

How to Make Black Ink



Background and Explanation

In this activity you will experience what it was like for the average person or scribe to make ink during the time of the New Testament, 2000 years ago. You will use ingredients similar to what they used. This type of ink was probably invented several thousand years before the time of the New Testament.

Writers during the time of the New Testament made their own ink. It was made by mixing charcoal (which is soot from incomplete combustion) with gum (a type of tree sap) and water. The charcoal provided the black color. The gum acted as an emulsifier for the charcoal and water, and as an adhesive to make the ink stick to the paper.

An emulsifier helps two substances stay mixed together that typically separate when they are combined. Soot and water naturally separate after mixing. The gum acts as a “hand-holder” between them so they stay mixed.

Cautions

This activity is fun but very messy. Children must have adult supervision. Your hands will get covered with charcoal dust. Charcoal and ink stain porous surfaces, cloth and clothing. Cover the area where you work with a disposable plastic tablecloth or plastic drop cloth (ink will soak through newspaper). Do not eat charcoal or Gum Arabic, however they are considered safe if consumed. Have fun learning!

Primary Ingredients

The primary ingredients for this activity are charcoal, Gum Arabic and water. They are explained below.

Charcoal is the black carbon residue produced by the incomplete burning of plant and animal products. In common terms, it is a kind of soot. Someone thousands of years ago discovered that charcoal could be used to make ink.

In New Testament times, charcoal was commercially produced in kilns, collected as a by-product of other burning processes, or could be collected in small quantities from fireplaces or oil lamps.

For this activity, compressed charcoal sticks are used. You can purchase these at a craft store that sells art supplies. A small package of 4 to 6 sticks costs between \$4.00 to \$6.00. Be sure to get real charcoal and not pastel chalks. They both come in stick form and look similar.

If you want to experiment after completing the activity as explained in these instructions, try charcoal or soot from other sources such as charcoal briquettes, soot from the walls of a fireplace, or the charcoal residue from incompletely burned wood or logs. **Caution: Be sure these sources are completely cold before you try to collect the charcoal.** Do not use ashes. They are a different chemical composition and will not work to make ink.



In small quantities, charcoal is safe if consumed. But I don't recommend it!

Gum Arabic, also called acacia gum, is a natural resin or gum that oozes from the acacia tree found in Africa. Its chemical makeup gives it the properties of a glue, binder, and thickener. For thousands of years, it has been an important commercial ingredient. It was used in medicines, as a glue, for embalming mummies, to make artistic paints, and to make ink. Today, it is used extensively in foods and soft drinks as a thickener and stabilizer.

In New Testament times, people would have purchased Gum Arabic in the marketplace that had been brought by traders from Sub-Saharan Africa.

You can purchase Gum Arabic in some craft stores, especially those that specialize in watercolor painting or calligraphy supplies. Artists use Gum Arabic as a binder with watercolors and to prevent ink bleeding in calligraphy. It is also available through Amazon. A one ounce bottle will be more than enough for this activity and costs around \$5.00.



Gum Arabic is considered to be natural, edible, non-toxic, and generally safe for human consumption. It is tolerated by people with sensitivities to gluten. However, some people are allergic to Gum Arabic.

Ingredients and Supplies Needed for Craft

- ☐ Charcoal (1 Stick)
- ☐ Gum Arabic (1 Ounce Bottle of Powder)
- ☐ Warm Water
- ☐ X-Acto Type Knife with #11 Blade (for scraping charcoal)
- ☐ Old Cutting Board (charcoal may permanently stain the surface)
- ☐ Plastic Tablecloth or Drop Cloth (to cover work surface)
- ☐ Calligraphy Dip Pen (to write with)
- ☐ Paper (to cover the cutting board and to write on)
- ☐ ¼ Teaspoon Measuring Spoon
- ☐ 1 Teaspoon Measuring Spoon
- ☐ Coffee Stirrer (to stir ink mixture)
- ☐ Small Glass Mixing Container (large enough to hold the amount of ink you are making)
- ☐ Small Plastic or Glass Bottle with Cap or Lid (if you want to store the ink)

Basic Recipe

1 Teaspoon Finely Ground Charcoal
¼ Teaspoon Gum Arabic
1 to 1.5 Teaspoons Water

This will make 2 to 3 teaspoons of ink, which is plenty. A little goes a long way. If you want to make larger amounts, use the same ratio of ingredients by volume:

1 Charcoal to ¼ Gum Arabic to 1 to 1.5 Water

You can experiment after completing the activity as explained in these instructions. Try different amounts of charcoal or Gum Arabic or water to see if you can improve the quality of the ink. What makes good quality ink? What makes poor quality ink?

Let's Do It!

1. Gather all ingredients and supplies.
2. Cover work area with plastic tablecloth or drop cloth.
3. Prepare charcoal.

Cover the cutting board with a piece of paper to easily collect the charcoal and pour it into your mixing container.

On the cutting board, lightly scrape an X-Acto Knife blade across a stick of charcoal to create charcoal powder. Always scrape away from yourself. When the stick becomes too short to easily hold, use another stick. One stick will create about one teaspoon. This will take about 10 minutes to complete.



The charcoal must be a fine powder to stay mixed and produce a good quality ink. A mortar and pestle will probably not grind the charcoal fine enough and the charcoal will permanently stain it. Scraping the blade of an X-Acto Knife across the charcoal stick produces a much finer powder.

4. Measure 1 teaspoon of the charcoal powder into the mixing container.
5. Measure ¼ teaspoon of Gum Arabic into the mixing container.
6. Stir the dry ingredients so they are thoroughly mixed.
7. Add ¼ teaspoon of warm water to the mixing container and stir thoroughly until completely mixed. The mixture will be a thick, black mud.
8. Add ¾ teaspoons of warm water to the mixing container ¼ teaspoon at a time. Stir thoroughly as each ¼ teaspoon is added.
9. Use a calligraphy pen to test the ink by writing on a sheet of paper. If the ink is too thick, add additional water ¼ teaspoon at a time and stir, but the total amount of additional water added should not be more than ½ teaspoon. Test the ink as you add each ¼ teaspoon.

The writing on the paper should be pure black and the ink should flow easily. If you add too much water the writing will look grey.

Below is John 3:16 in Greek upper-case letters that were used in the earliest manuscript copies of the New Testament. You can copy this using your pen and ink.

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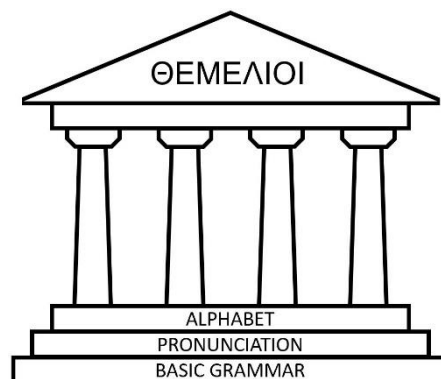
If you want to make a more authentic copy, follow the example below. This is how the verse would have actually looked in the earliest manuscript copies. There was no punctuation or spaces between words.

Also notice that the Omega character Ω is replaced by ω, and the Sigma character Σ is replaced by C. These are alternate forms of these letters used by scribes. Is it easier to write Ω or ω? Σ or C?

Also notice the overlines above ΘC and YN. These are *nomina sacra*, which is Latin for “sacred names.” *Nomina sacra* are abbreviations of sacred names used to show respect and reverence by the scribe. The abbreviation is often the first and last letters of the name. In these cases, ΘC is an abbreviation of ΘΕΟΣ (God) and YN is an abbreviation of ΥΙΟΝ (Son).

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10. If you want to keep your ink, store it in a plastic or glass bottle that has a tight lid. You will need to stir it the next time you use it. The ink will also become thicker as the water evaporates over time. Just add small amounts of water to return it to the proper consistency.
11. Now that you have made ink following the instructions, try experimenting with different amounts of charcoal, Gum Arabic, or water. Also try different sources of charcoal. What works? What doesn't work?
12. Clean up your mess and make your mother happy!



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