

How to make and use a hectographic duplicator

Better Times Emergency Notes

Folks over 50 years old may remember receiving hand-outs at school printed with purple ink. Those copies were made by a hectographic duplicator, which is a low-tech, inexpensive method of making multiple copies. A hectographic duplicator is a firm bed of gelatin made with a special recipe. A master copy made with hectographic ink or pencils is placed face down on the bed and the ink transfers to the gelatin. The master is taken off and blank sheets of paper are laid on the gelatin, producing from 30 to 50 or so copies. Hectographic copying has a long history of utilization in extreme situations such as prisoner of war camps, the Soviet gulag, and in civilian societies under tyrannical governments or foreign occupation. It does not need electricity and the materials are commonly available.

Recipe for the Gelatin Bed

	<i>English</i>	<i>Metric</i>
Unflavored gelatin powder	3.6 oz.	100 grams
Water	1-5/8 cups	375 ml
Sugar	1-2/3 cup	385 grams
Glycerin	2-3/8 cups	715 grams

Mix the unflavored gelatin powder with cold water. A common US brand name is “Knox” and it is available at most grocery stores in 1 ounce boxes. The box contains four 1/4 ounce packets. To get 3.6 ounces, I used three boxes, plus 2 of the quarter-ounce packets and half of a third. While gently warming the water, add the sugar and stir. When the sugar is dissolved, add the glycerin. Stir until it begins to boil, and continue to stir while boiling it for one minute. Remove from heat and pour into a metal baking pan that is a little bit larger than a sheet of paper. Let the mixture cool for several hours, and it hardens into the gelatin press bed.

Cautions: This mixture boils at a higher temperature than water. Treat it as carefully as you would a pan of boiling oil. Don’t splash or spill it. The mixture will increase in quantity as it boils so use a pan that holds about 3 times as much volume as the original mixture and stir with a long handled spoon. When you pour the liquid into the pan, use a spoon or some tissue paper to skim or blot up any foam. *The gelatin bed is not edible!*

The Printing Master

Use hectographic ink, hectographic pencils, or ditto masters to make hecto masters. Hectographic ink and pencils are available from any supply source for tattoo artists, or you can make your own. Hecto inks are available in a variety of colors, although the most common is purple. If you use ink, you need an old-fashioned writing stylus, available from tattoo supply houses and art stores. A quill pen would work if you have one available. Dip the pen into the hectographic ink and write your message on a sheet of paper. Small brushes could be used to paint various colors onto the paper stencil.

Using a ditto master: Instead of typing on the paper, turn it around and type or write on the back of the ditto carbon. Your master copy is then on the “back” of the paper – non-mirror imaged – so that when pressed on the gelatin bed and the copies are made they will not be backwards. If you type on the front of the paper, then the copy on the back will be mirror-imaged, so the printed copies will end up backwards. Note that you must use ditto masters, ordinary carbon paper won’t work.

Making the Copies

After the ink dries on your master, swirl a cup of water over the surface of the hardened gelatin pad and then drain that water. Use a clean sponge to wipe the surface and take up any remaining water. You want it to be slightly moist, but no drops. If the gelatin pad is too wet, the ink on the master will run.

Lay the master copy face down on the gelatin pad and make sure all parts of the paper are touching the surface of the gelatin. Leave it there for several minutes – the longer it is left in place, the more copies you can make. Then carefully pull it off and set it aside. You may be able to use it again.

Take a clean sheet of paper and lay it down on the gelatin bed and smooth it in place, then pick it up at one edge and peel it off. *Voila, a printed sheet!* Continue the process until you have enough copies or the copies begin to fade. Online sources say that the sharpness of the copy can be enhanced if the paper that receives the print is slightly moistened with alcohol (use a sponge to do this).

To clean the gelatin bed, pour a cup of hot water onto the bed and swirl it around until the ink dissolves. Pour this off and immediately cover the pad with some cool water. Drain that, and use a sponge to wipe up any excess water. Lay a clean sheet of paper on the pad and take it off to make sure no ink is left. When the gelatin is dry, cover it with a lid or aluminum foil to preserve it for your next duplicating session. The pad can be reused many times, but each time you clean it, a small amount of the gelatin dissolves and washes away, so it will eventually need to be replaced. If you damage the surface somehow, don't despair. Use warm water to soften the surface and the sponge to smooth it. Or, you can re-melt the gelatin pad and let it harden again. If the surface dries out between printing sessions, use warm water to soften and re-moisten it.

Ink Recipes

These recipes come from a source contemporary to the hectographic printing era: *Fortunes in Formulas for Home, Farm and Workshop. The Modern Authority for Amateur and Professional.* edited by Gardner D. Hiscox and T. O'Connor Sloane (New York: Books, Inc., 1907; rev. ed., 1956).

Purple: Methyl violet, 2 parts | Alcohol, 2 parts | Sugar, 1 part | Glycerine, 4 parts | Water, 24 parts

Black: Methyl violet, 10 parts | Nigrosin, 20 parts | Glycerine 30 parts | Gum arabic 5 parts | Alcohol, 60 parts

Red: Fuchsin, 10 parts | Alcohol, 10 parts | Glycerin, 10 parts | Water 50 parts

A modern recipe using contemporary pigments is found in *Recipes for Art and Craft Materials*, Helen Roney Sattler, (New York: Lothrop, Lee & Shephard, 1973):

- 1 1/2 teaspoons water-based pigment, such as Prussian blue, iodine-green, methyl violet, and so on. (Do not use an oil paint pigment. Aniline dye is best but poisonous.)
- 1 teaspoon glycerine
- 4 teaspoons distilled water
- 2/3 teaspoon peppermint or lemon extract

Mix the pigment with glycerine until smooth and well blended. Add water and extract. Stir or shake until thoroughly mixed. Makes about 2 tablespoons-enough for several projects.

Sources:

Glycerin: commonly available in small bottles at drug stores, or search for “soap-making supplies”.

Ditto Masters: local independent office supply houses or REPEAT-O-TYPE, 665 State Rt. 23 Wayne, NJ 07470 U.S.A, www.repeatotype.com

Hecto Inks and Pencils: www.spaulding-rogers.com or local tattoo supply businesses.

My information sources for the gelatin recipe, history, and printing process:

www.fell.demon.co.uk/steve/jelly.html | www.fell.demon.co.uk/steve/inks.html

<http://english.boisestate.edu/ttrusky/hecto.html> | www.deadmedia.org/

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