



Plaster of Paris

The chemical formula for gypsum is:



Gypsum has calcium (Ca), sulfur (S), and oxygen (O) in it. It also has two water molecules (H₂O).

So, if you heat gypsum, the water molecules are forced out of the gypsum and the calcium, sulfur and oxygen is left behind. It can now be crushed into a very fine powder. You can add water to this powder to make plaster.

You will need the following materials to do these activities:

Plastic candy molds, Plaster of Paris powder, water, measuring cups, spoon, clay, shells.

Go to your kitchen or a department store and find plastic molds that are usually used for making chocolate candy. Choose the shapes you like (animals, flowers, insects, etc.) Put your candy mold aside and proceed with the following:

Step 1: Take 1/3 cup of Plaster of Paris.

Step 2: Pour in water and stir. Add just a little bit of water at a time. Keep adding water until the powder has turned to thick plaster. You want it to be thick, but it also has to be soupy enough to be able to pour it into the molds. Don't add so much water that it becomes really wet and runny. If you add too much water and it gets really runny, just add a little more Plaster of Paris powder. This will thicken it up a bit.

Step 3: Pour the wet plaster into the candy mold until the mold is full.

Step 4: Every ten minutes, come back and check your plaster by touching it very carefully. Each time you come back you will see that it is a little harder than the time before. You will also notice the temperature of the plaster is changing.

What do you feel when you touch the plaster as it is drying?

Why does this happen? Scientists call this an "exothermic reaction." An exothermic reaction is one in which heat is created when two materials are mixed together and they react with each other. An exothermic reaction in which large amounts of heat are created instantly is called an explosion!

Turn the page and try another activity with Plaster of Paris: Make Your Own Fossils!



Making Fossils with Gypsum Plaster

In this activity you will need more Plaster of Paris powder, water, a spoon to stir, modeling clay and some hard items like sea shells or little plastic action figures, vegetable spray.

Repeat steps 1 and 2 from the previous page. When your plaster is ready, place it aside for a couple minutes and do the following:

Step 3: Fill the bottom of a small paper cup with modeling clay. There should be 1 to 2 inches of clay in the bottom of the cup.

Step 4: Take one of your items, like a sea shell or a small plastic figurine, and push it into the clay so that it leaves a mark in the form of the object.

Step 5: Carefully remove your hard object. You now have an indentation in the shape of your item. Give a light spray of vegetable spray into the cup. This will make it easier for you to separate the plaster from the clay in Step 9.

Step 6: Pour plaster into the paper cup. You only need to add enough to fill the indentation and cover the top of the clay.

Step 7: Hold the cup with the clay and plaster and firmly tap it on the counter top a number of times. This will push the plaster completely into the indentation and will help force out any air bubbles that might be in the plaster.

Step 8: Put the cup in a safe place on your counter and allow the plaster to completely harden. It is best to wait overnight.

Step 9: When the plaster is completely hard, carefully separate the plaster from the clay. If you need to, you can rip the paper cup to pieces to remove the cup from the clay and plaster inside.

What did you create?

You actually created a fossil! Can you see how your plaster actually looks like the item that was pushed into the clay??!! This is very similar to how many fossils were created in nature.

In ancient seas, sediments settled on the ocean bed. Organisms died and they settled onto the sediment. Their shells left impressions in the sediment. Over time the sediment hardened and the shell dissolved away, but an impression of the shell was left -- just like the impression you made in the clay. More sediment filled into the impression - just like your plaster. All of these sediments hardened into stone (a process geologists call "lithification").

The impression left by a shell in sedimentary rock is called a "mold." The sediment that fills in this impression and hardens to look like the original shell is called a "cast." Cast and mold is one manner in which fossils are created. The impression you made in the clay is the "mold." The plaster created the "cast." You have made a cast and mold fossil in your own home!!