

VFI® -178 90 A POLYURETHANE CASTING RUBBER

VFI-178 90 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-178 has superior tensile strength, tear strength, and elongation, providing castings with increased durability and resilience. With a high amine content, the rubber provides good chemical resistance and low-temperature flexibility for extended 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
- 1A:1B by volume 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
Shore Hardness	ASTM D2240	91 A
Tensile Strength	ASTM D412	2,711 psi
Elongation at Break	ASTM D412	630%
Tear Strength (Die C)	ASTM D624	408 pli
Shrinkage (12" x 1/2" x 1/2")	ASTM D2566	<0.010 in/in
Color	N/A	Neutral or Black

LIQUID PROPERTIES	TEST METHOD	TEST RESULTS
Mix Ratio by Volume	N/A	1A:1B
Mix Ratio by Weight	N/A	100A:98.13B
Weight per Gallon A Side	ASTM D1475	9.08 lb/gal
Weight per Gallon B Side	ASTM D1475	9.00 lb/gal
Mixed Weight per Gallon	ASTM D1475	9.00 lb/gal
Specific Volume	N/A	N/A
Viscosity A Side (cps @ 77°F)	ASTM D2196	1,200 cps
Viscosity B Side (cps @ 77°F)	ASTM D2196	1,250 cps
Mixed Viscosity (cps @ 77°F)	ASTM D2196	N/A
Pot Life (150g mass @ 77°F)	N/A	N/A
Gel Time (150g mass @ 77°F)	N/A	3.5 minutes
Demold Time @ 77°F	N/A	20 minutes
Full Cure Time	N/A	10 days

MANUFACTURER OF HIGH-PERFORMANCE POLYMERS
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THICKNESS REQUIREMENTS

There is no limit to thickness when using VFI-178, but if you are pouring or injecting less than 1/16th of an inch thick, you will have to post-cure the material. When casting by hand, pour the material in a single spot at the lowest point of the mold when casting by hand.

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-178 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. 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-178 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.

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.

PRECAUTIONS

VFI-178 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.