Laser Printer Toner Transfer With Kitchen Parchment Paper and a Laminator, Version 1.3

By R. G. Sparber

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Why?

No matter how nicely you make something in your shop, it will look less than professional if the label attached to it looks ratty. Consider a superbly machine shaper vise labeled with a permanent marker. Ouch! Equally bad is a slip of paper glued in place, especially when it gets smeared with grease.

Using toner transfer, those labels can look as professional as what comes out of your laser printer plus will be far more durable. Here we have toner transferred onto powder coated aluminum which has been glued onto the surface of the tool.

By printing on the back of clear plastic, I was able to flip it over and glue the coupon down. The result is toner sandwiched between the base metal and a covering of plastic. Now that is rugged.

Overview

R.G. Sparber

This process enables you to take artwork from a common laser printer and fuse it to a flat, thin surface. The composition of surface determines durability.

If the surface is thermal plastic, the image will be fused into it and be very strong. This plastic can be a thin coating as with powder coated metal or be solid plastic. If the plastic is clear, the artwork can be printed on the back side for added protection.

If the surface is metal, the toner will barely stick yet can still be useful. The surface can be sprayed with a clear coating to make it more durable. Or the surface can be soaked in chemical that will etch the metal. Areas covered in toner will be spared. For example, circuit boards can be etched using "toner transfer".

Advantages

This transfer of artwork is accomplished by using machines and materials commonly found around the home or available at local stores.

Contents

Limitations

You can only print to material that is thin enough to pass through a laminator[2]. It would apply the required heat and pressure.

My best results came with black and white artwork. Grey tones tend to break up too much.

Equipment

- Laser printer (I used an HP Laserjet Professional P1102w).
- Plastic laminator (I used a GBC Creative Laminator).
- Either a paper cutter or scissors.
- Depending on the thickness of the metal, sheet metal sheers may be needed.

Materials

- Plain paper for a laser printer.
- Parchment paper (I used Reynolds Genuine Parchment Paper, 45 square feet for $3 at Walmart).
- Elmer's Disappearing Purple Washable School Glue Sticks[3] (2 for $3 at Walmart).
- A base material (see page 5).

The Basic Idea of Fusing to Thermal Plastic

The toner used in laser printers is a thermal plastic. By placing the toner on thermal plastic and
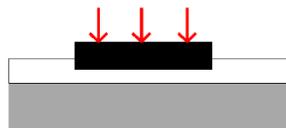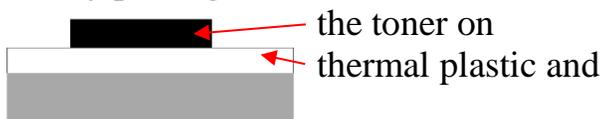
applying heat and pressure, the toner will fuse into the surface. You are left with artwork that can withstand as much abuse as the plastic supporting it.

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[2] Although not investigated, it is likely that a block of steel heated in a kitchen oven might substitute for the laminator.

[3] I have tried to use Elmer's white glue but the results were poor.

The "Magic" of Parchment Paper

By design, toner printed on paper does not easily fall off. Yet that is what we need in order to transfer it to a second surface.

The trick is to print onto parchment paper. One side of this paper has just enough "tooth" to hold the toner yet releases without any damage.

A problem with printing to parchment paper is its lack of stiffness. It crumples rather than pass through the laser printer.

This problem is solved by temporarily gluing the parchment paper to regular paper. To ensure that the parchment is flat on the regular paper plus secure, I coat the back with water-soluble glue and run it through the laminator. The laminator sets the glue while it smooths the parchment flat down on the regular paper.

In the past, I have tried using waxed paper to carry the toner. The results were disappointing. Kitchen Parchment Paper can withstand temperatures up to 420°F[4]. Contrast that with waxed paper which is not meant to be in an oven. This toner carrier must survive both the laser printer and the laminator.

Laser printing can have temperatures up to 801°F[5] for a brief time. The laminator can reach 302°F[6]. Therefore, it should be no surprise that Kitchen Parchment Paper works so well.

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[4] See product packaging.
[5] https://en.wikipedia.org/wiki/Laser_printing#Fusing
[6] https://www.thinktink.com/stack/volumes/volv/modulam/operation2.htm

Thermal Plastic Coated Base Material

It is essential that only thermal plastic coated or solid thermal plastic be used. Since I will be running this material through a laminator, it must be less than 1/16 of an inch thick.

Powder coated aluminum sheet can be found at some metal supply houses like Industrial Metal Supply[7].

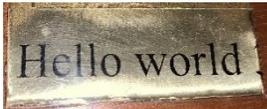Home Depot sells it but only in large quantities[8].

Another source of power coated metal is from the trash. For example, fluorescent fixtures are commonly made from powder coated steel. It won't be as easy to cut or flatten as aluminum but the price is right.

Solid Plastic Base Materials

Plastic file folders accept toner very nicely.

I found some clear plastic in my junk drawer and printed on it. Then I used Go2 Glue to attach the coupon to a metal plate. This glue spreads to a thin coat and dries clear. Since the toner is sandwiched between the plastic sheet and the metal plate, it is very rugged.

Thin polycarbonate sheets can stick inside the laminator.

Plastic milk cartons work well if you select flat areas. The plastic has a very thin skin on it that loosens when hot. Once cooled under water, it will re-bond to the base plastic. Just do not disturb the surface while hot. Although the carton material is translucent, printing on the back does give a rather faint image. I prefer to print on the front surface.

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[7] 24 inches by 48 inches 0.040 inches thick for $15 so 1.3 cents per square inch
[8] 24 in. x 50 ft. Bright White Aluminum Trim Coil $81.50 so 0.6 cents per square inch

Bare Metals

Clean off all oxide with an abrasive pad or with very fine steel wool and wipe down with acetone. Let it fully dry before proceeding.

The toner looks secure enough to withstand etching.

If in doubt, try some. Just be sure there are no sharp edges that can damage the laminator.

The Illustrated Procedure

Turn on the laminator and let it come to full heat. Mine takes about 5 minutes.

To ensure that my artwork will land on the parchment, I first printed the image on regular paper. Why is it mirror image? Because the toner to be applied to the parchment will be flipped over in order to print on top of the base material.

I left the print window open because a second printing will occur in a moment.

Then I cut out a coupon[9] of parchment paper that covered the artwork with about ½ inch of margin all around.

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[9] Coupons larger than about 4 inches square will tend to curl after running through the laminator which can be a problem when put back into the printer.

Note that the parchment naturally curls in one direction. With the curl down and working on a piece of scrap paper, I

fully coated the top face with the blue water-soluble glue. Then I flipped it over and stuck the parchment paper down, centered over the print.

Then I placed a clean sheet of paper on top of the parchment and immediately feed the sandwich into the preheated laminator. This both set the glue and flatten down the parchment. The top sheet protected the laminator's rollers from any excess glue or toner.

When the sandwich exited the back side of the laminator, I carefully removed that top sheet without bending the parchment and its carrier. Next I brought it, flat, to the printer with the same orientation of the artwork as when fed into the hopper the first time.

Going back to the PC, I printed the artwork again. Toner was deposited onto the parchment within 1/8 inch of the first printing.

I then peeled off the parchment taking care not to bend it as this can cause the toner to fall off.

I inspected the base material that will receive the toner. It must have no sharp edges nor sharp bends. A slight curve in the surface would have been fine. If plastic, I would have use soap and water to clean the surface. If bare metal, I would have scrubbed off all oxides and wiped down the surface with acetone. And finally, I dried the surface without leaving any lint.
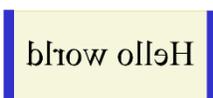
With the artwork showing mirror image[10], I applied a very thin bar of glue about 1/8 inch wide across the leading and trailing ends of the coupon (blue bars). I worked on scrap paper so any glue that slops over the ends does no harm. Then I carefully lifted up the coupon being sure that none of the glue got on the toner.

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[10] This assumes the toner will be printed on the surface. If you are printing to clear plastic and will then flip it over, the text should be right-reading.

Hello world Flipping the coupon over, I can see normal reading text. Next, I placed it down on the base material and made any small adjustments in position. Wiped up any excess glue.

Then I immediately ran the base material/coupon sandwich through the laminator, feeding in from the leading edge of the coupon. The laminator flattened down this leading edge and set the glue. Then it flattened down the artwork. Before it could spring back up, the trailing end of the coupon was heated and compressed. That sets the second bar of glue.

As soon as the base material emerged from the laminator, I put it back in. Did this 3 times and then looked closely at the toner through the parchment. As the toner let go of the parchment, it looks more frosty. If in doubt, I would go 2 more passes. Never needed more than 5 passes total.

The base material was hot so handled it with care.

Dropped the base material, with parchment attached, into warm, soapy water. Next I let it soak about 10 seconds. Then I ran warm water over the paper until I could see it starting to come loose. I was able to pull the parchment off. Since all went well, there was no toner left on the paper. The base material had some glue residue but that rubbed off in the water with my finger.

Sample Result

It is normal for me to see some tiny areas without toner. The higher the magnification, the worse it will look.

I see a few white spots on this R and the edges are not all smooth. However, I do not see any bits of paper stuck into the toner. That was common when I used plain paper and waxed paper rather than parchment paper.

Harry Croon pointed out that some printers have the ability to apply more toner. This solves the problem.

Without magnification, I think the toner looks fine.

The Procedure in Reminder Format

1. Turn on the laminator and let it come to full heat (about 5 minutes).
2. Print the artwork, mirror image, on the laser printer.
3. Cut out a piece of parchment paper larger than the artwork with at least a ½ inch margin all around.
4. Coat the parchment, curved side down, with the Elmer's glue and stick it down over the artwork; smooth the parchment down with your fingers.
5. Put a sheet of clean printer paper over the top and run the sandwich through the laminator. Remove the cover paper. Keep the base paper flat so the parchment does not break loose.
6. Put the paper, with parchment paper attached, back into the printer with the same orientation as from first printing. Print the artwork a second time.
7. Pull off the parchment paper. Trim around the parchment paper leaving at least a 1/8th-inch margin around the artwork.
8. Clean and dry the base material. Verify there are no sharp edges.
9. Apply glue to the front and back margins of the parchment paper. Place the parchment paper down on the base material and adjust to the final position. The text should be right-reading.
10. Feed the coupon into the laminator starting at a glued end; Run through 3 to 5 times and stop when all toner looks frosty through the parchment paper.
11. Soak in warm, soapy water, about 10 seconds until the parchment paper wrinkles. Then run warm, clean water until the parchment paper becomes loose. Pull off the paper and use your finger to rub off any glue residue. Dry.

Acknowledgment
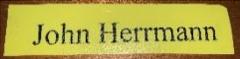
Thanks to for his editorial guidance.

Thanks to Harry Croon for providing his insights on toner transfer.

I welcome your comments and questions.

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