

Preliminary

Parts-In-Minutes®

Polyurethanes

RP 6462 R/H

FAST, HIGH-IMPACT RESISTANT

RAPID POLYURETHANE PROTOTYPING SYSTEMS

DESCRIPTION

RP 6462 system is a new development in Parts-In-Minutes polyurethanes. This product is formulated to closely simulate the properties of polyethylene and other polyolefins. The resulting Parts-In-Minutes RP 6462 R/H polyurethane parts will more closely parallel the performance of polyethylene, propylene, and blends in product evaluation simulations and in real-life short-run product applications.

Features of this cured product include notched Izod impact strength of over 2.3 ft-lb./in for outstanding part durability and toughness. This increase in toughness is made without sacrifice in heat deflection temperature. Heat deflection temperature of RP 6462 R/H is over 220°F for postcured material and 194°F for room-temperature cured material. RP 6462 R/H processes easily like other Parts-In-Minutes polyurethanes and demolding in a few minutes is possible.

APPLICATIONS

- ?? Simulation of polyethylene parts for crash-testing
- ?? Production of short-run functional parts
- ?? High-impact resistant, tough parts

ADVANTAGES

- ?? Excellent combination of Izod impact resistance and heat resistance
- ?? Produce durable short-run and prototype parts

ACCESSORIES

<i>Ultra-fast Adhesive:</i>	RP 6465 R/H amber or black polyurethane
<i>Moldmaking Silicone:</i>	RP 6473 Si clear silicone rubber

distributed by Freeman Mfg & Supply Co. 800-321-8511

MIX RATIO

By Weight: 75 to 100 Resin to Hardener
By Volume: 66 to 100 Resin to Hardener

Mixing Instructions: This reactive system is best suited for use employing a meter-mix dispensing system or suitable cartridge/static-mixer system. Your technical sales representative is available to discuss the requirements for dispensing this material.

Simple silicone, polyurethane, or epoxy molds can be used for molding the RP 6462 system. Mold design and construction for small parts can be for pressure-free casting. Large parts will require reinforced tooling.

**TYPICAL HANDLING
PROPERTIES**

Tested @ 77°F (25°C) unless otherwise noted.

<u>Property</u>	<u>Criteria</u>	<u>ASTM Test Method</u>	<u>Test Value</u>
Color	Resin	Visual	Brown
	Hardener		Black
	Cured		Black
Specific Gravity	Resin	D-1963	1.23
	Hardener		1.08
Viscosity, cP	Resin	D-2393	450–650
	Hardener		1,200–1,700
Gel Time, seconds	150g	D-2471	40–50

NOTE

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 Product Management Department.

PROCESSING

Static mixer recommendations for general purpose, all around use:

Overall Length	Outside Diameter	Inside Element Diameter	Number of Elements
9.5"	0.370	0.250	32

Unacceptable results may be obtained with other static mixers. Evaluate different mixers carefully for suitability.

Specialty Static Mixers are available from the following companies among others:

Michael Engineering Limited (517) 772-4073
Plas-Pac Industries, Inc. (860) 889-3383

SHOOT TIME

It is important to know if your pumping equipment has the capacity to shoot the required part:

Estimated Maximum Shoot Time

1.2–1.5 minutes

Part Shoot Time (min.)* = Part Weight (lb.) ? Pumping Capacity (lb./min.)

If the Part Shoot Time does not fall within the parameters for this product, increase the capacity of the dispensing equipment or select a Parts-In-Minutes® Polyurethane with a more suitable Shoot Time. See the Parts-In-Minutes® Polyurethane Selector Guide for more information.

Determine part weight by taking part dimensions from a drawing and calculating the weight based on a Parts-In-Minutes polyurethane density of 70 lb/ft³. If a master model exists, it can be weighed and the prototype part weight estimated by comparing the densities of the Parts-In-Minutes polyurethane vs. the material used in the master.

Determine pumping capacity of the meter-mixing equipment by shooting polyurethane into an empty cup for a specified time period. Then, calculate the pounds dispensed per minute.

* Actual pumping time may take up to 10 to 20% longer than the calculated time because the equipment injection rate may slow down as the tool fills with polyurethane.

DEMOLD TIME	Temperature 77°F (25°C)	Time 5 minutes or less	Thickness 1/8"
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RECOMMENDED CURE SCHEDULES	Options	Temperature	Time
	1.	77°F (25°C)	7 days
	2.	77°F (25°C)	24 hours
	plus	176°F (80°C)	14 hours

Curing Instructions: Depending on their size or shape, parts may need to be fully supported during room temperature cure. This system requires a post-cure for development of maximum physical properties. After demolding at room temperature, the parts should be post-cured and supported for 14 hours at 176°F (80°C).

TYPICAL CURED PROPERTIES

Tested @ 77°F (25°C) unless otherwise noted.

<u>Property</u>	<u>ASTM Test Method</u>	<u>Test¹ Value</u>	<u>Test² Value</u>
Hardness, Shore D	D-2240	74	75
Flexural Strength, at yield, psi	D-790	4,900	5,400
Flexural Modulus, psi	D-790	120,000	135,000
Ultimate Tensile Strength, psi	D-638	4,500	4,600
% Elongation	D-638	75–100	75–100
Deflection Temperature, °F(°C) 66 psi	D-648	194 (90)	221 (105)
Izod Impact, notched, ft-lb./in	D-256	2.3	2.5

¹ Cured 7 days @ 77°F (25°C)

² Cured 24 hours @ 77°F (25°C) plus 14 hours @ 176°F (80°C)

PACKAGING	<u><i>Unit</i></u>		<u><i>Weight</i></u>
	A package	<i>System</i>	14 lb.
	5 gallon	<i>Resin</i>	30 lb.
	5 gallon	<i>Fast Hardener</i>	40 lb.
	Drum	<i>Resin</i>	330 lb.
	Drum	<i>Fast Hardener</i>	440 lb.

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

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

CONDITIONING

RP 6462 Resin
Stir well before use. This material will separate.

RP 6462 Fast Hardener
This product may crystallize upon storage. If crystallized, vent container and heat to 125 to 145°F until crystals dissolve. Stir well after product has liquefied.

RP 6462 System
If heating of products 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

HANDLING Work in a well-ventilated area and use clean, dry tools for mixing and applying. For a two-component system, 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.

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

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

RP 6462 Resin
Warning! Harmful if inhaled. Causes skin and eye irritation. Causes 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 6462 Fast Hardener
Danger! Causes skin and eye irritation. May cause allergic skin reaction. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated contact with skin. Wash thoroughly after handling.

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.

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 technical sales representative for instructions before you start your job.

IMPORTANT

The following supercedes Buyer's documents. **SELLER MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller be liable for incidental, consequential, or indirect damages for alleged negligence, breach of warranty, strict liability, tort, or contract arising in connection with the product(s). Buyer's sole remedy and Seller's sole liability for any claims shall be Buyer's purchase price. Data and results are based on controlled or lab work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended.

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