

## Advanced Materials

# RenShape® 5169

### FOUNDRY BOARD

**DESCRIPTION :**

RenShape® 5169 board is an extremely tough, abrasion-resistant red material for CNC-machining foundry patterns and core boxes. The board is also well suited for producing tooling aids and fixtures and molds for thermoforming clear, thin-gauge thermoplastic sheet. Metal forming applications for durable RenShape® 5169 board include draw dies, low-pressure hydroforming molds, stretch forming dies, and wear-resistant inserts for RenCast® 6470 polyurethane molds. RenShape® 5169 board can be milled with hardened-steel cutters. Special features of the foundry board include:

ADVANTAGES	
	• Tough and resilient
	• Good edge definition and dimensional stability
	• High compressive and tensile strengths
	• Good impact and abrasion resistance
	• Surfaces can be polished to a high luster

ACCESSORIES	Matched Epoxy Adhesive	Polyurethane Repair Paste
	Ren-Weld® 5169	RenPatch® 5169

TYPICAL PROPERTIES*	Test Method	Test Values
Color	Visual	Red
Density, lb./ft. <sup>3</sup> (g/cm <sup>3</sup> )	ASTM D-792	75 (1.2)
cu. in./lb.	ASTM D-2240	23.1
Hardness, Shore D		85
Ultimate Flexural Strength, 5% strain, psi (MPa)	ASTM D-790	14,000 (96.6)
Flexural Modulus, psi (MPa)	ASTM D-790	380,000 (2,621)
Ultimate Tensile Strength, psi (MPa)	ASTM D-638	9,000 (62.1)
T <sub>g</sub> by DMA, °F (°C)	ASTM D-4065	206 (97)
Compressive Strength, 0.2% offset, psi (MPa)	ASTM D-695	8,800 (60.6)
Compressive Modulus, psi (MPa)	ASTM D-695	366,000 (2,524)
Izod Impact, notched, ft-lb./in	ASTM D-256	0.90
Coefficient of Thermal Expansion	ASTM D-3386	
-22° to 86°F, in/in/°F		40.8 x 10 <sup>-6</sup>
-30° to 30°C, in/in/°C		73.5 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.

**CONSTRUCTION TECHNIQUE :**

- Cut RenShape<sup>®</sup> 5169 board on a band saw to form the required rough shape.
- Apply mixed Ren-Weld<sup>®</sup> 5169 adhesive to both sides of the cut board and laminate sections together.
- Gently clamp the structure and cure overnight at room temperature.
- Machine or carve contours of the model.

MACHINING	Roughing Speed	Roughing Feed	Finishing Speed	Finishing Feed
	1,600 RPM	70 - 140 IPM (178 - 356cm/ min.)	10,000 RPM	100 – 200 IPM (254 – 508 cm/min.)

<b>Cutters : Roughing</b>	1 in. (2.5cm) Hog Ball End Mill 4-Flute HS Steel 8% cobalt
<b>Finishing</b>	5/8 in (16mm) Ball End Mill 2-Flute Carbide
<b>Depth</b>	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
<b>Blades</b>	Use carbide offset-tooth blade for faster cutting and less binding

**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.

**PACKAGING :**

RenShape<sup>®</sup> 5169 board is available in a limited number of standard combinations of 1 in., 2 in., 3 in., 4 in., 5 in. and 6 in. (2.5cm, 5cm, 7.6cm, 10cm, 12.7cm, 15cm) thicknesses, widths of 20 in and 24 in. (51cm, 60cm) and lengths of 30 in. and 60 in. (76.2cm, 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.

**STORAGE :**

RenShape<sup>®</sup> 5169 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.

**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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