HANDLING GUIDE FOR SILICONE RUBBER CASTING MATERIALS

B.J.B. formulates its product line to provide maximum cured properties with good handling characteristics at room temperature. The materials provide the following list of advantages in comparison to competitive products:

- All have relatively low viscosity
- All exhibit high tear strength in their respective Shore hardness categories
- They do not contain low cost fillers that cause shortened mold life due to cracking or creating poor surface conditions.

We recommend reading this guide prior to using these materials for achieving the best results.

STORAGE:

It is recommended that if materials are to be stored for any length of time (usually more than 20 days) after using a portion of a container, that a dry nitrogen blanket be applied prior to resealing the container.
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.

MIXING:

Use only metal or plastic mixing containers and spatulas. Paper tubs and wooden stir sticks have been known to contaminate the ingredients during mixing as they are porous and can absorb moisture in storage. Power mixing is advisable with the use of a Jiffy Mixer or equivalent type of mixer when mixing large quantities of silicone. The head of the mixer should be fully submerged in the materials. Mixing lesser amounts with a power mixer may "whip" in undesired air into the mixture.

Accurate weighing of the resin and catalyst components is a "must" for optimal results. Using package weights or proportioning by "eyeball" could result in failure.

Mix until a thorough blend is achieved. With low viscosity liquids, this normally takes from 2 to 3 minutes. Heavier viscosities may require up to 5 minutes of mixing, particularly when mixing by hand. After the materials are thoroughly mixed, it is wise to transfer the material into a second pouring container and mix again. It is nearly impossible to mix the layer of resin or catalyst that comes into contact with the container surface during weighing. This is especially true when using plastic mixing containers.
Note: Cured silicone will not adhere to polyethylene mixing containers or spatulas. This allows them to be easily reused.

For more information call BJB Enterprises, Inc. (714) 734-8450 FAX (714) 734-8929

DE-AIRING MATERIALS:

When air-free castings are required, the mixture should be placed in a vacuum chamber pulling down 28 to 29 inches of mercury for approximately 3-5 minutes. Allow headroom in the container, as the material can expand three to five times the original volume as the bubbles rise. It is recommended to have a viewing window so that the material can be observed during degassing. Vacuum de-gassing will also help strip a certain amount of moisture from the material, again allowing for air-free castings.

MOLDS:

Material should be cast onto dry surfaces. Molds or models made of wood or plaster that aren't sealed contain moisture that can cause foaming. The bubbles formed during the cure of the material are normally caused by moisture in the mold being absorbed by silicone. This bubble formation is not entrapped air or malfunctioning of the silicone, but is trapped moisture beads. Wood, plaster, and any moisture bearing surfaces should be sealed with a clear acrylic or PVC film to prevent moisture problems

RELEASE-AGENTS:

Silicone materials are known for their great release capability, without the use of release-agents in most cases. However, silicones will often bond to master surfaces. They also present a tendency toward not creating good internal release capabilities for some products cast into molds made of silicone. In these instances there are several good release-agents that can be recommended for use depending upon the application. Silicone will also bond very well to itself. When creating two-part molds you must utilize a good release-agent between the two halves to alleviate any unwanted bonding. It is best to discuss release-agents and your application with a technical sales representative before proceeding.

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 urethanes systems, typically below Shore 60A or aliphatic casting urethanes, tend to not cure against the surface of the condensation cure silicones.

ADDITION CURE (platinum-catalyzed) SYSTEMS:

These systems generally range from 30-50 Shore A durometers and will produce very durable molds. Inhibition with addition cure systems is exhibited by tackiness of the product to a complete lack of cure. Some materials found to cause inhibition are natural rubber (latex and certain glove materials), sulfur containing modeling clays, and condensation cure silicone systems. 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 surfaces before casting the mold or parts. The use of a "barrier coat" to prevent an inhibiting agent from contacting the uncured mold material is a common practice. An acrylic coating, PVC film, or PVA film applied directly onto the pattern are effective barrier coats in most instances. Rarely will you see materials inhibit when cast into addition cured silicone molds.

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