

Clear Flex™ 30

Water Clear Urethane Rubber



www.smooth-on.com

PRODUCT OVERVIEW

Clear Flex™ 30 is a mercury-free and phthalate-free water white clear urethane liquid rubber compound designed for applications that require absolute clarity and resistance to sunlight. Low viscosity ensures easy mixing and pouring. Clear Flex™ 30 cures at room temperature with negligible shrinkage. Cured castings are clear, flexible and UV Resistant. Vibrant colors and color effects are achieved by adding pigments. Applications include making model reproductions, decorative cast pieces, special effects, prototype parts.

CAUTION: NOT FOR HOME USE. THIS PRODUCT IS FOR INDUSTRIAL USE ONLY. With adequate local exhaust ventilation, respiratory protection is not normally required when using this product. Where risk assessment shows air-purifying respirators are appropriate, follow OSHA respirator regulations and European Standards EN 141, 143 and 371. Protective clothing (gloves and long sleeves) is required to minimize the risk of dermal sensitization. If breathing is affected or a dermal rash develops, immediately cease using this product and seek medical attention. Read SDS before using.

TECHNICAL OVERVIEW

Mix Ratio: 1A:1B by volume (100A:94B by weight)

Mixed Viscosity (cps): 750 (ASTM D-2393)

Specific Gravity (g/cc): 1.03 (ASTM D-1475)

Specific Volume (cu. in. /lb.): 26.9

Pot Life: 15 min. (73°F/23°C) (ASTM D-2471)

Cure time: 16 hrs. (73°F/23°C)

Color: Clear

Shore A Hardness: 30 (ASTM D-2240)

Tensile Strength (psi): 725 (ASTM D-412)

Elongation @ Break: 675% (ASTM D-412)

Die C Tear Strength (pli): 54 (ASTM D-624)

Shrinkage (in./in.): 0.002 (ASTM D-2566)

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

ELECTRICAL PROPERTIES

Volume Resistance (ohm): >7.646E+13 (ASTM D-150-98)

Volume Resistivity (ohm cm): >6.014E+15 (ASTM D-150-98)

Dielectric Constant k' @ 100 Hz: 6.62 (ASTM D-150-98)

Dissipation Factor @ 100Hz: 0.103 (ASTM D-150-98)

Dielectric Strength (V/mil): 474 (ASTM D-147-97a)

INDEX OF REFRACTION

1.48822 at 20°C

1.48649 at 25°C

PROCESSING RECOMMENDATIONS

PREPARATION...

This product has a limited shelf life and should be used as soon as possible. Materials should be stored and used in a warm environment (73°F/23°C). All liquid urethanes will react with moisture in the air, causing bubbles. Use in a low humidity environment (below 50% RH). Mixing containers should have straight sides and a flat bottom. Mixing sticks should be flat and stiff with defined edges for scraping the sides and bottom of your mixing container.

Apply Sealing and Release Agents - Clear Flex™ is adhesive and will bond to many surfaces. If pouring Clear Flex™ into a porous mold (such as plaster), seal the surface with SuperSeal™. Follow sealer coat with Universal Mold Release™. If pouring Clear Flex™ into a urethane mold, apply Universal Mold Release™ before casting. Use as directed. If unsure about surface compatibility, a small scale test casting should be made.

Selecting a Mold Rubber - Clear Flex™ 30 will cure in 16 hours at 73°F / 23°C. Surface may remain sticky or tacky for some time depending on which mold rubber is used to cast Clear Flex™ into. The tacky surface on newly demolded castings can be eliminated by post curing the casting out of the mold at 150°F / 60°C for 5 hours. Clear Flex™ 30 can be poured into a tin cured silicone mold (Mold Max™ silicone) or Mold Star™ 15, 16 or 30 platinum cured silicone. Clear Flex™ 30 will not work in a Mold Max™ T-Series or Mold Star™ T-Series silicone mold.

If Using Mold Max™ Silicone - to prevent cure inhibition, post cure newly made silicone mold for 4 hours at 150°F / 60°C and let cool prior to casting Clear Flex™.

Clear Flex™ 30 poured into;	Cure Time (at 73°F / 23°C)	Tack Free Time (at 73°F / 23°C)
Urethane Rubber Mold	16 hours	16 hours
Mold Max™ Tin Cure Silicone*	16 hours	36 hours
Mold Star™ Platinum Silicone	16 hours	5 days

The tacky surface on newly demolded castings can be eliminated by post curing the casting out of the mold at 150°F / 60°C for 5 hours.

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 prior to use and is available upon request from Smooth-On. All Smooth-On products are safe to use if directions are read and followed carefully.

BE CAREFUL

Part A is a modified aliphatic diisocyanate. Vapors, which can be significant if heated or sprayed, 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 seek immediate medical attention. Remove from skin with waterless hand cleaner followed by soap and water. Refer to MSDS.

Part B is irritating to the eyes and skin. If contaminated, flush eyes with water for 15 minutes and seek 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 upon a patent. User shall determine the suitability of the product for the intended application and assume all risk and liability whatsoever in connection therewith.

MEASURING & MIXING...

Stir or shake Part B thoroughly before dispensing. After dispensing proper amounts of Parts A and B into mixing container, mix thoroughly for at least 3 minutes making sure that you scrape the sides and bottom of the mixing container several times.

If Mixing Large Quantities - (16 lbs. / 7 kg. or more) at one time, use a mechanical mixer (i.e. turbine mixer or equal) for 3 minutes followed by careful hand mixing for one minute as directed above. Then, pour entire quantity into a new, clean mixing container and do it all over again. If coloring or filling Clear Flex™, add filler or pigment dispersion to Part B and mix thoroughly before adding Part A.

Important: material is mass sensitive and will exotherm. Large amounts of material cast at one time will generate mild heat and will shrink in proportion to mass. The more material cast in a large concentration, the higher the shrinkage. Amount and nature of shrinkage will depend on casting thickness and mold configuration.

Vacuuming Material - If vacuum degassing prior to pouring, your vacuum pump must pull a minimum of 29 inches of mercury (or 1 Bar / 100 KPa). Leave enough room in container for material expansion. Vacuum material until it rises, breaks and falls. Vacuum for 1 minute after material falls.

POURING, CURING & PERFORMANCE...

Pouring - If casting Clear Flex™ 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 at least two hours.

For most applications, room temperature curing (73°F / 23°C) for 24–48 hours is adequate. Castings will reach ultimate physical properties at room temperature in 5–7 days.



Call Us Anytime With Questions About Your Application.

Toll-free: (800) 381-1733 Fax: (610) 252-6200

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