



SkinFlex III MATERIAL APPLICATION AND HANDLING GUIDE

SkinFlex III castable and brushable material systems can be applied against many types of mold surfaces as a single system to make skin-like parts. It can also be used as a component of a composite of materials. This approach is one where the SC-89 polyurethane coating (stretch paint) can be applied in a mold before casting or brushing, or can be used after a part is pulled to paint in detail and provide various degrees of ultra-violet protection. Reinforcements can also be employed in either the cast or brushed material applications.

This guide is intended to help the user employ the most suitable methods to any given project. BJB personnel have performed practical applications of the products and processes outlined. Situations one may encounter that are not covered in this guide will certainly come up and we will respond to all inquiries.

MOLD SELECTION

Generally when casting or brushing flexible urethane materials into molds, a rigid mold is preferred. These molds may be made out of plaster, epoxy, polyester, polyurethane, metal, thermoplastics, or various foam materials. The best materials for flexible mold construction are urethane elastomers and silicone rubbers (RTV). Molds made from various materials are discussed as follows:

Plaster - Easy to use, low cost, limited re-use. For molding urethanes (SkinFlex III) and other plastics, the plaster must be well sealed and released.

Molds constructed of polyurethane (rigid or flexible), polyester epoxy, thermoplastics, metal, or foams with coated surfaces can be released the same as plaster, eliminating the need for plaster sealer.

Avoid using silicone-based releases or other releases than can present transfer problems, which affect painting and bonding.

Tin-based silicone molds can present curing problems for SkinFlex III. Usually a tacky, un-cured surface will result on the SkinFlex III surface that was next to the silicone. To prevent this, spray the SC-89 coating into the mold before casting or brushing SkinFlex III. This will also eliminate the need to prime a raw SkinFlex III surface for painting. An additional advantage of this process is that the ultra-violet ray protection of SC-89 coating aids in the preservation of the SkinFlex III surface.

The method of air-brushing or spray painting SC-89 into the mold is referred to as “barrier coating.” It can be used with any of the mold substrates discussed. It would be best to apply over a PVA film release for easy removal with water. However, it will come off with little transfer from a dry Challenge 90 released surface.

The application of SC-89 polyurethane coating in the mold is an easy process. Spray painting or air-brushing will provide the best results. The SC-89 coating can be pigmented and applied in gloss, flat, or super flat mixtures. It is thinned with 89 thinner, about 3 parts thinner to 1 part of SC-89 coating. Allow 60 minutes for the SC-89 to dry before applying SkinFlex III. Further instructions on its use are available on the SC-89 data bulletin and handling guide for polyurethane paints.

CONSTRUCTION TECHNIQUES

The SkinFlex III castable and brushable systems often form the skin (or face) of a soft or semi-soft polyurethane foam back-fill. When polyurethane foams are cast behind the SkinFlex III, the heat (exotherm) they generate can aid in faster de-mold times. Note: Urethane materials gain strength and physical properties with age. Artificial heat can advance full cures, but these products may be distorted if stretched too much within the first 24 hours of use. Generally they will de-mold with no problem in relatively short periods with the heat generation of the foam or with oven heat. However, avoid demolding too soon if it appears the skin has a gummy or un-cured feel to it.

APPLICATION OF SKINFLEX III CASTABLE

The mix ratio of “A” to “B” by weight is 50 parts “A” to 100 parts “B”. This material should be mixed by weight, not by volume. The “C” component can be varied depending on the feel or stretch that you desire. Anywhere from 0 to 50 percent of “C” to the total weight of “A” and “B” may be added. To create an air-free part, a vacuum must be pulled on the mixed material prior to casting to evacuate and degas the entrapped air. BJB’s AF-5 (air release product) should be used to aid in the de-gassing process. The material should be allowed to cure overnight at room temperature or 6-8 hours at 150°F (66°C) before demolding.

APPLICATION OF SKINFLEX III BRUSHABLE

The mix ratio of “A” to “B” by weight is 50 parts “A” to 100 parts “B”. This material should be mixed by weight, not by volume. The “C” component can be varied depending on the feel or stretch that you desire. Usually 15 to 30 percent of “C” to the total weight of “A” and “B” may be added. For the “brushing in” application, a paintbrush with the bristles shortened is used to help eliminate air entrapment. Apply the first coat paper-thin by brushing in one direction to eliminate air bubbles against the mold surface. Allow 60 minutes or so depending on the working temperature for the material to tack up. Then apply subsequent coats depending on your desired thickness. Allow the material to tack up between each coat. If you wish to back the skin with foam, do so after your last coat of SkinFlex III has tacked up. Timing is important. If the skin is too fresh, the pressure of the foam can push the skin around, and if the skin has cured too long, the bond between the foam and skin may not be adequate. Allow the skin to cure overnight at room temperature or 6-8 hours at 150°F (66°C) before de-molding.

PAINTING SKINFLEX III WITH SC-89 STRETCH PAINT

After demolding SkinFlex III, clean the surface with the 89 thinner and allow to dry. Spray the surface with the TC-89 primer and allow 45-60 minutes to dry before applying the SC-89 paint. When spraying the SC-89, mix 2½ - 3 parts 89 thinner to 1 part SC-89 paint, then pigment to desired color. When brushing the SC-89, mix 1 part 89 thinner to 1 part SC-89 paint, then pigment to desired color. When you are applying the paint, it is better to apply several light coats as opposed to 1 or 2 heavy coats.