

# Laser Printing to Powder Coated Sheet Aluminum, version 1.0

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**By R. G. Sparber**

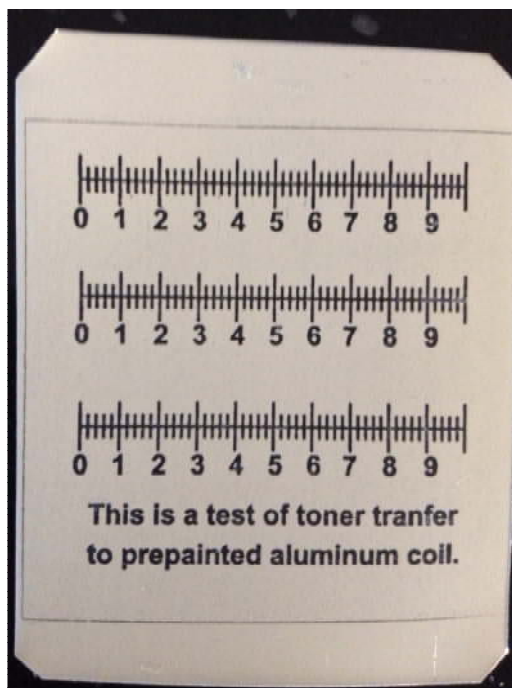
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This work is based on the amazing efforts of David Pickering:

<http://rick.sparber.org/electronics/cel.pdf>

David figured out how to use a laser printer, a plastic laminator, and a kitchen freezer to fuse toner into bare copper plate. The key to his success is a special wax paper that is very low cost. This paper is sold via eBay by a company in China and delivery takes a few weeks at best. I bought a few packages of this paper and it certainly works very well. My only complaint is that I can't buy it for next to nothing at my local office supply house.

My goal is to duplicate David's success but use commonly available materials.



The approach presented here has a lot in common with soldering. If you tin two copper surfaces first, soldering them together is more consistent and secure.

Instead of solder, I am using plastic. The toner used in laser printing is a close cousin to the plastic powder used in powder coating. Using heat and pressure from the laminator gives amazing results.

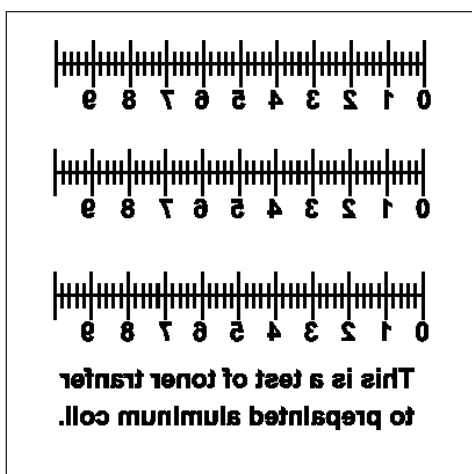
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<sup>1</sup> You are free to copy and distribute this document but not change it.



I used pre-painted aluminum coil. It is white on one side and a light tan on the other. The stuff cuts easily with a pair of sharp scissors. I do not try to cut it to an exact shape. That is done after the toner has been transferred.

I take the aluminum sheet into the kitchen and scrub it with dish soap and a 3M pad. The goal is to get it very clean, not to remove a layer of paint.



I created the artwork using DesignCAD Version 14. It enables me to mirror image all text. Microsoft Word<sup>®</sup> also has this capability but it is more limited<sup>2</sup>.

I then print the artwork out using my Hewlett Packard<sup>®</sup> 1102 laser printer and standard paper. Then trim off the excess paper. There should be at least 1/8" of exposed metal around the artwork.

Using small squares of Scotch<sup>®</sup> Magic<sup>™</sup> Tape, I secure the paper to the aluminum plate. Tape the first corner, smooth down the artwork, and move on to the next tape. The goal is to have the paper as flat on the metal as possible. Don't worry about getting the artwork perfectly square. You can trim the metal after the toner has fused.

Avoid putting tape over any toner areas as it may interfere with the laminator's heat and pressure.

<sup>2</sup> Use "Word Art" to generate the text and then you can mirror it using Rotate: flip horizontal.



My GBC® Creative Laminator™ has been pre-heating for at least 10 minutes.

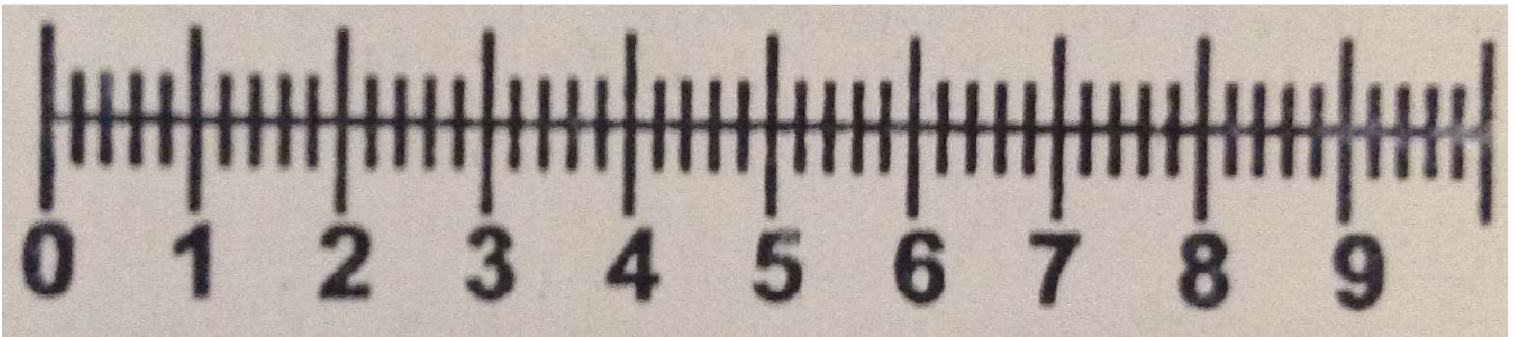
I then run the aluminum/paper sandwich through the laminator 10 times. This seems to always work. Fewer passes might work depending on the thickness of the metal.

When done, place the sandwich in the freezer for at least 15 minutes. We need to cool off the metal so the toner will be nice and hard.

The final step is to run the paper under warm water. The toner should be securely fused to the powder coat layer so you can rub fairly hard with your finger. In fact, I even used the 3M pad with a light touch.

I have blown up the picture of page 1. Actual length of the scale is about 1.6" .

You can see a little bit of paper still stuck around the right end of the scale and on the top of the "5". It will come off with a bit more soap, water, and rubbing. Note that none of the toner came off.



I welcome your comments and questions.

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