

VFI®-176 80 A POLYURETHANE CASTING RUBBER

VFI-176 80 A Polyurethane Casting Rubber is a fast-setting urethane rubber with good rebound properties. The urethane's viscosity allows for easy processing when pouring or injecting and the creation of larger castings that maintain final properties. VFI-176 has excellent physical properties and cures at room temperature with no post-curing necessary. With a higher amine content, the rubber provides good chemical resistance, durability, and low-temperature flexibility for longer use of a mold or part. The material's fast setting capabilities allow for a quick demold time that increases part production.

- Excellent physical properties for making industrial parts and prototypes
- Highly durable, versatile urethane with good rebound properties
- 1:1 mix ratio for easy processing and to avoid costly off-ratio mixes
- Room temperature cure eliminates the need for post curing
- Great chemical resistance and low-temperature flexibility

| PHYSICAL PROPERTIES | TEST METHOD | TEST RESULTS |
|------------------------|-------------|--------------|
| Hardness Shore A | ASTM D2240 | 81 A |
| Tensile Strength | ASTM D412 | 1,021 psi |
| Elongation | ASTM D412 | 405% |
| Tear Strength | ASTM D624 | 252 pli |
| Yield Strength | N/A | 302 psi |
| Elastic Modulus | N/A | 2,118 psi |
| Solid Material Density | N/A | 67.21 pcf |
| Permanent Set | N/A | 15% |
| Shrinkage | N/A | 0.50% |

| LIQUID PROPERTIES | TEST METHOD | TEST RESULTS |
|-------------------------|-------------|--------------|
| Solids by Weight | ASTM D1644 | 100% |
| Solids by Volume | ASTM D2697 | 100% |
| Mixed Liquid Density | ASTM D2939 | 8.91 lbs/gal |
| Specific Gravity A Side | N/A | 1.086 g/mL |
| Specific Gravity B Side | N/A | 1.067 g/mL |
| Mixed Specific Gravity | N/A | 1.07 g/mL |
| Ratio by Volume (A:B) | N/A | 1A:1B |
| Ratio by Weight (A:B) | N/A | 100A:98.13B |
| Viscosity A Side | ASTM D2196 | 1,200 cps |
| Viscosity B Side | ASTM D2196 | 1,300 cps |
| Pot Life | N/A | 4 minutes |
| Demold Time | N/A | 20 minutes |
| Full Cure | N/A | 10 days |
| VOC | N/A | 0 |

MANUFACTURER OF HIGH PERFORMANCE POLYMERS

Toll-Free 800-307-9218 | volatilefree.com | info@volatilefree.com

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THICKNESS REQUIREMENTS

There is no limit to thickness when using VFI-176, but if you are pouring or injecting less than 1/16th of an inch thick, you will have to post-cure the material. Pour the material in a single spot at the lowest point of the mold when casting by hand.

STORAGE/SHELF LIFE

Store between 60°F - 90°F in a clean, dry building. The shelf life of unopened containers is 12 months after the date of manufacture. Once open, use immediately, but if storing after opening, both sides must be nitrogen purged.

MOLD PREPARATION

All surfaces must be clean and free of dirt, debris, and oils that could contaminate the material. When demolding, the surface must be sealed with a release agent. A release agent will help extend the life of the mold and prevent unwanted adhesion. Compatible molds for casting include urethane and metal when properly prepared. The material can be used with platinum silicone molds but will create a surface tack, so it must be removed from the silicone mold and post-cured. You may heat the mold between 70°F-150°F to accelerate the cure process and achieve a quicker demold. However, heating the mold will shorten the pot life.

MIXING

Before combining the A (Iso) and B (Poly) side materials, the B side should be premixed until uniform. With a short work time, the main method of application is using injection equipment, but VFI-176 can also be hand poured. If pouring by hand, pre-weigh the material into separate containers and pour the B side into the A side. You can mix small volumes of the material by hand, but any quantities over ½ a gallon should be rapidly mixed with a power mixer until uniform. Transfer the material into a new container and mix again until uniform. The material must be fully mixed and used before the duration of the pot life. The pot life will shorten if the temperature exceeds 72°F.

POST-CURE

The material should be allowed to cure for at least 20 minutes at room temperature before demolding. Thinner pours will need more time to cure to develop the necessary green strength to demold. VFI-176 will reach full physical properties after 10 days. To achieve final properties faster, the material can be post cured in an oven at 150°F for 16 hours. Silicone molds must be post-cured at room temperature for one day or at 150°F in an oven for 2 hours to remove surface tack.

PRECAUTIONS

VFI-176 contains isocyanate, which is irritating to the skin and toxic if inhaled. Avoid prolonged breathing of vapors and repeated skin contact. Use only with adequate ventilation. The material is not UV color stable and has no long-term UV testing. It is sensitive to moisture and cannot be cross mixed with other materials. Do not thin or add foreign material to the product. See Safety Data Sheet for complete safety instructions.