

Nature Exchange

Plaster Casting

The technique of making a cast is called "casting" and involves making a "mold" or impression of your model. Depending on the application intended and the complexity of the model, a mold can be made from a number of substances such as rubber, latex, polyurethane, plasticine, clay and wax. Some can be re-used over and over again such as latex and polyurethane, and others have limited re-usability such as plasticine.

What is a cast?

It is a "model" or copy of something that already exists. They can be made of plastic, fiberglass, wax and plaster. We will concentrate on plaster casts because of its availability, safety and ease of use.

What's in it for me?

Most of us are not sculptors, so casting allows us to copy articles that already exist. By learning how to make good casts, you can make models that will look as good as the real thing.

Examples of items you may want to cast are figurines of dinosaurs, dolls, animals, or things from nature such as shells, teeth from various animals, fossils and this is only the beginning. Casting is not only rewarding and fun, but it can also develop a host of other traits such as creativity, imagination, ingenuity and curiosity.

Casting is a very important technique and is very much a part of our every day world. Casts are not only used by taxidermists, but also by museums where they replace real items that are not available or too rare to put on display. Casts are also a very crucial part of industry which use various "casting" techniques to produce things such as toys, car parts, kitchen utensils, jewelry, ceramics, and the list goes on.

Just for fun, list all the things you think are made using casting techniques.

What to Do

Mixing Plaster of Paris

- Estimate how much plaster you will need to mix.
- It is recommended that you use cold water and that the plaster be added to the water because the reaction gives off heat and mixing is easier.
- Plaster should pour easily and have consistency of pancake batter and flow smoothly when poured.
- The ratio of plaster to water is about 3 to 1, so the water should be about 1/3 the required amount of plaster (you may have to experiment).
- Without stirring, slowly sprinkle plaster into the water until all the water is absorbed and small wet islands appear.
- Gently stir mixture and tap container to bring air bubbles to surface.



Handy Tip.

too much vigorous stirring can make plaster set faster.

Activity

1

"Casts and Molds"

What to Do

Making a Mold

- Pick an article you would like to make a model of.
- So that the item doesn't stick, coat it with vegetable oil using a brush, paper towel or simply dip it. Other separators can be used to keep

your article from sticking, such as Vaseline, silicon, light oil, soap and water mixture (allowed to dry) or corn starch.

- Make an impression of your item by pressing it into the plasticine and work the plasticine around it.
- Remove your item from the plasticine, being careful not to distort the plasticine too much.

What to Do

Making a cast or copy

- Mix your Plaster of Paris following the method described and pour it into your plasticine mold. Tap your mold a little to get the plaster to settle and coax air bubbles out.
- After the plaster has set, (approx. 20 minutes) carefully peel the plasticine away. The plaster should feel dry to the touch.

NOTE: if you are careful, you can use your plasticine mold over again.

Activity

#2

Animal Tracks

In most cases, demonstrating this technique outdoors using authentic tracks is not possible. However, the procedure outdoors is about the same.

What to Do

Making a 'negative cast' or a 'raised image'.

- Pick out a "cast" of an animal track to copy.
- Flatten plasticine like a pancake, make sure it is larger than the cast.
- Coat your cast with oil or Vaseline and press the cast into the plasticine, removing it carefully.
- Now imagine the plasticine impression is a footprint found in dried up mud or sand.
- Make a cardboard ring about 5cm

high that will fit around the track, then press it into the plasticine, (or ground - if outdoors) slightly so the plaster won't leak out.

NOTE: shape a lip around the edge of the impression to contain the plaster.

- Mix plaster as per handout and pour it into ring.
- After the plaster has completely set gently pry your cast up.
NOTE: in nature, sand and debris sticking to the plaster can be brushed off after the plaster sets.

What to Do

Making a 'positive cast' or 'copy'

- A copy of the track can be made from the "negative" cast by pouring plaster over the negative.

NOTE: Coat the negative cast with Vaseline for easier separation, place a cardboard ring around it to keep the plaster from leaking and have a screwdriver close by, in order to split them up.

Activity

#3

More Casting

What to Do

- Pick out a few items (shells, etc.) and paint them with vegetable oil or other separators mentioned.
- Mix a batch of plaster to fill about 1/2 of a container.
- Before the plaster hardens, put your items gently in the plaster.
- Allow the plaster to dry.
- After drying, coat the plaster and items with corn oil or Vaseline.
- Mix another batch of plaster and cover your items; allow the top layer to dry.
- Separate the two layers with a twisting prying motion, or use a screwdriver, knife or chisel set into the separation line and twist it.

Casting Using Plasticine and Rubber Molds

What to Do

- Rubber "molds" and "casts" of models have been provided.
- Before using them, coat them with a bit of oil, (use paper towel or fingers).
- For the "casts" provided use plasticine to make a mold as before and carefully peel it way.
- Mix plaster.
- After the plaster has dried, carefully pop the plaster cast from the rubber mold or peel away the plasticine.
- Paint your cast so that it looks real or like the original object.

NOTE: plaster can be used in the classroom to make more molds, or more copies. But before using it, don't forget to coat it with oil or Vaseline.

"Other Tips"

Plaster models can be painted using acrylic and some watercolors (you may have to experiment).

- Coat the plaster "casts" or "molds" with clear shellac or varnish, so casts don't absorb moisture or paints.
- A variety of substances can be used to make molds, such as rubber, wax, etc.
- Casts can be made out of some types of plastics, fiberglass and some waxes.
- Complicated 3-dimensional molds can be made. Two or more sections are needed. The sections fit together and allow you to pour your casting material through a pour hole. High points in the mold may require vent holes be made in the mold.
- A variety of objects can be used as models,

such as small rubber figurines, doll faces, things from nature, even fingerprints. Use your imagination, practice makes perfect.

- Plastic containers can be re-used by allowing the plaster to dry and removing it by pushing on the sides of the container.
- When mixing, use a dowel or popsicle stick and not a spoon as it may cause air bubbles in the plaster mix.
- Remove the stir stick from the plaster only after the mixing is done.
- Increase the strength of the plaster by adding resin or white glue while mixing. The addition of any liquid may require additional plaster because it may water down the mixture.
- The thicker the plaster mix, the faster it will set.
- The plaster mix can be pre-colored by adding paint to the mix or coloring the water being used for mixing with powdered paint or food coloring.
- Remember, the faster and the more the plaster is mixed, the faster it will set, and the greater the chance of mixing in air bubbles.

Equipment List and Suppliers

1. Plaster of Paris: hardware or building supply store
2. Mixing containers and cups: department stores, food packaging
3. Stir sticks, paints, modeling clay, paint brushes Plasticine: department or hobby stores
4. Corn oil, Vaseline, corn starch, Q-Tips: grocery stores
5. Latex Rubber, shellac/varnish, files/sandpaper: hobby shops, building or hardware stores.
6. Polyurethane - Rubber:

Synair Corp
P.O. Box 5269,
Chattanooga, Tenn
37406-0269
Tel: 615-698-8801, Fax: 615-624-0321

BM Sports District
Rawdon, Québec
Tel: 514-834-3535
Price (CAN) for Por-A-Mold
\$34.95 for 1 quart/kit \$139.95 for 1 gallon/kit
Shipping is extra and cost about
\$15.00 (via UPS)

7. Jeltrate
Ash Temple
31 Scarsdale Rd
Don Mill, Ontario
M3B 2R2
800-268-6497
Price- \$14.00/440g container