

Advanced Materials

RP 6419

HEAT RESISTANT 85D POLYURETHANE

DESCRIPTION :

RP 6419 is a low viscosity, off-white polyurethane casting system. The system can be easily pigmented or dyed.

The system passes UL94V-O at a thickness of 0.125 inch. RP 6419 has a deflection temperature of 174 °F when heat cured by the recommended procedure.

The system is formulated without MOCA⁽¹⁾, TDI⁽²⁾, MDA⁽³⁾ or a mercury catalyst.

APPLICATIONS :

RP 6419 is an ideal prototyping candidate for simulating hard injection molded or thermoformed thermoplastics or hard RIM production polyurethane.

RP 6419 is also useful for limited production series parts for end-use applications.

MIXING INTRUSCTIONS :

Reaction Ratio 100R to 80H by weight
 100R to 85H by volume

Mixing: Stir each component thoroughly before use. Weigh each component accurately (\pm 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. Vacuum deairing is recommended where void free parts are required.

RP 6419 contains special fillers which impart flammability characteristics and moisture scavenging ability to the formulation. The materials must be resuspended before use. Failure to do so may cause foaming in the cured part and will cause the material to fail flammability requirements.

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

⁽²⁾TDI – toluene diisocyanate

⁽³⁾MDA – 4,4' – methylene dianiline

TYPICAL PROPERTIES :

Property	ASTM Test Method	Test Values
Resin Color	Visual	Amber
Hardener Color	Visual	Cloudy, Off-White
Mixed Color	Visual	Translucent, Off-White
Mixed Viscosity, cP	D-2393	250
Get Time, minutes	D-2471	15

TYPICAL PHYSICAL PROPERTIES :

Property	ASTM Test Method	Test Values
Cured Density, g/cc	D-792	1.27
Hardness, Shore D	D-2240	85 ± 3
Ultimate Compressive Strength, psi	D-695	21,700
Ultimate Flexural Strength, psi	D-790, Procedure A	16,300
Flexural Modulus, psi	D-790, Procedure A	439,000
Ultimate Tensile Strength, psi	D-638 @ 0.2"/min, Type 1	10,300
Tensile Modulus, psi	D-638 @ 0.2"/min, Type 1	459,000
Ultimate Elongation, %	D-638 @ 0.2"/min, Type 1	3.5
Tg per DMA, °F (°C)	D-3418	207 (97)
Coefficient of Thermal Expansion per TMA (-30 °C to 30 °C)		
In/in °F		3.8 x 10 ⁻⁵
In/in °C		6.8 x 10 ⁻⁵
Shrinkage, in/in	D-3566, Mold #0, 0.5" Deep	0.001
Izod Impact, ft-lbs/in	D-256	0.54
Deflection Temperature, °F (°C)	D-648, 264 psi	163 (73)
	D-648, 66 psi	174 (79)
Flame Test	UL94V-O, specimen size: 5" x 0.5" x 0.125"	Passes, self-extinguishing

Tested at 77 °F (25 °C)

Cure Schedule – 24 hours @ 77 °F/25°C + 16 hours @ 176°F/80°C.

NOTE : The cast part must be post-cured in either the original mold or in a supported fixture.

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

CURING INSTRUCTIONS :

RP 6419 polyurethane system must be post-cured to achieve good results. If the original mold is not suitable for the elevated post cure operation, the casting must be cured a minimum of 24 hours at 75 °F ± 5 °F before demolding.

The casting must be post-cured 16 hours at 176 °F on a support which will not deform during this heat cycle.

PACKAGING :

Unit		Size
Working Kits		15 pounds
5 Gallon	Resin	45 pounds
	Hardener	36 pounds
Drum	Resin	500 pounds
	Hardener	400 pounds

STORAGE :

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.

Provided this material is stored under the recommended storage conditions in the original containers, it will remain in useable condition for six months from date of shipping.

HANDLING :

Stir well before use. This material will separate.

Work in a well ventilated area and use clean, dry tools for mixing and applying. 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.

If heating of product in plastic packaging is necessary, heat in a ventilated oven to 145 °F maximum. Before heating, loosen the container lid slightly to relieve any pressure buildup and place container to be heated into a metal bucket of sufficient volume to contain the product, should the container tip over or leak.

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.

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

SAFETY PRECAUTIONS :

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

RP 6419 Resin

WARNING.. Causes skin and eye irritation. Harmful if swallowed or inhaled. May cause allergic skin and respiratory reaction. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Avoid prolonged or repeated contact with skin. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.

RP 6419 Hardener

WARNING Harmful if swallowed. Wash thoroughly after handling.

PRECAUTIONARY 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, generating 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.

FIRST AID :

In case of contact

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.

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The manufacture of materials is the subject of granted patents and patent applications; freedom to operate patented processes is not implied by this publication.

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