

# DIY Eco-Friendly Naturally Dyed Eggshell Chalk vs. oat water based pastels

## What is the Difference?!

For this at home or classroom activity we will test out two different kinds of art making supplies and compare the results. This is a 3 in 1 activity you can do throughout the week since you will first have to make the chalk and pastels and then let them dry before testing. We recommend using the same color pigments for both mediums to be able to gather proper data, especially if drawing on different surfaces

Terms to know:

*Binders: substances that hold pigment particles together and attach them to a surface, ensuring color adhesion, durability, and uniform coverage.*

*Chalk: a versatile drawing medium made from naturally occurring minerals, used for both preparatory sketches and finished artworks.*

*Pastels: sticks of pure pigment combined with a minimal binder, traditionally used on textured surfaces like pastel paper to allow the pigment to adhere properly*

binders we will be using for these activities are:

- oat water
- ground eggshells
- flour
- water



### How Oat Water Works as a Binder

Oat water, the liquid obtained from soaking or boiling oats, contains natural starches and proteins that can act as a mild adhesive, similar to traditional binders like gum tragacanth or honey. These components help the pigment particles stick together while still allowing the pastel to be soft and blendable.



### how eggshells work for chalk

Eggshells are similar to chalk because they are primarily composed of calcium carbonate ( $\text{CaCO}_3$ ), which is the same main ingredient found in chalk. This similarity in chemical composition allows eggshells to be used as a substitute for traditional chalk in various applications.



## Ready to begin? ok, let's cook!

# Recipe for Eggshell Chalk

*This and other recepies can be found on the woodlark blog site*

## Materials:

- calcium carbonate or eggshells (powdered, see directions below)
- flour
- natural pigments for natural dye. Links for my favorite pantry ingredients that I've used as natural dye:  
turmeric, beet root, butterfly pea, pink pitaya and freeze dried strawberry. When I have matcha that is expired I use that as well.

## Step 1: How to make eggshell powder (optional)

If you are using eggshells: Empty shells out completely and rinse well with hot water, also removing the inner membrane. Boil for 5 minutes to sanitize them and make sure your egg shells dry completely. Grind your eggshells into a fine powder using a mortar and pestle or the back of a spoon. You can also use a blender if you have one that is dedicated to crafting. I don't recommend using your normal blender because the eggshells are abrasive and can scratch it.



## Step 2: Mixing the chalk

In a small bowl, combine 1 teaspoon of your natural pigment/dye material ( using what you currently have in your pantry) with 2 teaspoons of hot water. Stir to combine. Add 1 tablespoon of flour and 1 tablespoon eggshell powder or calcium carbonate. The mixture will seem dry and clumpy at this point.



### Step 3: Forming the chalk

Use your hands to mix and knead the mixture until it is smooth and combined. Add small amounts of water at a time if necessary so that the mixture sticks together (add slowly—you want to add as little water as possible). Roll the mixture out to shape and form sticks. You can also press the mixture into a silicone mold if you have one to create shapes instead of rolling them into sticks. Allow to dry completely for at least 2-3 days on a piece of kraft paper, parchment paper or on a towel. Comparison photo of turmeric chalk below using eggshell powder (top) and calcium carbonate (bottom). Let dry completely, then use to draw on any outdoor sidewalks or pavement!



SHARE YOUR EXPERIENCE! Post about your adventures and tag us at @gpconservatory or use the hashtag “#GPCatHome”!

# PASTEL STICKS

*This recipe can be found in the book "From Plant to Pigment" by Natalie Stopka. It is used for educational purposes only; we do not own the rights to sell or mass produce products made using this recipe.*

## MATERIALS

- 7.5g (1 tbsp) oats (I've had success with old-fashioned and quick rolled)
- 240ml (1 cup) water
- Pigment, finely ground and sieved
- Chalk, optional
- Newsprint or newspaper, paper towel

## METHOD

1. Combine oats and water in a small saucepan. Bring to a vigorous simmer for five minutes. Keep a close eye on the oats as they cook; in my experience, oats are jealous of attention and boil over into a sticky mess the instant I look away! Sieve through a fine mesh, and discard or compost the oats. Allow the oat water to cool. If necessary, store for up to four days in the refrigerator.

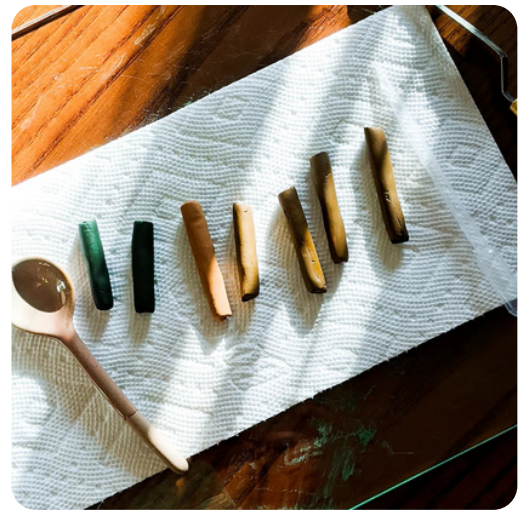
2. On a nonporous surface or slab, measure out roughly 2 tsp pigment. You may choose to mix colors together, or incorporate chalk. Create a divot in the center of your mound of pigment. Add 3.5ml binder.



3. Work the binder into the pigment with a palette knife. Incrementally add more binder by drops as needed, until the consistency is malleable and claylike.

*These pastels call for a simple binder made from oats, rather than the more traditional gum tragacanth.*

4. Transfer the paste to a piece of newsprint and roll it into a log, holding your fingers parallel to its length. If the pastel cracks apart, return it to the slab and work in a few more drops of binder.



5. Move the finished pastels to a fresh sheet of newsprint to dry for one to two days, weather dependent. When dry, sample your pastels on toothy paper to compare their texture, color, and granularity.

# Results

Now that we have made our supplies it is time to put them to the test! You can use this chart to compare your chalk and pastel results using the techniques below. You can also record your own techniques in the center column.

## Chalk

## Pastels

|                |  |                |
|----------------|--|----------------|
| Heavy Pressure |  | Heavy Pressure |
| Light Pressure |  | Light Pressure |
| Water          |  | Water          |
| Dry Brush      |  | Dry Brush      |