

VFI®-4586 84 D UV STABLE CLEAR POLYURETHANE

VFI-4586 84 D UV Stable Clear Polyurethane is a two-component liquid urethane plastic with high-end properties that offers ample time to cast parts that are water-clear with no distortion. The cured plastic is highly rigid and durable, making castings tough and impact resistant. The plastic is UV color stable for use in indoor and outdoor environments. VFI-4586 is best used for applications that require transparency such as prototype models, decorative pieces, and industrial parts. VFI also offers a faster formula (VFI-4585) with a 10-minute pot life for various processing needs.

- Crystal clear castings perfect for prototyping applications
- High heat deflection temperature at 160°F (71.1°C)
- Long working time provides sufficient time to mix, degas, and pour by hand
- Can be vacuum degassed and pressure potted for bubble-free castings

PHYSICAL PROPERTIES	TEST METHOD	TEST RESULTS
Shore Hardness	ASTM D2240	84 D
Tensile Strength	ASTM D638	9,500 psi
Tensile Modulus	ASTM D638	356,000 psi
Elongation at Break	ASTM D638	16%
Flexural Modulus	ASTM D790	373,000 psi
Izod Impact, Notched	ASTM D256	0.61 ft-lb/in
Linear Shrinkage	ASTM D2566	<0.005 in/in
Heat Deflection Temperature (@ 66 psi)	ASTM D648-18	160°F ± 2°F
Flame Test	UL 94-V0	No
Standard Cured Color	N/A	Transparent

LIQUID PROPERTIES	TEST METHOD	TEST RESULTS
Mix Ratio by Volume	N/A	138.18A:100B
Mix Ratio by Weight	N/A	140A:100B
Weight per Gallon A Side	ASTM D1475	8.75 lb/gal
Weight per Gallon B Side	ASTM D1475	8.83 lb/gal
Mixed Weight per Gallon	ASTM D1475	8.83 lb/gal
Viscosity A Side	ASTM D2196	550 cps
Viscosity B Side	ASTM D2196	825 cps
Mixed Viscosity	ASTM D2196	800 cps
Pot Life	N/A	50 minutes
Gel Time	N/A	60 minutes
Demold Time	N/A	12 hours
Full Cure Time	N/A	N/A

MANUFACTURER OF HIGH-PERFORMANCE POLYMERS
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THICKNESS REQUIREMENTS

We recommend pouring at a thickness of ½ an inch to 3 inches to create the necessary film to demold the part and prevent shrinking at corners or bubbles from forming. Pour the material into a single spot at the lowest point of the mold and allow it to seek its level. A consistent pour will minimize air bubbles.

MOLD PREPARATION

All surfaces should be clean, dry, and free of dirt, dust, and debris. Porous surfaces should be properly sealed before casting. Spraying a release agent is recommended to extend the life of the mold and prevent unwanted adhesion. When working with prototyping urethane molds, release is required. VFI recommends using Chem-Trend's MR-515 Aerosol or a similar release agent. Be careful not to overspray the release, as this may result in a shiny/glossy surface or loss of detail transferred to the casting.

For smaller molds, we recommend heating the mold up to 150°F for 4 hours before casting. Heated molds can help to reduce bubbles and demold times. Compatible molds include aluminum and platinum silicone. A platinum silicone mold is the preferred molding type to allow for the full transfer of detail, but post-curing VFI-4586 is required when using a silicone mold.

MIXING

The material should be used at room temperature for proper mixing and application. Premix the B side (Poly) material before each use. Avoid introducing extra moisture or air into the mix. The A side (Iso) does not need to be premixed.

Vacuum degassing and pressure potting the material is required for bubble-free castings. Prepare a container that is an appropriate size for degassing with at least 2/3 of headspace. Measure the A side material and pour it into the mixing container. Then, measure the B side material and pour it into the same container. Slowly hand-mix the material until uniform. Make sure to scrape the sides and bottom of the container. To avoid an uneven mix, pour the material into a different, clean container and mix again. VFI-4586 provides ample time to mix, degas, pour, and pressurize your pot before the end of the 50-minute pot life.

POST-CURE

Castings should be kept in the mold until fully cured to prevent warping. Demold time is dependent on the volume of the material used and pour thickness. Thin-walled parts may not cure as well without heat or pressure. VFI-4586 should sit for at least 12 hours at room temperature before demolding. Post-curing in an oven for 8 hours at 170°F is required to achieve full physical properties.

STORAGE/SHELF LIFE

Store in a clean, dry place between 60°F - 90°F. The shelf life of unopened containers is 12 months from the date of manufacture. To extend the shelf life of opened containers, you must keep the containers sealed and nitrogen purge both sides of the material.

PRECAUTIONS

VFI-4586 contains isocyanate, which may be irritating to the skin and is toxic if inhaled as particulate matter. Avoid prolonged breathing of vapors and repeated skin contact. Use only with adequate ventilation. The material is moisture sensitive and may foam if exposed to too much moisture. Do not add foreign material to the product. See Safety Data Sheet for complete safety information.