

Advanced Materials**RP 6405 Resin / TDT 178-85 Hardener**

REN:C:-THANE[®] POLYURETHANE ELASTOMER
A RIGID HIGH STRENGTH SHORE 75 ± 5D ELASTOMER

DESCRIPTION :

Ren[®] 6405 Resin / TDT 178-85 Hardener is a low viscosity, off-white, two-component casting polyurethane elastomer ideal for prototypes and rigid parts. RP 6405R / TDT 178-85H cures to a tough, tear resistant, rigid material without containing MOCA⁽¹⁾ or TDI⁽²⁾. RP 6405R / TDT 178-85H is easily mixed and reproduces fine detail with a minimum of air entrapment and cures at room temperature. The system RP 6405R / TDT 178-85H accepts pigments and other colorants better than the standard RP 6405 system. The absence of white pigments yields deeper colors than previously obtained.

APPLICATIONS :

Prototyping and short-run production of injection molded parts and thermoformed parts.

MIXING INTRUSCTIONS :

Reaction Ratio 100R to 100H by weight
 90R to 100H by volume

Mixing: Stir each component thoroughly before use. Weigh each component accurately (± 5%) into clean containers. Thoroughly mix resin and hardener together (minimum 3 minutes) scraping container sidewalls, bottom and mixing stick several times to assure a uniform mix.

TYPICAL MIXED PROPERTIES :

Property	ASTM Test Method	Test Values ⁽³⁾
Gel Time and Viscosity Profile (150g)	<u>Time (min.)</u>	<u>Viscosity (cP)</u>
	5	240
	15	350
Color	Visual	gelled
		Amber
Viscosity	D-2393	Off-white
		40 – 50 cP
Demold time (for most applications)		800 – 900 cP
Cure time (for ultimate properties)		24 hours
		7 days

⁽¹⁾MOCA – 4,4' methylene bis (2-chloroaniline)

⁽²⁾TDI – toluene diisocyanate

⁽³⁾ Tested @ 77 °F (25 °C)

TYPICAL CURED PROPERTIES :

Property	ASTM Test Method	Test Values ⁽¹⁾	Test Values ⁽²⁾
Density (g/cc)	D-792	1.13	1.13
Hardness (Shore D)	D-2240	75 ± 5	75 ± 5
Tensile Strength (psi)	D-638 @ 20"/min.	5,300 (36,500 kPa)	5,500 (37,900 kPa)
Ultimate Elongation (%)	D-638 @ 20"/min.	13.3	10
Tear Strength (ppi)	D-624 @ 20"/min.	300 (52 kN/m)	350 (61 kN/m)
Compression Yield Strength (psi)	DIE C D-695	6,500 (45,000 kPa)	7,000 (48,000kPa)
Ultimate Flexural Strength (psi)	D-790	6,870 (47,350 kPa)	8,580 (59,160 kPa)
Deflection Temperature (264 psi)	D-648	124 °F (51 °C)	146 °F (63 °C)
Coefficient of Thermal Expansion (in/in °F)	D-3386	5.8 x 10 ⁻⁵	5.6 x 10 ⁻⁵
Notched IZOD Impact Strength	D-256	.71 ft-lb/in (.38 Joules/cm)	.55 ft-lb/in (.30 Joules/cm)
Linear Shrinkage (in/in)	Mold #0 Mold #1	D-2566 (0.875" deep)	0.0007 0.0029
			0.0044 0.0055

⁽¹⁾ Cure Schedule – 7 days @ 77°F (25 °C), tested @ 77 °F

⁽²⁾ Cure Schedule – 24 hours @ 77°F (25 °C), + 16 hours @ 176 °F (80 °C) (supported)

NOTE : Typical Properties – These physical properties are reported as typical test values obtained by our test laboratory. If assistance is needed establishing product specifications, please consult with our Quality Control Department.

CURING INSTRUCTIONS :

Although room temperature epoxies will normally set up to a rigid, demoldable state within 24 hours at room temperature (75 °F ± 5 °F), these systems reach their full cure after seven days at room temperature. A full cure can be accelerated by applying heat after the part has set rigid. We recommend a post cure of 176 °F for a minimum of 16 hours. (Add to this adequate time to bring the part to the post cure temperature.) After cure, the part should be cooled at a slow rate so as not to shock the part thermally.

Uniform heat distribution is also required during post cure ; concentrated heat, such as that directed from a lamp, can cause warp. An elevated temperature cure will slightly increase the shrinkage compared to a room temperature cure.

STORAGE/HANDLING INFORMATION :

RP 6405 Resin and TDT 178-85 Hardener

Store at 70 - 90 °F. This product is moisture-sensitive and packaged under a blanket of dry nitrogen. Maintain factory seal, after use reblanket with dry nitrogen and tightly reseal.

Work in a well ventilated area and use clean, dry tools for mixing and applying. For two component system, combine the resin and hardener according to mix ration. Mix together thoroughly and use immediately after mixing. Material temperature should not be below 65 °F (18 °C) when mixing.

RP 6405 Resin

This product may crystallize upon storage. If crystallized, vent container and heat to 125 – 145 °F until crystals dissolve. Stir well after product has liquefied.

TDT 178-85 Hardener

Stir well before use. This material will separate.

SHELF LIFE :

Provided materials are stored under the recommended storage conditions in their original containers, they will remain in useable condition for six months from date of shipping.

PACKAGING :

This product is available in the following package size(s) :

Pail unit resin, 38#; Pail unit hardener, 38#

Please call Customer Service (800-367-8793) for price and availability.

SAFETY/HANDLING PRECAUTIONS :

Do not use or handle this product until the Material Safety Data Sheet has been read and understood.

RP 6405

WARNING. Harmful if inhaled. Causes skin and eye irritation. Causes allergic skin and respiratory reactions.

Avoid contact with eye, skin, or clothing. Avoid breathing vapor or mist. Avoid prolonged or repeated contact with skin. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

TDT 178-85 Hardener

CAUTION In accord with good industrial practice, handle with due care.

Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

Nuisance dust may be generated when sanding or sawing cured material.

FIRST AID :

In case of contact with :

Skin : Immediately wash with soap and water. Remove contaminated clothing and launder before reuse. Destroy contaminated shoes.

Eyes : Immediately flush with water for at least 15 minutes. Call a physician.

Ingestion : If conscious, give plenty of water to drink. Do not induce vomiting. Call a physician.

Inhalation : Remove to fresh air. Administer oxygen or artificial respiration if necessary. Call a physician.

Other : Referral to physician is recommended if there is any question about the seriousness of any injury.

PRECAUTION NOTE :

Thermosetting systems generate heat when curing. The amount of heat and the period of time in which heat is released vary significantly between systems. Additionally, ambient or compound temperature, amount of material mixed, and construction and shape of the mold or container can also be factors in the temperature profile of a mixed system. In some cases, the thermosetting reaction can be vigorous, generation heat sufficient to cause decomposition of the system with subsequent liberation of large volumes of acrid smoke.

A good rule of thumb is never mix more material than can be applied during the stated pot life or gel time. Also take care when using materials in applications other than stated on the product Data Sheet, i.e., a laminating resin for casting.

Please feel welcome to call our Product Information Department or your local Ren representative for instructions before you start your job.

Caution To protect against any potential health risks presented by our products, the use of proper personal protective equipment (PPE) is recommended. Eye and skin protection is normally advised. Respiratory protection may be needed if mechanical ventilation is not available or is insufficient to remove vapors. For detailed PPE recommendations and exposure control options consult the product MSDS or a Huntsman EHS representative.

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