

Handling Guide for Shore A & Shore D Polyurethane Elastomer Systems.

BJB formulates its product lines to provide exceptional cured properties with good handling at room temperature. **We recommend reading this guide, the Technical Data Sheet and the Safety Data Sheet (SDS) prior to using materials for best results.**

PRESERVING SHELF LIFE

Polyurethane casting systems can react with atmospheric moisture and oxygen to produce undesired reactions during storage and cure. Moisture can cause hardening or crystallization of the "A" (Iso) side and Oxygen can accelerate darkening of the "B" (Polyol) side in many polyurethane systems. 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.



PURGING PAIL WITH NITROGEN

STORAGE

Store both resin and hardener components in an area where the temperature is between 65°-80°F (18°- 27°C). When first using the material, a sample should be visually inspected to be sure no crystallization is present. Crystallization of the Iso (A) or Polyol (B) components can occur during shipment in cold weather. If the resin appears cloudy, thick, or grainy, the component should be warmed to 120°-160°F (49° - 71°C) and stirred until the material returns to its proper smooth liquid consistency. Do not heat materials longer than needed to reconstitute the liquid or scorching can occur. Drums or five-gallon pails should be stored on pallets to prevent cold floors from lowering the material temperature.



STORE MATERIAL OFF FLOORS

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 low viscosity liquids, this normally takes roughly 1 to 2 minutes. Heavier viscosities (like brushable pastes) may require 3 or more 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 remix. The thin film of unmixed material is difficult to scrape off the sides and bottom of mixing containers. BJB has a thorough video guide showing many techniques for properly mixing. Link to video on last page.

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 the material can expand to two or three times the original volume as the bubbles rise. A viewing window is recommended so that material can be observed during degassing. Vacuum degassing will also help strip a certain amount of moisture from the material, again allowing for bubble-free castings.

The use of an **Anti-Foam** agent may be required to assist in the vacuum degassing of some material systems. Refer to individual product data sheets for the anti-foam of choice for the product to be processed. The anti-foam (often called surfactant) is designed to lower the surface tension of the mixed material which allows the air to exit much easier. Adding a very small amount of an Anti-Foam agent (1-2 drops per 100 g. of mixed material) will significantly aid the degassing process. For more info, visit our website or speak to a BJB representative.



MOLDS

Molds can be made from several different types of substrates including silicone RTV's, polyurethanes, epoxies, polyesters, wood, plaster and metal. Silicone RTV molds are the most common medium used for prototyping, art work, model kits, and short run production applications. Epoxy, polyurethane, and metal molds are generally associated with production tooling.

RELEASE AGENTS

Release agents must be used when casting into a mold (other than silicone molds) so the urethane can be removed without bonding. When using a silicone RTV mold, a mold release may not be needed but cycle life may improve with the use of one. Many types of release agents are available for different application methods. It is advisable to contact a BJB technical representative for help in selecting the proper release for your application.

Material should be cast into dry, non-porous molds. Molds made of wood or plaster should be sealed to prevent bonding and moisture contamination. Moisture reacting with the polyurethane creates CO² and may lead to foaming or defects in the part.

CURING

Demold time can be accelerated by heating the resin and hardener components and/or by heating the mold prior to mixing and casting. Work time is reduced when operating at temperatures greater than (77°F). 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. Typical physical properties are achieved after first gelling at room temperature, then post curing at 160°F - 180°F (71°C - 82°C). Refer to individual product data sheets for specifics. The least amount of shrinkage is encountered when the casting is gelled firmly at room temperature prior to heat curing. Thickness (cross-section) and configuration of the casting will also influence the amount of shrinkage. Usually the shrinkage can be compensated for with the use of risers to act as reservoirs in a closed mold situation.

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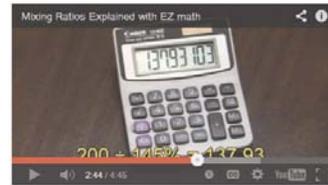


How-To videos to learn about BJB products and processing methods.

www.youtube.com/user/BJBEnterprises



Video on properly mixing two-part material systems.



Video on calculating mix ratios.



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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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