

# ***STERLING MODELS***

## Plaster Casting

Two issues that arise when casting with plaster are the plaster to water ratio and managing bubbles. The first can affect the second.

Each plaster type (Hydrocal, Ultra-Cal 30, Plaster of Paris...) has its own plaster to water ratio for optimum mix. Plaster, because it is a powder, is difficult to measure by volume as it can either be packed loose or dense with considerable variation. It is recommended that the plaster be weighed for the correct measurement. A reasonably priced digital postal/kitchen scale works well for this.

Plaster to water ratio formulas are always listed as the plaster being 100 units to a given amount of water units. Examples being:

Hobby plaster	65 units of water to 100 units of plaster
Moulding plaster	70 units of water to 100 units of plaster
Pottery plaster	70 units of water to 100 units of plaster
White Art plaster	70 units of water to 100 units of plaster
Hydrostone	32 units of water to 100 units of plaster
Hydrocal - white	45 units of water to 100 units of plaster
Tuf-stone	32 units of water to 100 units of plaster
Ultra-Cal 30	38 units of water to 100 units of plaster
Plaster of Paris	65-70 units of water to 100 units of plaster

A postal scale can break the units into grams which works very well for measuring out ratios as the units are smaller than ounces.

Disposable plastic cups work well with a postal scale. The water can be weighed out and a line or mark put on the cup at the water level with a Sharpie marker for future measurements, with only the plaster needing to be weighed each time. If the plaster mix is too thick it will not capture detail well and will be very difficult to manage air bubbles. If the plaster mix is too thin the plaster will not be dense enough when cured and will be soft and chalky. Cold water (I like to chill mine with ice for a consistent temperature) will give a longer set time. The warmer the water the shorter the set time will be.

Plaster will release from any nonporous flexible material. Mold release is not needed. A material called Mold Dressing is mistakenly thought to be a mold release. It is not. Mold Dressing is a wetting agent used to pre-wet molds to help prevent air bubbles as pouring plaster into a dry mold will trap air and create bubbles. Rubber repels water so when pre-wetting a rubber mold with water, the water will bead up and run off. A wetting agent is needed to break the surface tension of the water. Using dish detergent as a wetting agent only creates more bubbles. Wetting agents for plaster casting are glycol based and do not have this issue. Scenic Express carries Super Wet wetting solution and Ultimate Scenery Center Mold Dressing. These are both concentrated wetting agents which work well as mold dressing for plaster casting as they are both glycol based. The difference between using a mold dressing or not using one is significant. It is extremely difficult to manage air bubbles without it.

## STERLING MODELS—PLASTER CASTING

Each of the next steps for casting is done in such a way as to manage air bubbles.

1. Each mold needs to be placed in its own holder so it can be handled on its own. A mold holder can be a shallow plastic or cardboard container that the mold will fit in. After a layer of kitty litter, sand or such material is placed in the container the pre-wet mold is pressed into it to create the desired shape. Pre-wetting the mold is done by thoroughly wetting down the mold cavity with wet water from a spray bottle. Shake the mold to remove any excess water.
2. Pour pre-measured water into a clean mixing bowl. Add pre-measured plaster to the water then allow it to set (the term used in plaster casting is soak) for 1½ - 2 minutes. Adding the plaster to the water with a coarse sieve will help to create a sprinkling action as the plaster is added to the water. After soaking, the plaster can be mixed for 1-2 minutes trying not to add air into the mix. Soaking and mixing should be no longer than 4 minutes.
3. Pour plaster into pre-wet mold by pouring around the edge of the mold and allowing the plaster to flow down and coat the sides, only filling the mold between ¼ and ⅓ full. Pick up the holder with its mold and swirl the plaster around the bottom of the mold in a circular motion to sweep up any bubbles stuck to the bottom surface of the mold. Roll the mold so that the plaster coats the sides up to its top edges. Any bubbles that show up on the coated surface should be swept off by rolling the mold so that plaster flows over that area again. When satisfied that air bubbles are off the bottom of the mold and none can be seen on the plaster coated sides set the mold down and fill ¾ full of plaster. Jiggle or swirl the container to bring any bubbles to the surface then finish filling with plaster.
4. For casting in shallow, flat molds such as wall molds, the mold should be set on a flat surface that can be picked up and moved around such as a piece of plywood or Styrofoam. A form made of strips of corrugated cardboard (or better yet corrugated polyethylene, which is used for signs and carried by both Lowe's and Home Depot) that is the depth of the mold should be placed under the lip of the mold to hold the mold edges vertical. This can be fastened down with double sided tape. A thin bead of plaster is poured into the center area of the pre-wet mold. The mold with its plywood or Styrofoam base is then picked up and the plaster swirled or worked into the edges and corners as a thin coating on the bottom of the mold, watching for any bubbles forming. If a bubble forms, swirl the plaster over it and sweep it to the top of the plaster. Fill the mold ¾ full and again swirl the plaster to cause bubbles to rise to the top surface. Finish filling the mold.

### Tips to keep in mind

Cold water will increase the setting time of the plaster.

Mixing container should be clean of any residue from the previous mix of plaster. Water that has any contamination from the previous mix is called Seasoned Water and will shorten the setting time of any future plaster batches it mixes with.

Containers for mixing plaster need to be thoroughly cleaned with fresh water after each batch. Plaster will set under water. The plaster in the residual water that is rinsed out of the mixing container when cleaning will settle to the bottom of any body of water, such as plumbing traps, and harden. Therefore the initial cleaning of any mixing container should not be done in any sink or reservoir connected to your plumbing. This should be done in a bucket or plastic tub to remove all plaster residue before it is rinsed with clean water in a sink. This bucket or tub is called a plaster trap. It should be allowed to set 12 – 24 hours for any plaster to settle out and harden in the bottom before the water is poured off down a drain.

When doing a lot of casting the mixing container itself may become seasoned. Cleaning container with a product such as Lime-A-Way may become necessary. Use according to product instructions.

Some plasters, such as lightweight Hydrocal, will have their own plaster to water ratios. Follow the instructions given for them.