

TECHTHANE[®] 475A ALIPHATIC POLYETHER PREPOLYMER**DESCRIPTION**

TECHTHANE 475A is a high performance aliphatic polyether prepolymer. When reacted with diethyltoluene-diamine (DETDA) it yields an elastomer of approximately 91 Shore A. The most notable characteristic in prepolymer form is its near total insensitivity to moisture resulting in long storage stability compared to MDI and TDI prepolymers. Notable characteristics of the cured elastomer is high resistance to UV, weathering, hydrolysis, and acidic and caustic solutions. Typical applications include linings, wheels, seals, and prototype models.

PROPERTIES OF LIQUID PREPOLYMER

PROPERTY	VALUE
Liquid-Solid Transition Point, °F (°C)	< 0 (-18)
Available Isocyanate Content	4.60 - 4.89
Viscosity Brookfield, cps @ 75°F (24°C)	65,000
Viscosity Brookfield, cps @ 110°F (45°C)	3,500
Viscosity Brookfield, cps @ 140°F (60°C)	800
Specific Gravity @ 75°F (24°C)	1.04
Specific Gravity @ 140°F (60°C)	1.02

PROPERTIES OF CURED ELASTOMER

PROPERTY	VALUE
Hardness, Shore A (ASTM D2240)	91
Tensile Strength (ASTM D412)	4,200 psi (28.90 MPa)
Elongation (ASTM D412)	425%
100% Modulus (ASTM D412)	1,150 psi (7.90 MPa)
300% Modulus (ASTM D412)	2,800 psi (19.30 MPa)
Tear Strength, Die-C (ASTM D624)	520 pli (91.40 kN/m)
Tear Strength, Split (ASTM D470)	100 pli (17.51 kN/m)
Specific Gravity (ASTM D792)	1.06
Bell Brittle Point, °F (°C) (ASTM D746)	<-50 (-45)

PROCESSING SUMMARY

	VALUE
DETDA level, pph, approximate	9.57
Prepolymer, mold temperature, °F (°C)	140+ (60+)
DETDA temperature, °F (°C)	140+ (60+)
Pot Life @ 140°F (60°C), minutes, approx.	5
Cure @ 180°F (80°C), hours	24

INFORMATION BASED ON 95% THEORY

PROCESSING

Thawing

TECHTHANE 475A will not normally solidify unless exposed to temperatures below its liquid/solid transition point. If solidified, thawing can normally be achieved by heating the container to a maximum of 130°F (55°C) using a melting oven, thermostatically-controlled blanket heater, or other uniform heating device (heat bands are not recommended) for a period of 12-24 hours. Thoroughly re-blend the entire container after thawing.

Re-blending

Prepolymers must be re-blended thoroughly prior to use to ensure homogeneity of the prepolymer. This is especially important if the prepolymer was exposed or even potentially exposed to cold temperatures or if less than the entire quantity in the container is to be used at one time. Re-blend prior to each use.

Degassing

Removal of any air which has become entrained in the prepolymer can normally be achieved either by heating the prepolymer to 160-180°F (71-82°C) for 15-20 minutes, or by application of vacuum and agitation. Either method is complete when the majority of air is removed.

Casting

To ensure optimum physical properties and surface finish, molds should be heated to or slightly higher than cure temperature. Application of mold release agents should be in accordance with release agent manufacturer's guidelines.

Curing

Recommended cure is 24 hours at 180°F (80°C). Due to the high heat resistance of this prepolymer, temperatures up to 240°F (115°C) for reduced time periods can be used. Likewise, it will cure at room temperature in approximately seven days.

Note: If using curatives other than DETDA, refer to curative manufacturer's suggested cure cycles.

AVAILABILITY

Available in 44 lb. (20 kg) pails and 451 lb. (200 kg) drums. Specific quantities and special packaging are available by request.

STORAGE AND SHELF LIFE

TECHTHANE prepolymers are packaged sealed with an argon gas blanket. Containers should be kept in this condition and stored in a cool, dry area that is protected from direct sunlight until they are to be used. Containers that have been opened should be resealed immediately, and if the contents are not to be used within several days, they should be purged with argon to prevent moisture contamination.

In the absence of heat and moisture, TECHTHANE prepolymers are stable and have a shelf life of a minimum of 1 year. In the presence of heat, however, the NCO of all prepolymers decreases, affecting their reactivity. The following is a general guideline of the maximum recommended time that prepolymers should be maintained at the given temperature without significant decrease in NCO:

TEMPERATURE	MAXIMUM STORAGE TIME
90°F (32°C)	6 weeks
180°F (82°C)	36 hours
200°F (93°C)	12 hours
212°F (100°C)	8 hours

SAFETY

TECHTHANE 475A, in its uncured liquid form, contains a small amount of free isocyanate which can cause severe irritation to the eyes, skin, respiratory system, and mucous membranes. Contact by inhalation, skin, eye, or ingestion must be avoided. All guidelines for handling isocyanate-containing materials must be followed when using TECHTHANE prepolymers.

Users should avoid direct contact, particularly skin contact and inhalation of hot vapors. To avoid contact with skin or clothing, protective clothing must be worn at all times. To avoid inhalation, forced air ventilation must be used for all indoor applications. When working in tanks and other confined areas, or anywhere the TLV is exceeded, fresh air breathing equipment must be worn. Chemical cartridge masks suitable for organic vapors and approved by MSHA/OSHA may be used under some conditions with adequate ventilation.

Refer to the Material Safety Data Sheet (MSDS) for further information prior to use of this material.

These products are intended for use by professional casting facilities only.

FOR INDUSTRIAL USE ONLY

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