why would a customer choose laser engraving? "Laser engraving can perform vivid engraving photo output performance and has a permanent, non-removable effect," says Mira Wu, GCC.

LASER FOCUS

While laser engraving metal isn't all that difficult, there are a few requirements that must be met in order to do so. "(Laser engraving) requires high resolution, fast (speeds), accuracy and consistency," states Wu. But there's more.

"Raw metals without a coating *shouldn't* be marked," Baldi emphasizes. She lists two reasons for this: aesthetics and dura-



Laser engraving metal, following the proper steps, will yield results with a high-perceived value.

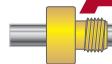
Achieve a High-Quality Image on Metal

By Karly Baldi, Horizons ISG

Just like a cook trying to teach a student how to bake the perfect cake, each person has his or her own tricks to achieve the best result, in this case, high-quality images on metal. Whether using pre-coated sheets such as AlumaMark or DuraBlack, or applying a coating like CerMark to metal, there are many steps and opinions to improve results. Here are a couple that apply broadly when marking both:

1. Quality of the graphic is imperative for yielding quality results. Lasers are like printers—they cannot add detail and resolution if it is not there in the beginning. Vector images are ideal and can easily be scaled to any size. Raster graphics copied from a website at 72 DPI will not be nearly as crisp and clean as a 300 DPI image.
2. Always follow manufacturer's recommendations and contact them for technical support if needed. When determining proper settings, dialing in settings prior to processing a live order is highly recommended. Not using the proper laser settings can result in images looking too light, marked areas bleeding too much, and inconsistent marks, just to name a few.
3. Some metals have the ability to yield quality halftone images, like AlumaMark. To achieve this, most lasers have some halftone options in the software to control the pattern and density of the mark. Sometimes additional control is helpful, then a photo editing program like Adobe Photoshop can be utilized in creating a halftone screen or fixing hot spots or overly dark/light areas in photos.

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Metal marking can be done via many methods, and each has its own unique effect.



IMAGE COURTESY EPILOG LASER

bility. "Marked bare anodized aluminum will leave a low-contrast white mark on a silver background," she elaborates. "Stainless steel will leave a blackened carbon mark if given enough power, but the amount of heat needed to generate the black mark can distort the metal and graphics."

On the durability side, Baldi says that ablating the raw metal surface weakens and compromises the protective coating which makes the metal more susceptible to oxidation and rust. "Marking a pre-coated sheet (e.g. DuraBlack) or sprayed sheets (e.g. CerMark) protects the integrity of the base metal and leaves the metal surface intact and fully protected," she finishes.

Henry elaborates on the coating aspect to laser engraving metal. "If a user would like to mark bare metal with a CO₂ system, it must first be pre-treated with a laser marking agent such as CerMark or TherMark," he points out.

Perhaps one of the most important requirements falls on the customer service side. Bob Shaprio, ID Plates, emphasizes the importance of asking your customer about not just the look and feel of the end product, but where the metal will be used. "This information can help you find the best materials and laser engraving processes to use," he adds.

HIGH MARKS

Once you've established what the customer is looking for, it's time to actually laser engrave the metal substrate. Wu offers a few tips on the process: For photo engraving/marketing, the higher the resolution, the better the engraving result for the image. "Turn it into grayscale and adjust proper brightness-contrast for the image to enhance engraving quality. Then adjust the parameters to optimize the metal engraving output effect," she says.

Henry has a few things to add to the conversation. "For CO₂ systems, operators should treat the area to be engraved with a metal marking agent; let the marking agent dry; engrave the desired portion with the intended graphic; and lastly, wipe away the excess marking agent to reveal the final mark." He also adds that determining the proper settings for your desired mark may take some experimentation.

This leads to another point to keep in mind: like any project, there are bound to be some difficulties. Shaprio believes that the biggest obstacle is education. "We suggest always starting with the end in mind—what look is your customer requesting? Are there any environment or durability issues you need to be aware of?" he says. "Starting with the end in mind helps you learn and decide on the best processes and materials for the project."

Baldi elaborates on that point, pointing again to the customer. "The biggest hurdle is probably the misconception to customers that metal equates to being very expensive," she states. She goes on to say that metal products can command a higher sales price due to greater perceived value, but marking metal is not any more expensive to the retailer than other products. "Capitalizing on proper pricing for the market can yield win-win results: a win for the customer because they get a quality metal product, and a win for the retailer because of higher profit margins."

Henry also points out that proper machine settings are important to pay attention to. "The challenge faced by most users—typically new users—is determining the proper settings for their desired mark. We encourage operators to experiment thoroughly with different speed, power, frequency and focal settings to achieve the perfect mark they're seeking."

METALLIC FINISH

Metal marking can be done via many methods, and each has its own unique effect. If you want to laser engrave metal, it's more simple than you might think. It's all about making the right mark with your customer to show them that the end results are worth it.



IMAGE COURTESY ID PLATES

The look you are trying to achieve will dictate the best way to mark metal.