

**Advanced Materials****RenPim® 6486 Resin  
RenPIM® 6486 Slow Hardener  
RenPIM® 6486 Fast Hardener****EXTREMELY HIGH IMPACT RESISTANT RAPID  
POLYURETHANE PROTOTYPING SYSTEMS****DESCRIPTION:**

RenPIM® 6486 fast and slow systems are a new development in Parts-In-Minutes® polyurethanes. These products are formulated to closely simulate the properties of polyurethane, polypropylene and other polyolefins. The resulting Parts-In-Minutes® RenPIM® 6486 polyurethane parts will more closely parallel the performance of polyethylene and 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 5 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 RenPIM® 6486 is over 200°F for cured material. RenPIM® 6486 processes easily like other Parts-In-Minutes® polyurethanes in the Ren® Parts-In-Minutes® polyurethane family.

**APPLICATIONS:**

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

**ADVANTAGES:**

- For the Slow hardener, a gel time greater than 5 minutes coupled with a demold time of about 8 hours facilitates the production of large size parts (can be accelerated)
- For the Fast hardener, a gel time of 1.5 to 2.5 minutes facilitates the production of medium-size parts
- Complete compatibility of the Fast and Slow hardeners to allow custom blending on the shop floor for the right gel and demold times needed
- Excellent combination of Izod Impact resistance and heat resistance
- Produce durable short-run and prototype parts

**ACCESSORIES:**

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

- Ultra-Fast Adhesive: Parts-In-Minutes® RP 6465 R/H amber polyurethane
- Moldmaking Silicone: RenCast® 6473 Si clear silicone rubber

**MIXING RATIO:**

By Weight: 100 to 50 Resin to Hardener (Slow and fast)  
 By Volume: 100 to 100 Resin to Hardener (Slow and fast)

**Mixing Instructions:** This reactive system is best suited for use employing a meter-mix dispensing system or suitable cartridge/static-mixer system. The pot life of the RenPIM<sup>®</sup> 6486 Slow system does allow for small hand-cast batches as well. Our Ren<sup>®</sup> representative is available to discuss the requirements for dispensing this material.

Simple silicone, polyurethane, or epoxy molds can be used for molding the RenPIM<sup>®</sup> 6486 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 Hardener, Slow/Fast Cured, Slow/Fast	Visual	Light amber Amber/Amber Amber/Amber
Specific Gravity	Resin Hardener, Slow/Fast	D-1963	1.12 1.12/1.1
Viscosity, cP	Resin Hardener, Slow/Fast Mixed, Slow @3 min./Fast	D-2393	7,500 – 8,500 75–95 / 120-150 5,600 / High
Gel time, minutes	150g, Slow/Fast	D-2471	7-8 / 1.5-2.5

**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 (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:

Slow Hardener	10 minutes
Fast Hardener	3 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 Ren® 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./ft<sup>3</sup>. 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 dispensing 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:**

		Resin Temp.	Mol Temp.	Demold Time	Part Thickness
Approximate	Low System	77°F (25°C)	77°F (25°C)	8 hours	1/8"
		77°F (25°C)	90°F (32°C)	4.5 hours	1/8"
		77°F (25°C)	120°F (49°C)	1 hour	1/8"
		120°F (49°C)	77°F (25°C)	4 hours	1/8"
		120°F (49°C)	120°F (49°C)	1 hour	1/8"
Approximate	Fast System	77°F (25°C)	77°F (25°C)	1 hour	1/8"
		77°F (25°C)	90°F (32°C)	40 minutes	1/8"
		77°F (25°C)	120°F (49°C)	30 minutes	1/8"
		120°F (49°C)	77°F (25°C)	30 minutes	1/8"
		120°F (49°C)	120°F (49°C)	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	176°F (80°C)	16 hours

**Curing Instructions:** This system requires a post-cure for development of maximum physical properties. After demolding, the parts should be post-cured and supported for 16 hours at 176°F (80°C). Depending on their size or shape, parts may need to be fully supported during room temperature cure.

**TYPICAL CURED PROPERTIES:**

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

Property	ASTM Method	RenPIM® 6486 Slow System		RenPIM® 6486 Fast System	
		Test <sup>1</sup> Value	Test <sup>2</sup> Value	Test <sup>1</sup> Value	Test <sup>2</sup> Value
Density, lb.ft <sup>3</sup> (g/cm <sup>3</sup> )	D-792	72 (1.16)	72 (1.15)	72 (1.16)	72 (1.15)
Cubic Inch per Pound		23.9	23.9	23.9	23.9
Hardness, Shore D	D-2240	67	65	62	62
Flexural Strength, at yield, psi	D-790	4,750	4,500	4,500	4,400
Flexural Modulus, psi	D-790	110,000	98,000	101,000	96,000
Ultimate Tensile Strength, psi	D-412	3,600	3,600	4,500	4,300
% Elongation	D-412	181	132	173	137
Tear Strength, ppi	D-624	717	612	698	655
Tg by DMA, E' onset, °F (°C)	D-4065	156 (69)	236 (113)	--	--
Deflection Temperature, °F (°C)	D-648				
66 psi		156 (69)	216 (102)	143 (63)	201 (94)
Izod Impact, notched, ft.-lb./in	D-256	6.6	5.9	5.4	4.9
Coefficient of Thermal Expansion	D-3386				
-22° to 86°F, in/in/°F		87 x 10 <sup>-6</sup>	88 x 10 <sup>-6</sup>	84 x 10 <sup>-6</sup>	88 x 10 <sup>-6</sup>
-30° to 30°C, in/in/°C		156 x 10 <sup>-6</sup>	158 x 10 <sup>-6</sup>	151 x 10 <sup>-6</sup>	158 x 10 <sup>-6</sup>

1 Cured 7 days @ 77°F (25°C)

2 Cured 24 hours @ 77°F (25°C) plus 16 hours @ 176°F (80°C)

**PACKAGING:**

<u>Unit</u>		<u>Weight</u>
DS-200mL Cartridge	<i>Slow System</i>	0.6 lb.
DS-200mL Cartridge	<i>Fast System</i>	0.6 lb.
A Package	<i>Slow System</i>	12 lb.
A Package	<i>Fast System</i>	12 lb.
5 gallon	<i>Resin</i>	40 lb.
5 gallon	<i>Slow Hardener</i>	20 lb.
5 gallon	<i>Fast hardener</i>	20 lb.
Drum	<i>Resin</i>	460 lb.
Drum	<i>Slow hardener</i>	230 lb.
Drum	<i>Fast hardener</i>	230 lb.

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

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**HANDLING:**

This resin component product will likely crystallize upon storage. If crystallized, vent container and heat to 125-145°F until crystals dissolve. Stir well after product has liquefied.

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. 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 ratio. Mix together thoroughly and use immediately after mixing. Material temperature should not be below 65°F (18°C) when mixing.

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**STORAGE :**

RP 6456 system 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.

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**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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