

Handling Guide for Silicone RTV Casting Materials.

BJB formulates its product lines to provide exceptional cured properties with good handling at room temperature. Our silicone systems are typically used for molds to cast polyurethanes into; however, they have also been used to create specialty parts. **We recommend reading this guide, the Technical Data Sheet and the Safety Data Sheet (SDS) prior to using materials for best results.**

CONDENSATION CURE (tin-catalyzed) SYSTEMS

These products typically fall into a lower Shore hardness category and have more elongation than the addition cure silicones. Inhibition with condensation cure systems is not common, making them very user friendly. However, many urethane systems, typically below Shore 60A or aliphatic casting urethanes (e.g. BJB Water Clear systems), can experience cure inhibition against the surface of the condensation cure silicones. A small test is recommended if you are not sure about compatibilities.



ADDITION CURE (platinum-catalyzed) SYSTEMS

These systems generally range from 30-60 Shore A durometers and will produce very durable molds. Inhibition with addition cure systems will vary from a slight tacky surface of the product to a complete lack of cure. Some materials found to cause inhibition are natural rubbers, such as latex, sulfur containing clays, enamels, lacquers, condensation cure silicones and some SLA materials. Surfaces that have previously been in contact with any of those materials may also cause inhibition. Surfaces should be cleaned before casting silicone against them. It is always recommended that the silicone be “pre-tested” against surface before casting the final mold or part. The use of a “barrier coat” to prevent inhibition of the silicone is a common practice. An acrylic coating, PVC (RF-5124), or PVA (RF-5215) film can be applied directly onto the pattern surface as a barrier coat. Rarely will you see materials that are inhibited when cast into addition cured silicone molds.



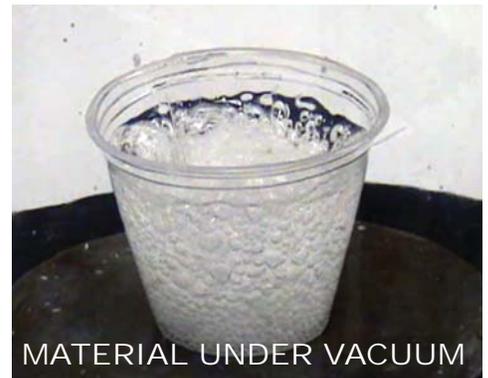
MIXING

Use only metal or plastic mixing containers and wide, flat spatulas. Paper tubs and wooden stir sticks have been known to contaminate the mixture with moisture and introduce more air during the vacuum degassing process. For larger batches, power mixing is advisable with the use of a “Jiffy Mixer”® or equivalent type of mixer. The Jiffy Mixer is designed to rapidly mix materials and reduce the introduction of air bubbles provided there is enough material in the container to keep the mixing head submerged in the liquid. Mix until a thorough blend is achieved. With thicker (higher viscosity) systems, this may take several minutes to effectively blend the two components. With silicones, we highly recommend that after the materials are thoroughly mixed, transfer the material into a second, clean pouring container and remix (also called double-mixing). The thin film of unmixed material is difficult to scrape off the sides and bottom of the first mixing container. BJB has a thorough video guide showing many techniques for properly mixing. Link to video on last page.

Note: Cured silicone will not adhere to plastic mixing containers or spatulas. This allows them to be easily cleaned and reused.

MIXING RATIO

Accurate weighing of the A&B components on an accurate scale is a “must” for good results. Using package weights or proportioning by “eye” can result in failure and inconsistent results.



DEGASSING

When air-free castings are required, the mixture should be placed in a vacuum chamber under **28-30 inches** of mercury. Using an inadequate pump is a common source for technical problems and trapped air in castings. Allow headroom in the container, as silicones can expand five to ten times the original volume as the bubbles rise. A viewing window and breaker valve is recommended so that the material can be observed during degassing and prevent over-flow in the container. Not using a degassing chamber increases the chances of bubbles and/or voids in the mold. If you plan on pressure casting your mold and cast parts, degassing the silicone is an essential step.



CPE-120 VACUUM CART



BJB OFFERS HIGH QUALITY SILICONE MOLD MATERIALS



Zip ME-301S Mold Release



RIGID POLYURETHANE CAST INTO SILICONE MOLD

RELEASE AGENTS

Silicone materials are known for their natural great release capabilities and materials can be cast into them without the use of release agents in most cases. To help prolong the life of a silicone mold the use of release agents are recommended. When casting a silicone against another silicone surface (e.g. when constructing a two-part mold) a release agent should be used to prevent the materials from adhering to each other. Zip ME-301S Mold Release works great for silicone-to-silicone applications.

CURING

Normal room temperature cure, 77°F (25°C), for seven days will develop a high percentage of physical properties. Your BJB technical representative can recommend accelerated cure schedules. Work time is reduced when operating at temperatures greater than (77°F). Maximum physical properties are achieved after first gelling at room temperature, then post curing at 120°F - 140°F (49°C - 60°C). Silicone can swell with high temperatures so refer to individual product data sheets for specifics on Coefficient of Thermal Expansion (CTE).

CASTING

When casting the silicone over your pattern try to pour in one area and let the silicone flow over your pattern naturally. This procedure will help reduce the induction of additional air into your pour

STORAGE

Store both resin and catalyst components in an area where the temperature is between 50°F and 100°F. Best operating results will occur when the silicone resin temperature is between 75°F and 90°F. Drums and five-gallon pails should be stored on pallets to prevent cold flooring from lowering the material temperature. It is recommended to keep the lids on storage containers as much as possible while using throughout the day. A dry nitrogen blanket should be applied prior to re-sealing the container for storage. Dry nitrogen can be obtained from welding supply companies in different size cylinders. Open the tank regulator to allow a low-pressure flow of nitrogen, giving adequate time to purge the air from the container before resealing the lid.



STORE MATERIAL OFF FLOORS

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How-To videos to learn about BJB products and processing methods.

www.youtube.com/user/BJBEnterprises



Video on properly mixing two-part material systems.



Video on making a two-part Silicone Mold.



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We appreciate your business and are happy to assist with any of your material selections or technical questions. Please feel free to contact us by phone M-F 7:30 am to 4:00 pm PT or email our Tech Department at info@bjbenterprises.com.



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