



# Using Plaster/Silica Compound

A 50/50 mix of pottery plaster and silica flour is excellent for making molds and for casting elements for kiln sculpture. It's inexpensive, easy to use and wonderfully versatile.

## Preparing the Mix

Many suppliers sell this compound under the name "casting compound" or "investment mix". You can buy it premixed or buy the two compounds from a pottery supply outlet and mix your own. If you decide to make your own take special care to thoroughly mix the two materials to avoid having concentrations of either material in one part of your mix. Any inconsistency in the mix will weaken the casting.

Use only pottery plaster to make casting compound. Other plasters like plaster of paris or hydrocal are unsuitable.

Silica flour is also called flint. It comes in a variety of grits. The finer the grit the easier it is to mix smooth but the finer the grit the more silica dust becomes airborne when you work with it.

## Safety

Take care to wear a protective mask when handling the powders. Pottery plaster is just a nuisance dust like drywall dust but silica powder is as dangerous as glass dust. A safe way to mix it to avoid spreading dust when stirring is to place the two compounds in a sealed container and shake it to mix the powders together. When the two materials are mixed together the pottery plaster works well to prevent the spread of silica powder but you should still take care when handling it.

## Preparing Molds

### Oiling the Letter mold

For molds with steep sides, add oil to ensure easier release. If the mold you plan to use has steep sides, the plaster might stick to the mold and not release without cracking. Coating the mold with oil will ensure the casting pops right out when it's dry.



### Oiling the Starfish mold

You can use almost any oil for this. Cooking oil works as well as anything.





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## Mixing Plaster/Silica

You can mix it as thin as cream or as thick as peanut butter. A thick mix with minimum water produces the strongest material but a thinner mix is easier to pour into molds and easier to level. You can weigh the powder and water to calculate the perfect ratio but it's equally accurate and much less work to measure both by volume.

For a stiff mix use 1 part water and 3 parts powder. For a thin soupy mix use 1 part water and 2 parts powder. Once you've had some experience working with plaster/silica you'll find it much easier to just mix by look. Pour out some water, add some powder and stir until the lumps are gone. Add more powder and continue stirring to removing lumps. Repeat until you have the mix consistency you like.

Always start with water then add powder. It's easy to remove the lumps that way. If you start with powder and add water it's nearly impossible to remove the lumps. Any lumps left in the mixture will weaken the casting.

## Special Issues

### Need for speed

Be quick mixing and filling molds. Once water is added to the compound it sets firm in only a few minutes.

### Expedite drying

Avoid using heat to speed up drying. It will cause the castings to crack. It's better to use a fan to wick moisture away.

## Making a Thick Mix

### Thick mix

Get a bowl for mixing. Measure out in equal volume, 3 units of casting compound powder and 1 water.



### Add water

Pour the water into the mixing bowl.







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## 1<sup>st</sup> powder

Pour the 1<sup>st</sup> measure of powder into the water and mix thoroughly to remove all lumps.



## 2<sup>nd</sup> powder

Add the 2<sup>nd</sup> measure of powder and mix thoroughly.



## 3<sup>rd</sup> powder

Pour in the 3<sup>rd</sup> measure of powder



## Full mix

Continue stirring until you have a smooth lump free mix.







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## Filling Mold with Thick Mix

### Filling bowl

Using a spoon to pour some mixed casting compound into a kitchen bowl. I'll be using the casting from this to drape glass over to make a glass tortoise



### Casting letters

Spoon the compound into a plastic candy mold to make letters. Because I don't want to make all the letters, I placed a glass nugget in each of the molds I didn't want to fill.



### Cast starfish

Spooning compound into a plastic candy mold to make starfish castings.



### Multiple molds filled

I filled a bunch of plastic candy molds to use up all the material I had mixed up.







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## Making a Thin Mix

### 2 cup mix

I set out a mixing bowl with 2 measures of powder and one measure of water.



### 1st cup

Mixing the first measure of powder into the water.



### 2nd cup

Mixing in the 2nd measure of powder.



### Filling molds

Spooning out the compound into a plastic candy mold. This much thinner mix is a lot easier to work with. It pours easily from a spoon and levels itself out. I prefer this more liquid mix for small castings. On thicker castings a drier mix with less water produces stronger castings less likely to crack while being handled or during firing in the kiln but sets faster and requires extra work to level out.







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## All done

I filled up a lot of molds to use up all the mix.



Casting compound is relatively inexpensive so it's not a big loss if you have some left over and toss it out. I just make it a habit to be as efficient as I can with time and materials. If I need to make some castings I prefer to do a little production batch whenever I get set up to mix and pour casting compound. It's nice to have a stock of castings available for future projects.

When you clean out the bowl you used to mix the compound it's a good practice to wipe out as much of the residue as you can to minimize how much you wash down the drain. If you clean the bowl immediately after pouring the castings it's an easy job. If you wait long enough for the compound to set, it's not so easy.

## Removing the Castings

### Removing castings

All the casting compound is set. I'm removing the castings from the plastic molds. I usually remove them within 24 hours but you can leave longer if you wish. These castings are set firm but not completely dry. They must be left another day or so to fully dry before using in a project.



### Pressing to release

Pressing on the back of the mold with my thumb makes the casting pop out easily.

