

**Advanced Materials****RenShape® 450**

## MODELING BOARD

**DESCRIPTION**

RenShape® 450 modeling board is preferred by model makers throughout the world for its ability to hold precise tolerances, maintain good dimensional stability even after exposure to temperature and humidity extremes, and produce good surface detail with solid, well-defined edges. RenShape® 450 board is easy to hand carve or CNC machine. It causes minimal cutter wear even at high feed rates. RenShape® 450 modeling board is well suited for producing temporary, styling, visual and master models, architectural and automotive die models, prototype parts, CAD design verification models, prototype foundry patterns, prototype vacuum-form molds, and other applications requiring fast machining and good model surfaces. Special performance characteristics of the grain-free modeling material include:

<b>ADVANTAGES</b>	
	• Good edge definition
	• Low shrinkage and water absorption
	• High-quality surface finish

<b>ACCESSORIES</b>	<b>Matched Epoxy Adhesive</b>	<b>Polyurethane Repair Pastes</b>
	Ren-Weld® 103	RenPatch® 177-113/Ren® 177-113 or RenPatch® 440

<b>TYPICAL PROPERTIES*</b>	<b>Test Method</b>	<b>Test Values</b>
Color	Visual	Light brown
Density, lb./ft <sup>3</sup> (g/cm <sup>3</sup> )	ASTM D-792	41 (0.66)
Hardness, Shore D	ASTM D-2240	65
Ultimate Flexural Strength, psi (MPa)	ASTM D-790	4,000 (27.6)
Flexural Modulus, psi (MPa)	ASTM D-790	144,000 (993)
Ultimate Tensile Strength, psi (MPa)	ASTM D-638	2,300 (15.9)
Tg by DMA, E", °F(°C)	ASTM D-4065	205 (96)
Compressive Strength, 0.2% offset, psi (MPa)	ASTM D-695	2,800 (19.3)
Compressive Modulus, psi (MPa)	ASTM D-695	135,000 (931)
Coefficient of Thermal Expansion	ASTM D-3386	
-22° to 86°F, in/in/°F		36 x 10 <sup>-6</sup>
-30° to 30°C, in/in/°C		65 x 10 <sup>-6</sup>

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

**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.

<b>MACHINING</b>	<b>Roughing Speed</b>	<b>Roughing Feed</b>	<b>Finishing Speed</b>	<b>Finishing Feed</b>
	2,000 RPM	100 IPM (254cm/min.)	15,000 RPM	200 IPM (508cm/min.)

**Cutters :** **Roughing** 1 in. (2.5cm) Hog Ball End Mill 4-Flute HS Steel 8% cobalt  
**Finishing** 5/8 in (16mm) Ball End Mill 2-Flute Carbide  
**Depth** Roughing varies from 0.25 in. to 2.5 in. (6mm to 6.35cm) with a 40% stepover  
Finishing depth is 1/8 in. (3mm) leaving a 0.002 in. (0.05mm) scallop height

**These machining parameters are represented as starting points.** Cutter type and material, spindle speed, feed rate, machine power and rigidity all affect machining results. User must determine the best parameters for specific situations.

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**PACKAGING :**

RenShape<sup>®</sup> 450 board is available in a limited number of standard combinations of 1 in., 2 in., 3 in. and 4 in. (2.5cm, 5cm, 7.6cm, 10cm) thicknesses, widths of 16 in., 20 in and 24 in. (40cm, 51cm, 60cm) and length of 60 in. (152cm). Boards are finished on top and bottom faces and on all edges. Please contact Customer Service (800) 367-8793 for currently available options, price and availability.

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**STORAGE :**

RenShape<sup>®</sup> 450 boards should be stored flat 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 10 years. The product should not be exposed to direct sunlight.

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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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Main Offices :  
**Huntsman Corporation**  
10003 Woodloch Forest Dr.  
The Woodlands  
Texas 77380  
(281) 719-6000

**Huntsman Advanced Technology  
Center**  
8600 Gosling Rd.  
The Woodlands  
Texas 77381  
(281) 719-7400