

Advanced Materials**RenPIM® 6450 POLY Black/RenPIM® 6450 ISO**

PARTS IN MINUTES® POLYURETHANE
55-SECOND RAPID SET / RAPID DEMOLD
MEDIUM FLEXURAL MODULUS PROTOTYPE SYSTEM
FOR MACHINE DISPENSING

DESCRIPTION :

RenPIM® 6450 POLY BLACK/RenPIM® 6450ISO system is an extremely fast-setting, machine-dispensable polyurethane casting system for production of prototype and short-run production parts. The cured castings exhibit thermoplastic-like properties including high-impact resistance, thermal resistance, and dimensional stability. RenPIM® 6450 POLY BLACK/RenPIM® 6450ISO system offers rapid part production with extremely fast demold time, up to 6 parts per hour depending upon part configuration. When this fast-setting polyurethane system is combined with meter-mix dispensing equipment, very large parts can be efficiently cycled un 10 to 30 minutes.

APPLICATIONS :

For fast production of complex prototype parts and other limited production parts series. RenPIM® 6450 POLY BLACK/RenPIM® 6450ISO system simulates high-density polyethylene, polypropylene, and ABS.

ADVANTAGES :

- Fast cure for rapid-part turnaround
- Excellent combination of izod impact resistance and heat resistance
- Produce durable short-run and prototype parts

ACCESSORIES :

Use RenPIM® Color Pastes for the best coloring results. Other coloring materials may not be compatible with this product and yield undesirable results.

Adhesive and Repair Paste : RP 6465 R/H amber or black polyurethane
Mold making Silicone : RP 6473 Si clear silicone rubber

MIX RATIO :

By weight : 80 to 100 Resin to Hardener
By volume : 67 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 RenPIM® 6450 POLY BLACK/RenPIM® 6450ISO 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.

Property	Criteria	ASTM Test Method	Test Value
Color	Resin	Visual	Dark Brown
	Hardener		Cream or Black*
	Cured		Buff or Black*
Special Gravity	Resin	D-1963	1.20
	Hardener		1.03
Viscosity, cP	Resin	D-2393	170
	Hardener		1,600
Gel time, seconds	150g	D-2471	45-65

* Hardener is also available in Black

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 Quality Control 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 (989) 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 – 1.7 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	Time	Thickness
77 °F (25 °C)	15-30 minutes	1/8"

RECOMMENDED CURE SCHEDULE :

Options	Temperature	Time
1	77 °F (25 °C)	7 days
2	77 °F (25 °C)	24 hours
Plus	178 °F (80 °C)	14 hours

Curing instructions : Parts can be cured unsupported at room temperature. 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).

Some silicone rubber mold materials inhibit the cure of polyurethanes. In general, fewer incompatibility problems occur with platinum-catalyzed silicone rubber mold materials than with tin-catalyzed systems. To be absolutely sure compatibility of each silicone and polyurethane combination should be checked in your shop before proceeding to the tool building stage. For this testing, cast the polyurethane selected into a small silicone-rubber test mold to check for proper cure. The silicone systems must be fully cured to manufacturers' recommendations. This is especially important with tin-catalyzed systems, which give off alcohol on curing which must evaporate from the mold before use.

TYPICAL CURED PROPERTIES :

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

Property	ASTM Test Method	Test Values ⁽¹⁾	Test Value ⁽²⁾
Density, lb./ft ³ (g/cm ³)	D-792	72 (1.13)	73 (1.17)
Cubic inch per pound		23.9	23.7
Hardness, Shore D	D-2240	77	80
Flexural Strength, 5% strain, psi	D-790	7,000	6,300
Flexural Modulus, psi	D-790	184,000	167,000
Ultimate Tensile Strength, psi	D-638	4,900	5,100
Tensile Modulus, psi	D-638	170,000	166,000
% Elongation	D-638	12	6
Tg by DMA, E", °F (°C)	D-4065	306 (152)	320 (160)
Deflection Temperature, °F	D-648	66 psi	252 (122)
		264 psi	208 (98)
Linear Shrinkage, in/in	PIM method*	0.0009	0.0028**
Ultimate Compressive Strength, psi	D-695	23,100	17,900
Compressive Modulus, psi	D-695	187,000	170,800
Izod Impact, notched, ft-lb./in	D-256	0.9	0.7
Coefficient of Thermal Expansion	D-3386	-22° to 86°F, in.in./°F	67 x 10 ⁻⁶
		-30° to 30°C, in/in/°C	121 x 10 ⁻⁶

⁽¹⁾Cured 7 days @ 77 °F (25 °C)

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

*Epoxy Fiberglass Laminate Closed Mold : Test Blank 0.090 x 23 x 7.5"

** Cured 12 hours @ 150 °F (66 °C)

PACKAGING :

Unit		Weight
A package	System	14.4 lb.
5 gallon	Resin	32 lb.
5 gallon	Hardener	40 lb.
5 gallon	Hardener Black	40 lb.
Drum	Resin	360 lb.
Drum	Hardener	450 lb.
Drum	Hardener Black	450 lb.

Please call Customer Service (800) 376 8793 for price and availability.

HANDLING :**RenPIM® 6450 POLY BLACK/RenPIM® 6450ISO Resin**

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.

RenPIM® 6450 POLY BLACK/RenPIM® 6450ISO Hardener

Stir well before use. This material will separate.

STORAGE :

RenPIM® 6450 POLY BLACK/RenPIM® 6450ISO should be stored in a dry place, in the sealed original container, at temperatures between +2°C and +40°C (+35.6°F and 104°F). Under these storage conditions, the shelf life is 1 year. The product should not be exposed to direct sunlight.

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.

PRECAUTIONARY STATEMENT :

Huntsman Advanced Materials Americas LLC maintains up-to-date Material Safety Data Sheets (MSDS) on all of its products. These sheets contain pertinent information that you may need to protect your employees and customers against any known health or safety hazards associated with our products. Users should review the latest MSDS to determine possible health hazards and appropriate precautions to implement prior to using this material.

First Aid!

Refer to MSDS as mentioned above.

**KEEP OUT OF REACH OF CHILDREN
FOR PROFESSIONAL**

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