

## VFI®-4281 78 D POLYURETHANE CASTING PLASTIC

VFI-4281 78 D Polyurethane Casting Plastic is a high-impact urethane plastic with high heat deflection and tensile strength. This material works well when vacuum-degassed and pressure-potted to provide a repeatable, uniform, void-free cast. It is a multi-faceted plastic capable of being used in rapid prototyping, production parts, and equipment housings for large part runs. VFI-4281 has a working time of 6-8 minutes.

- Usable in platinum-cured silicone, metal, or prototyping urethane molds
- High heat deflection temperature (HDT) at 199.04°F (92.8°C average)
- Neutral color that can be easily primed and top coated
- Excellent processing and demold times at 1-2 hours
- Non-mercury based, TDI-free, MOCA-free, odorless polymer

PHYSICAL PROPERTIES	TEST METHOD	TEST RESULTS
Hardness Shore D	ASTM D 2240	78 D
Tensile Strength	ASTM D 638	8850 psi
Tensile Modulus	ASTM D 638	250,000 psi
Elongation	ASTM D 412	10%
Flexural Strength	ASTM D 790	12,300 psi
Flexural Modulus	ASTM D 790	281,000 psi
Shrinkage Linear (12" x 1/2" x 1/2")	ASTM D 2566	<0.01 in/in
Izod Impact, Notched	ASTM D 256	0.72 ft-lb/in
Izod Impact, Unnotched	ASTM D 256	9.20 ft-lb/in
Heat Deflection Temperature (@ 66 psi)	ASTM D 648-18	199.04 °F ± 2 °F

  

LIQUID PROPERTIES	TEST METHOD	TEST RESULTS
Liquid Density A Side	ASTM D 2939	9.5 g/mL
Liquid Density B Side	ASTM D 2939	8.9 g/mL
Mixed Liquid Density	ASTM D 2939	9.3 g/mL
Specific Gravity A Side	N/A	1.14 g/mL
Specific Gravity B Side	N/A	1.07 g/mL
Mixed Specific Gravity	N/A	1.11 g/mL
Ratio by Volume (A:B)	N/A	100A:53.3B
Ratio by Weight (A:B)	N/A	2A:1B
Mixed Solids by Volume	ASTM D 2697	100%
Viscosity A Side	ASTM D 2196	100 cps
Viscosity B Side	ASTM D 2196	2300 cps
Mixed Viscosity	N/A	300 cps
Pot Life	N/A	8 min
Gel Time	N/A	10 min
Flash Point	ASTM D 56	>200 °F

### MANUFACTURER OF HIGH PERFORMANCE POLYMERS

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## THICKNESS REQUIREMENTS

To create the necessary exotherm to fully cure the part, it cannot be poured less than a quarter inch thick at room temperature. For thinner pours, you must elevate the mold and molding temperature to 115°F.

## 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 opened, use immediately. If storing after opening, both sides must be nitrogen purged immediately after use.

## MOLD PREPARATION

Release agents are recommended for any molding application to extend the life of the mold, and for prototyping urethane molds, it is a requirement. Heated molds are not recommended for this product or any mold over 120°F because it will cause an uneven cure.

## MIXING

The B side (Poly) must be premixed once daily before each use, being careful not to introduce extra moisture or air. The A side (Iso) does not need to be mixed.

Prepare a container that is an appropriate size for degassing. It is recommended to contain at least 2/3 of head space in order to vacuum degas. Pour measured A side into the container and promptly follow by pouring measured B side into the same container. Mix until uniform by hand or power mixer. Mixing, vacuum degassing, and pouring must all be completed before the end of the pot life.

## POST-CURE

After an initial cure of 16 hours at room temperature, heat curing at 150°F for 24 hours will achieve full physical properties. Physical properties at room temperature will be delayed until after 7 days and may not fully develop without post-curing in an oven.

## PRECAUTIONS

This product contains isocyanate, which may irritate the skin and is toxic if inhaled as particulate matter. Avoid prolonged breathing of vapors or repeated skin contact. Use only with adequate ventilation. Do not add foreign material to the product. See Safety Data Sheet for complete safety data.