ETCHED IN METAL!

USING **ACID ETCHING** TO MAKE ONE OF A KIND MARKED METAL

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Automotive enthusiasts can be a resourceful bunch, adapting techniques and ideas typically unrelated to the hobby, and using them for their benefit. Recently, we came across an at-home process derived from creating custom electronic circuit boards, which can be used to create custom body tags, emblems, or anything else you would want etched into metal.

This process is a way to chemically etch non-ferrous metals such as brass, copper, aluminum, and zinc with ferric chloride, an acid that only dissolves these types of metals. Where imagination couples with chemistry is in a product called PNP-Blue, a printable substrate that resists ferric chloride and can be transferred to metal surfaces. Combining these two items allows you to etch exposed areas and leave masked areas untouched in whatever design you desire. How exciting is that?

Here at *Street Thunder*, we thought this was such a cool idea that each of us decided to make something for our own project cars. So whether you want to mark a "V8" in your three-deuce zinc carb setup or make a custom badge for your late-model, we're sure this process will get your three pounds of gray matter going and will result in something unique. Enjoy!

01

The first step in the process is creating a design. The black areas in the design will mask the metal and the white areas will be exposed to be etched. In order for the design to turn out correct, it must be reversed before being printed and transferred.

02

We used a laser printer to print our body tag design on the rough side of the PNP-Blue, purchased online for about $1/sheet. After printing, we removed any lint or dust from its surface to ensure a proper transfer to the metal. If any particles remain when transferred, they will lead to imperfections in the form of pitting in the unetched portion of the metal.

03

Since brass sheets are tough to come by, we elected to use a brass door kick plate and sanded off the clearcoat finish. Then we cleaned the surface with mineral spirits to remove any grease or finger prints.

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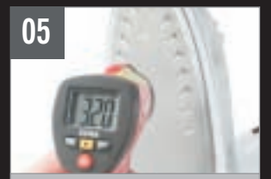
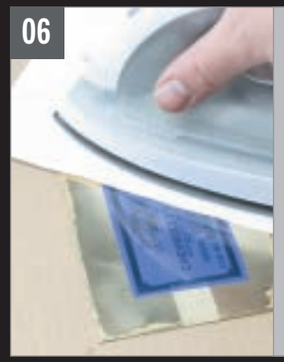
Before transferring the design to the metal, we attached the substrate with removable tape to ensure the PNP-Blue didn't shift during transfer, which would compromise the mask.

05



We used a household iron to apply the heat and pressure needed to transfer the design to the metal. Our goal was a temperature range of 275 to 325 degrees without steam.

06



Using a piece of plain white paper to reduce friction, we made smooth passes over the transfer making sure to apply even heat. After about five minutes, we brought the temperature of our brass plate to the 275 to 325-degree range. After transferring the design, we quenched the metal in cold water. Quenching allows the toner mask to adhere solidly to the metal.

07

After quenching, we peeled the translucent backing away, completing the transfer of our body tag design to the brass.

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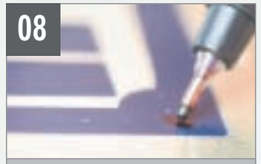

Small imperfections occurred where the toner didn't completely transfer to the metal. To fix this problem, we applied a couple layers of ink using a black Sharpie marker. We used black finger nail polish for fixing larger exposed areas.

09

Before starting the etching process, we masked off the remaining exposed surfaces of the brass plate that we didn't want etched, including the back side. We used packing tape because it resists the effects of ferric chloride.

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While ferric chloride etchant solution (available at Radio Shack for around $10/bottle) will work fine at room temperature, we discovered it's more effective at about 120 degrees. Read the warning label carefully first and make sure to use it in a well-ventilated area while wearing rubber gloves and eye protection. Also, make sure to use a glass container opposed to a metal one, as the acid will not penetrate glass.

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To begin etching, we placed our body tag in the acid face up, making sure to cover the plate with at least a 1/4-inch of solution.

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Because the metal will etch unevenly if left to soak, we agitated the solution every couple minutes. This also helps flush the areas being etched.

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We checked the etching depth often, as the time needed varies with each metal. Our brass plate took about an hour to etch our desired amount.

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After removing the plate from the etchant solution, we neutralized it by soaking it in cool, clean water.

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After rinsing the brass throughly, we peeled off the protective tape before using steel wool to remove the toner mask.

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As you can see, the metal was etched evenly, leaving well defined letters intact with enough depth to fill in with paint.

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After cutting our items out from the sheets, you can really see how cool this process is. Our plans call for sending a few of the pieces out to get nickel-coated, while we spray painted others. You're only limited by your imagination; if you can print it, you can etch it.