

TASK[®] 7 - Flame Out[®]

Flame Resistant Urethane Resin



www.smooth-on.com

PRODUCT OVERVIEW

Flame Out[®] is a low viscosity, fast set casting resin that meets UL 94 V-O requirements for flame resistance. It does not contain mercury, TDI or MOCA. Mix ratio is 1A:1B by volume. Pot life is 2.5 min. and demold time is 10 min. at 73°F / 23°C (depending on mass).

Fully cured **Flame Out[®]** material is tough, durable, machinable and paintable. It has much higher physical and performance properties than any other flame rated urethane available anywhere. Vibrant colors and color effects are possible by adding SO-Strong[®] color tints. Applications for **Flame Out[®]** include making flame resistant prototype and architectural models, model toys, theme park and stage elements, durable miniatures and special effect props. Material can also be used for potting and encapsulation applications.

TECHNICAL OVERVIEW

Mix Ratio: 1A:1B by volume

Mixed Viscosity, cps: 200 (ASTM D-2393)

Specific Gravity, g/cc: 1.2 (ASTM D-1475)

Specific Volume, cu. in. / lb.: 23.1 (ASTM D-1475)

Pot Life: 2.5 min. @ 73° F / 23°C ** (ASTM D-2471)

Cure time: 10 min. @ 73° F / 23°C **

Color: White

Shore D Hardness: 73 (ASTM D-2240)

Ultimate Tensile, psi: 3,390 (ASTM D-638)

Tensile Modulus, psi: 150,700 (ASTM D-638)

Elongation @ Break: 15.1% (ASTM D-638)

Flexural Strength, psi: 5,450 (ASTM D-790)

Flexural Modulus, psi: 148,900 (ASTM D-790)

Compressive Strength, psi: 5,140 (ASTM D-695)

Heat Deflection Temp: 131°F/55°C (ASTM D-648)

Compressive Modulus, psi: 57,600 (ASTM D-695)

Shrinkage, in./in.: 0.0111 (ASTM D-2566)

Dielectric Strength, volts/mil: 305 (ASTM D-147-97a)

* All values measured after 7 days at 73°F/23°C

** Depending on mass

PROCESSING RECOMMENDATIONS

PREPARATION... Materials should be stored and used in a warm environment (73° F / 23° C). This product has a limited shelf life and should be used as soon as possible. All liquid urethanes are moisture sensitive and will absorb atmospheric moisture. Mixing tools and containers should be clean and made of metal, glass or plastic. Mixing should be done in a well-ventilated area. Wear safety glasses, long sleeves and rubber gloves to minimize contamination risk.

Because no two applications are the same, a small test application to determine suitability for your project is recommended if performance of this material is in question.

Applying A Release Agent - A release agent is necessary to facilitate demolding when casting into or over most surfaces. Use a release agent made specifically for mold making (Universal[®] Mold Release or Mann's Ease Release[®] 200 available from Smooth-On or your Smooth-On distributor). A liberal coat of release agent should be applied onto all surfaces that will contact the plastic.

~IMPORTANT: To ensure thorough coverage, apply release and brush with a soft brush over all surfaces. Follow with a light mist coating and let the release agent dry for 30 minutes.

Smooth-On silicone rubber molds usually do not require a release agent when casting urethane resin into the mold. Applying a release agent will prolong the life of the mold.

MEASURING & MIXING...

Pre-mix Part A and Part B before dispensing.

Measuring - The proper mixing ratio of **Flame Out[®]** is 1 Part A to 1 Part B by volume. Dispense equal amounts into a mixing container.

If tinting or pigmenting **Flame Out[®]**, add color to Part B and mix thoroughly before adding Part. A.

Mixing - Stir deliberately making sure that you scrape the sides and bottom of the mixing container several times. Be careful not to splash low viscosity material out of container.

IMPORTANT: Shelf life of product is reduced after opening. Remaining product should be used as soon as possible. Immediately replacing the lids on both containers after dispensing product will help prolong the shelf life of the unused product. XTEND-IT® Dry Gas Blanket (available from Smooth-On) will significantly prolong the shelf life of unused liquid urethane products.

Safety First!

The material safety data sheet (MSDS) for this or any Smooth-On product should be read before using and is available on request. All Smooth-On products are safe to use if directions are read and followed carefully. **Keep Out of Reach Of Children.**

Be Careful. Part A (Yellow Label) contains methylene diphenyl diisocyanate. Vapors, which can be significant if heated or sprayed, may cause lung damage and sensitization. Use only with adequate ventilation. Contact with skin and eyes may cause severe irritation. Flush eyes with water for 15 minutes and get immediate medical attention. Remove from skin with soap and water.

Part B (Blue Label) is irritating to the eyes and skin. Avoid prolonged or repeated skin contact. If contaminated, flush eyes with water for 15 minutes and get immediate medical attention. Remove from skin with soap and water. When mixing with Part A, follow precautions for handling isocyanates.

IMPORTANT - The information contained in this bulletin is considered accurate. However, no warranty is expressed or implied regarding the accuracy of the data, the results to be obtained from the use thereof, or that any such use will not infringe a copyright or patent. User shall determine suitability of the product for the intended application and assume all associated risks and liability.

POURING, CURING & PERFORMANCE...

Pouring - If casting **Flame Out**® into a rubber mold, pour mixture in a single spot at the lowest point of the mold. If encapsulating an object, do not pour the mixture directly over the object.

Let the mixture seek its level. A uniform flow will help minimize entrapped air.

For Best Results ... Best results are obtained using a pressure casting technique. After pouring the mixed compound, the entire casting assembly (mold, dam structure, etc.) is placed in a pressure chamber and subjected to 60 PSI (4.2 kg/cm²) air pressure for 1 hour.

Curing - For most applications, room temperature curing at 73°F (23°C) for 10 minutes is adequate depending on mass. Castings will reach ultimate physical properties at room temperature in 7 days.

Important: Use this product with at least room size ventilation or in proximity to a forced outlet air vent and do not inhale/breathe fumes. Fumes, which may be visible with a significant mass concentration, will quickly dissipate with adequate ventilation. Castings with significant mass may be hot to the touch and irritate skin immediately following cure. Let casting cool to room temperature before handling.

Demold time of the finished casting depends on mass and mold configuration. Low mass or thin-walled castings will take longer to cure than castings with higher mass concentration.

Post Curing - Post curing is recommended if castings are thin or of low mass concentration. Castings should be post cured in a mold or support structure. Allow the material to cure for 1 hour at room temperature followed by 2 hours at 150 - 160°F (65 - 72°C). The casting or part should be allowed to cool to room temperature before handling.

Performance - Cured castings of **Flame Out**® are rigid and durable. They resist moisture, moderate heat, solvents, dilute acids and can be machined, primed/painted or bonded to other surfaces (any release agent must be removed). Castings can be displayed outdoors after priming and painting.

Because no two applications are quite the same, a small test application to determine suitability is recommended if performance of this material is in question.



Call Us Anytime With Questions About Your Application.

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The new www.smooth-on.com is loaded with information about mold making, casting and more.