

HANDLING POLYURETHANE FOAMS

Each Polyurethane Foam system is unique and reference should always be made to the relative Technical Data Sheet available from your Barnes Representative.

Both the SFOAM and RFOAM series are generally fast reacting once mixed and, as a rule, the lower the density of the foam the faster reaction time a system will have. It is recommended that systems are always pre-tested for suitability to an application, as the systems are quite diverse. This will provide critical information on reaction time, mixing requirements and the processing characteristics of a product.

Weighing materials separately rather than pouring together on a scale is the preferred method. This allows for more time when combining the materials and prevents premature reaction. Weights according to the specified ratio on the packaging should be closely observed.

As a general rule, both components of foam systems should be pre-warmed to between 24-29°. Colder temperatures can cause sluggish and poor expansion of the foams. Excessive heat will cause the foams to react quickly and may cause poor cell structure or cause the foam to collapse.

Mixing is best with a high speed drill or air motor and a high shear mixing head. The blade shears the material and provides a thorough mix within the 5-8 seconds generally established for achieving a uniform blend. The material should have a uniform blended appearance before pouring. Mixing too long or not enough can result in poor material performance.

Once mix, the material should be poured immediately. If pouring takes too long, the foam will start to rise in the mixing container and the batch may be lost.

When pouring the foam, avoid scraping any material from the sides and base of the mixing container. This material may not be sufficiently mixed and there also is not enough time to perform this operation.

Mould Preparation

The mould should be well sealed and released. Foams will seek moisture through release waxes and stick to mould surfaces if an insufficient seal exists. The type of sealer is dependant on the mould material. The mould should be warmed to between 24-29°C prior to casting the first part. Once a mould is heated and cycled, it generally maintains heat for continued production.

Release systems vary in accordance with the mould material, however, as a general rule we recommend JWAX, Challenge 95 and non-silicone paste waxes. Silicone-based releases do not work successfully with either the SFOAM or RFOAM series. The silicone migrates and often causes poor surface conditions. Silicone can also inhibit the adhesion of paints and over-coatings.

The premium moulds for foam production (rather than short run prototypes and limited parts) are either machined aluminium moulds, epoxy moulds and TC1630 moulds. Epoxy moulds and TC1630 moulds offer the least expensive method for long term use when cycle times allow slower heat dissipation.

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Demoulding Foams

Most foams can be removed from the mould within 30 minutes. However, small masses will develop a lower exothermic reaction and may require a slightly longer cure time in the mould.

It is recommended that SFOAM parts are crushed or squeezed after demoulding to remove residual gases remaining in the cell structure. This will help to reduce post shrinkage and aid in reducing natural odours from the foam parts.

Containers and Storage

Containers should always be purged with Poly Purge Dry Air prior to replacing the lid after each use. Store both containers in an area where the temperature is between 21-32°C. When first using the material, a sample should be visually inspected to be sure no crystallization is present. Crystallization can occur during shipment and storage in cold weather. If the product appears cloudy or gummy, the components should be warmed with the containers open and stirred until the material returns to its proper smooth liquid consistency.

Do not shake the closed containers *excessively*. This could cause the unmixed material to expand on its own in the container. The preferred method is to stir or mix the components separately in their original packaging to ensure that the mixture is homogenous. A light side to side shake is also better than an aggressive shake.