

LiquaCast® Liquid Molding Rubber

INSTRUCTIONS

NOTE: Molds made of Castaldo® LiquaCast® liquid molding rubber will last many years if stored properly. Exposure to moisture and humidity will tend to soften the molds and make them unusable. For best results store finished molds in airtight containers such as the kind sold for food storage. Adding a small packet of silica gel pellets or desiccant, widely available from industrial supply houses and via the Internet, will extend their life even longer. Do not store Castaldo® LiquaCast® molds in contact with molds made of other types of rubbers.

Caution: **SOME** CAD-CAM/ RP/ Stereo models **MAY** require a barrier coating when used with this material. See —Model Preparation on page 3

Castaldo® LiquaCast® liquid molding rubber is **NOT** a silicone rubber. Procedures may be different than those you may be accustomed to using. Please read and observe the following instructions carefully.

1. **STIR BEFORE USE!** Mix 1 part A and 10 parts B by **WEIGHT** for a total of **11 PARTS** (see mixing chart). Components **MUST BE WEIGHED CAREFULLY TO THE 1/10th GRAM AND NOT ESTIMATED**, as is often the case with liquid silicone rubbers. Use an accurate scale. **DO NOT MEASURE BY VOLUME. DO NOT ESTIMATE. DO NOT GUESS! Make sure both parts are at room temperature.**

Unlike silicone rubbers, the recommended mix ratio for Castaldo® LiquaCast® liquid molding rubber **CANNOT BE VARIED** without spoiling the mold.

2. Pour the required amounts of both parts A & B into a mixing container. A rubber mixing bowl of the type commonly used to mix jewelry investment is ideal. **DO NOT** mix in paper cups or use wooden mixing tools - they may contain moisture that can ruin a mold.

3. Always pour catalyst (part A) into rubber (part B).

4. Mix thoroughly by hand for 3 to 4 minutes until no traces of the catalyst can be seen. Take care to scrape the sides of the mixing bowl into the center several times during mixing. Do not use wood, paper or cardboard mixing tools and containers as they can introduce moisture and spoil the rubber.

5. Make sure the bowl is big enough to allow for temporary expansion of the rubber during vacuuming of 300% to 400% without overflowing.

6. Vacuum the liquid rubber for approximately 5 minutes, making sure that it boils and bubbles vigorously. Vacuuming is complete once the rubber rises and collapses. Do not wait for the rubber to stop bubbling completely - **it will not stop bubbling no matter how long you vacuum it.** Over-vacuuming may break down the rubber. Wide mouth containers allow more air to escape than narrow mouth containers.

7. Pour the liquid rubber into the mold frame, taking care to avoid entrapping air. Optional: vacuum again for 5 minutes. Do not over-vacuum. Make sure to allow extra room at the top of the frame for the rubber to expand during vacuuming.

8. Working time before **cure begins** is approximately 45 to 60 minutes at room temperature.

9. Put the mold aside to cure at room temperature (77 F°/ 25 C°) for 16 to 18 hours. A period of 24 hours is best. Always remember that longer cure times will improve the mold and will not hurt it, while shorter mold times will result in soft and deformed molds. Avoid curing in areas where the temperature is below 65° F /18° C. Avoid moving the mold during the curing process. Avoid temperature changes during curing,

such as lower temperatures at night, open windows, etc.

Cure at the same warm temperature that all your materials were when they were mixed. Temperatures below 65°F / 18°C will lengthen the time required for proper curing and may spoil the mold.

NOTE: Rubber received during extremely cold winter months may require warming before use regardless of the temperature of your work room because long exposure to cold will keep the rubber cold for extended periods. If necessary, warm the rubber to 100° -130° F / 37° – 54° C for several hours. Check rubber temperature with a thermometer and allow to cool before using.

10. If you need the mold to be finished faster, it can be cured for 90-120 minutes by warming it to 150°F / 66°C as it cures. Typical devices for this warming process include the tops of vulcanizers, food warming trays, empty slow cookers, empty rice cookers, radiators, empty wax injectors, etc. Avoid higher temperatures, which might damage the mold.

Typical Mold Sizes & Mixing Proportions

The following is only a guide — the mass of your model will increase or decrease the amount of rubber needed.

Sizes given are for typical 1 7/8 inch x 2 7/8 inch (4.8 cm x 7.3 cm) molds.

<u>Mold Size</u>	<u>Part A</u>	<u>Part B</u>	<u>Total</u>
0.75" / 19 mm	11.0 g	110 g	121.0 g
1.00" / 25 mm	14.0 g	140 g	154.0 g
1.25" / 32 mm	19.0 g	190 g	209.0 g

NOTE: When full, a typical mold frame measuring 1 7/8" x 2 7/8" — (4.8 cm x 7.3 cm.) will contain the following volume depending on thickness. The volume of the model must be subtracted from this figure.

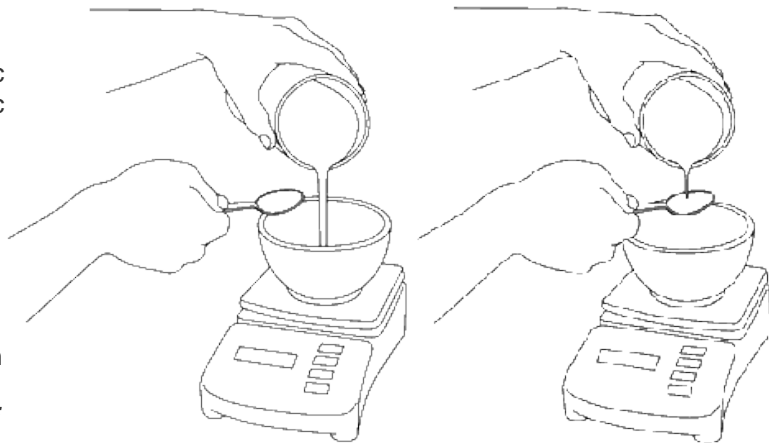
0.75" / 19 mm	4.4 cu in / 66 cc
1.00" / 25 mm	5.4 cu in / 87 cc
1.25" / 32 mm	6.7 cu in / 112 cc
1.50" / 38 mm	8.1 cu in / 133 cc

WEIGHING INSTRUCTIONS

For best results, measure 1 Part A and 10 Parts B BY WEIGHT in a round-bottomed mixing bowl after zeroing your scale adjusting it to read "000.0" with the bowl on it.

Measure Part A & Part B **TO THE GRAM!** If possible, measure to

the 1/10th gram. An easy way to do this is illustrated in the drawings at right.



Assume that you want a final mix of 200 grams of rubber. Divide 200 grams into 11 parts. Part A will be 1/11th of the final mix at 18.2 grams and Part B will be 10/11ths, or 181.8 grams.

Step 1: Place a round-bottomed mixing bowl on a scale and adjust the scale to read "000.0". With a disposable plastic spoon in one hand, use the other hand to pour a thin stream of Part

B into the mixing bowl. Reduce the stream as the scale reads close to 180 grams. Stop the flow with the spoon at exactly 181.8 grams.

If you have poured too much into the bowl you can easily correct this by dipping the spoon into the bowl and withdrawing tiny amounts until the correct weight is achieved.

Step 2 : Using the same technique as previously with a 2nd disposable plastic spoon, pour a thin stream of Part A into the bowl until the scale reads exactly 18.2 grams. Use the **SAME BOWL WITHOUT REMOVING IT FROM THE SCALE** in order to avoid mistakes. Once again, if you pour too much you can remove the excess by dipping the spoon into the rubber. Part A will remain on top of Part B, making this step easy.

If the proportions of Part A & Part B are not mixed very precisely, the rubber may become hard and brittle and will break and tear.

MIXING AND CURING: Both Part A and B tend to absorb atmospheric moisture, and thus should be used as soon as possible after opening the container. All materials should be at room temperature. Stir individual components before use. If solid material is noted at the bottom of the Part A container, it may be re-dissolved by loosening the lid and warming to 150°F / 66°C, stirring with a metal or brass rod and allowing to cool before use.

Part B should be weighed into a clean metal, glass, rubber or plastic container (but not styrene or polystyrene foam, such as cold drink cups), then the appropriate amount of Part A can be weighed on top of the B. One pound kits are pre-weighed and the Part A can simply be emptied into the Part B container, if the whole unit is to be used at once. Do not use wood, paper or cardboard mixing tools and containers as they can introduce moisture and spoil the rubber.

Curing in a warm location, up to 150°F/ 65°C, will greatly accelerate the curing speed while low temperatures slow down the cure.

Remove molds from their frames and cut them gently as the material is softer than it will be a few days later. The longer the material can cure before de-molding, the better. easily.



No Vacuum Pump ??

You can cure the mold inside your empty and unheated air-pressure type wax injector, using the pressure to collapse air bubbles rather than a vacuum to remove them.

Simply place the mold frame with the uncured liquid rubber inside an unheated wax injector pot with the heat turned off, pressurize it as high as it will go, and let it cure under pressure.

If you wax injector is empty you can heat the pot to 150°F / 66°C and cure the mold in as little as 2 hours.

If you don't have either a vacuum pump or a wax injector, you can brush the uncured liquid rubber on the model with an artists' paint brush and examine the model for air bubbles. Pop any bubbles that you see with a pin, knife point or similar object.

Similarly, you can merely dip the model in the liquid rubber, shake off any excess and then examine it for air bubbles as described above.

With either technique, place the model after it is coated with liquid rubber in a standard liquid rubber mold frame and fill it with more rubber. Any air bubbles in the part of the mold away from the model are not a problem.



STORAGE: Avoid exposure to moisture and humidity. Keep containers tightly closed. Store and use at normal room temperatures.

Part A & Part B will remain usable for at least six months from the date of shipment in unopened containers, if stored in a cool, dry location. If Part A becomes solid or if solids accumulate at the bottom of the container, the compound is too old or has absorbed moisture from the air.

WRITING ON MOLDS: Cured LiquaCast® molds can be written on for identification with ordinary marker pens.

CLEANING MOLDS: Castaldo® LiquaCast® molds can be cleaned if they become soiled or dirty by wiping them carefully with denatured ethyl alcohol (shellac thinner).

MODEL PREPARATION: *SOME* resin models *MAY BE* adversely affected by contact with LiquaCast® Long Life™ while many may not be. Some resin models may adhere to this rubber or soften, in which case Castaldo® silicone mold release spray will help. Other resin models may become soft or result in soft rubber around the model. In that case a barrier coating to isolate the model and *THEN* a release spray afterwards is required. Barrier coatings can include Castaldo® Resin Release spray, ordinary spray paint or poly vinyl alcohol (PVA), which is often sold in artist, hobby, sculpture and fishing supply stores. ***ALWAYS test a scrap piece.***

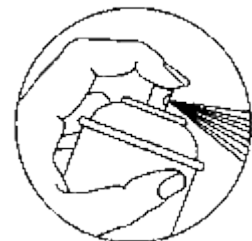
Porous surfaces such as wood, terra cotta or plaster must be sealed to prevent the rubber from penetrating the pores. Several coats of paste wax, allowed to dry and then polished, or melted paraffin, petroleum jelly and potters soap all work well for certain surfaces.

INCOMPATIBLE MATERIALS: Castaldo® LiquaCast® may attack some plastics and surface coatings, including styrenes and lacquer. If in doubt, test on an inconspicuous area or scrap piece first. Barrier coatings as described above may be needed.

CLEAN UP: Paper towels for wiping up are a must. Tools should be wiped clean before plastic or rubber is hard. Denatured ethyl alcohol (shellac thinner), acetone or MEK are good cleaning solvents, but are highly flammable.

CLEAN UP & REMOVING CURED RUBBER. Simply pull off cured rubber from surfaces it has adhered to. There is no known acid or solvent that will remove it. If rubber has lodged in jewelry models and cannot be otherwise removed, heating with a torch to above 300°F/ 149°C will burn the rubber and allow it to be cleaned off as ordinary carbon scale. Even a match or cigarette lighter will do. Use adequate ventilation.

MOLD RELEASE: Molds can be removed more easily from the frames if the glass or plastic sides are coated very lightly with petroleum jelly (Vaseline®) before the liquid is poured.



DISCLAIMER: The information contained in this bulletin is considered accurate. However, no warranty is expressed or implied regarding the accuracy of the data, the results to be obtained by the use thereof, or that any such use will not infringe any patent. Before using, user shall determine the suitability of the product for the intended use and user assumes all risk and liability whatsoever in connection therewith.

WARNING: Uncured LiquaCast® compounds may cause skin or respiratory irritation or sensitization if improperly handled. Avoid skin and eye contact with the uncured material. If skin contact occurs, remove with water-less hand cleaner or alcohol, then soap and water. Flush eyes with water for 15 minutes and seek medical attention. Use with adequate ventilation. Read SDS and container labels prior to use. LiquaCast® can be used safely if simple precautions are taken as recommended. Use gloves, dust masks, eye protection, closed shoes and adequate clothing as needed.

PROBLEM	CAUSE
Mold won't cure - soft & sticky	<ul style="list-style-type: none"> • Improper mix ratio; not mixed properly • Too cold • Rubber contaminated with moisture from air, mixing equipment, etc. • Individual components not mixed thoroughly before use
Mold cures too slowly	<ul style="list-style-type: none"> • Improper mix ratio • Cure temperature too low • Individual components not mixed thoroughly before use
Rubber Around Model Soft & Sticky	<ul style="list-style-type: none"> • See "Model Preparation", page
Mold distorts after handling or use	<ul style="list-style-type: none"> • Cure temperature too low • Mold removed from frame or cut too soon
Streaks of soft rubber or air bubbles	<ul style="list-style-type: none"> • Rubber not mixed thoroughly. Unmixed rubber usually from the bottom or sides of mixing bowl
Mold hard to release	<ul style="list-style-type: none"> • Use aerosol wax spray
Part A becomes hard; crystals form	<ul style="list-style-type: none"> • Stored too long and/or spoiled by humidity
Bubbles in mold	<ul style="list-style-type: none"> • Improper mixing of individual components A & B • Insufficient vacuuming of uncured rubber • Temperature changes during curing