

Formulated Materials Group

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Provisional Data Sheet

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 inches. RP 6419 has a deflection temperature of 174°F when heat cured by the recommended procedure.

The system is formulated without MOCA¹, TDI², MDA³ or a mercury catalyst.

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

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

Mix Ratio & Instructions Reaction Ratio 100 R to 80 H by weight.
 100 R to 85 H 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	Resin Color	Amber
	Visual	
	Hardener Color	Cloudy, Off-White
	Visual	
	Mixed Color	Translucent, Off-White
	Visual	
Mixed Viscosity, cP	250	
ASTM D-2393		
Gel Time, minutes	15	
ASTM D-2471		
Typical Physical Properties	Cured Density, g/cc	1.27
	ASTM D-792	
	Hardness, Shore D	85 ± 3
	ASTM D-2240	
	Ultimate Compressive Strength, psi	21,700
	ASTM D-695	
	Ultimate Flexural Strength, psi	16,300
	ASTM D-790, Procedure A	
	Flexural Modulus, psi	439,000
	ASTM D-790, Procedure A	
	Ultimate Tensile Strength, psi	10,300
	ASTM D-638 @ 0.2"/minute, Type I	
	Tensile Modulus, psi	459,000
	ASTM D-638 @ 0.2"/minute, Type I	
	Ultimate Elongation, %	3.5
	ASTM D-638 @ 0.2"/minute, Type I	
	Tg per DMA, °F (°C)	207 (97)
	ASTM D-3418	
	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	0.001	
ASTM D-3566, Mold #0, 0.5" Deep		
Izod Impact, ft-lbs/in	0.54	
ASTM D-256		
Deflection Temperature, °F (°C)		
ASTM D-648, 264 psi	163 (73)	
ASTM D-648, 66 psi	174 (79)	
Flame Test	Passes, Self-extinguishing	
UL94V-0, Specimen size: 5"x0.5"x0.125"		

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 postcure 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 ratio. 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 if 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 varies 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 Ciba representative for instructions before you start your job.

First Aid

In case of contact

- Skin:** Immediately wash with soap and water. Remove contaminated clothing and launder before reuse. Dispose of 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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Publication #6419
DS/ts/W
(1/96)

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