Econ™ 80

Urethane Moldmaking Rubber - Technical Bulletin

www.smooth-on.com

PRODUCT OVERVIEW

Econ™ 80 is an economical Shore 80A urethane rubber suitable for a variety of mold making and industrial applications. It is a lower cost, faster cure alternative to our popular PMC™-780. Physical properties are lower vs. PMC™-780. This is a no odor system that features a 1A:1B mix ratio and a low viscosity for easy mixing and pouring. Working time is about 13 minutes at room temperature, handling time is 6 hours and rubber cures overnight. **Econ™ 80** is translucent and easily colored with SO-Strong™ or Ignite™ colorants. **Econ™ 80** is used to make short run molds for casting concrete and resins, concrete stamping pads, rubber mechanical parts, coating fabrics, pour-in-place gaskets for industrial equipment and burial vaults. **Important;** To minimize air bubbles in cured rubber, vacuum degassing is recommended.

PROCESSING RECOMMENDATIONS

START BY PREPARING YOUR MODEL...

Preparation - Store and use at room temperature (73°F/23°C). Environmental humidity should be as low as possible. Good ventilation (room size) is essential. This product has a limited shelf life and should be used as soon as possible. Wear safety glasses, long sleeves and rubber gloves to minimize contamination risk. 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.

Some Materials Must Be Sealed - To prevent adhesion between the rubber and model surface, models made of porous materials (gypsum plasters, concrete, wood, stone, etc.) must be sealed prior to applying a release agent. SuperSeal™ and One Step™ (available from Smooth-On) fast drying sealers suitable for sealing porous surfaces without interfering with surface detail. A high quality Shellac is suitable for sealing modeling clays that contain sulfur or moisture (water based). Thermoplastics (polystyrene) must also be sealed with shellac or PVA. **In all cases,** the sealing agent should be applied and allowed to completely dry prior to applying a release agent.

TECHNICAL OVERVIEW

Mix Ratio: 1A:1B by volume	
Mixed Viscosity (cps): 1200	(ASTM D-2393)
Specific Gravity (g/cc): 1.06	(ASTM D-1475)
Specific Volume (cu. in. /lb.): 26.16	
Pot Life: 13 min. (73°F/23°C)	(ASTM D-2471)
Handling Time/Demold: 6 hours (73°F/23°C)	
Cure time: 24 hrs. (73°F/23°C)	
Color: Translucent	
Shore A Hardness: 80	(ASTM D-2240)
Tensile Strength (psi): 955	(ASTM D-412)
100% Modulus (psi)**:** 670	(ASTM D-412)
Elongation @ Break: 127	(ASTM D-412)
Die C Tear Strength (pli)**:** 77	(ASTM D-624)
Shrinkage (in./in.)**:** 0.0014	(ASTM D-2566)

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

Non-Porous Surfaces - Metal, glass, hard plastics, sulfur free clays, etc. require only a release agent.

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 available from Smooth-On). A liberal coat of release agent should be applied onto all surfaces that will contact the rubber.

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

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

MEASURING & MIXING...

Liquid urethanes are **moisture sensitive** and will absorb atmospheric moisture. Mixing tools and containers should be clean and made of metal, glass or plastic. Materials should be stored and used in a warm environment (73°F/23°C).

IMPORTANT: Shelf life of product is drastically reduced after opening. Immediately replacing the lids on both containers after dispensing product will 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.

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 an MDI prepolymer. Vapors, which can be significant if material is 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 Prepolymers contain trace amounts of MDI which, if ingested, must be considered a potential carcinogen. 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.

IMPORTANT: Stir Part A and Part B thoroughly before dispensing. After dispensing the proper amounts of Parts A and B into mixing container, drill mix thoroughly for 2 minutes using a Squirrel Mixer or equivalent. Then, use a straight edged paddle and mix by hand, making sure that you scrape the sides and bottom of the mixing container several times.

Use the 'Double Mix and Pour Technique' - Pour mixture into a new, clean mixing container. Drill mix and then hand mix again for another 3 minutes, scraping the sides and bottom of your container.

After mixing parts A and B, vacuum degassing is recommended to eliminate any entrapped air in liquid rubber. 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 A pressure casting technique using a pressure chamber can yield totally bubble-free rubber. Contact Smooth-On or your distributor for further information about vacuum degassing or pressure casting.

POURING, CURING & PERFORMANCE...

Pouring - For best results, pour your mixture in a single spot at the lowest point of the containment field. Let the rubber seek its level up and over the model. **A uniform flow will help minimize entrapped air.** The liquid rubber should level off at least 1/2" (1.3 cm) over the highest point of the model surface.

Curing - Allow rubber to cure overnight (at least 24 hours) at room temperature (73°F/23°C) before demolding. Cure time can be reduced with mild heat or by adding Smooth-On "Kick-It™" Cure Accelerator. Do not cure rubber where temperature is less than 65°F/18°C.

Post Curing - After rubber has cured at room temperature, heating the rubber to 150°F (65°C) for 4 to 8 hours will increase physical properties and performance.

Using The Mold - If using as a mold material, a release agent should be applied to the mold before each casting. The type of release agent to use depends on the material being cast. The proper release agent for **wax, liquid rubber or thermosetting materials** (i.e. Smooth-On liquid plastics) is a spray release made specifically for mold making (available from Smooth-On or your distributor). Prior to casting **gypsum plaster materials,** sponge the mold with a soap solution for better plaster flow and easy release. **In & Out™ II Water Based Release Concentrate** (available from Smooth-On) is recommended for releasing abrasive materials like **concrete**.

Performance & Storage - Fully cured rubber is tough, durable and will perform if properly used and stored. The physical life of the rubber depends on how you use it.

SMOOTH-ON SINCE 1895

Call Us Anytime With Questions About Your Application.

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

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