



## Product Data

# RenShape<sup>®</sup> 5166 METALFORMING BOARD

RenShape 5166 board is a tough, durable polyurethane material designed for use in forming metal parts for prototype and low-volume production. Typical applications for RenShape 5166 board include draw dies, stretch forming dies, and low-pressure hydroforming dies. It also can be CNC-machined with carbide tools and produces low cutter wear.

ADVANTAGES	
	• CNC machinable at high speeds
	• Good edge definition
	• Good dimensional stability
	• Good impact and abrasion resistance

ACCESSORIES	Matched Epoxy Adhesive	Polyurethane Repair Paste
	Ren-Weld <sup>®</sup> 100	RenCast <sup>®</sup> 6470/Ren 6470/DT 082

TYPICAL PROPERTIES*	Test Method	Test Values
Color	Visual	Cream
Density, lb./ft. <sup>3</sup> (g/cm <sup>3</sup> )	ASTM D-792	103 (1.66)
Hardness, Shore D	ASTM D-2240	90
Ultimate Flexural Strength, psi (MPa)	ASTM D-790	8,000 (55.2)
Flexural Modulus, psi (MPa)	ASTM D-790	965,000 (6,655)
Ultimate Tensile Strength, psi (MPa)	ASTM D-638	4,875 (33.6)
Tg by DMA, E", °F (°C)	ASTM D-4065	228 (109)
Compressive Strength, 0.2% offset, psi (MPa)	ASTM D-695	9,500 (66)
Compressive Modulus, psi (MPa)	ASTM D-695	840,000 (5,793)
Coefficient of Thermal Expansion -22° to 86°F, in/in/°F -30° to 30°C, in/in/°C	ASTM D-3386	22 x 10 <sup>-6</sup> 39.6 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>
	1,600 RPM	40 IPM (101cm/min.)	10,000 RPM	100 IPM (254cm/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.

**PACKAGING:**

RenShape 5166 board is available in a limited number of standard combinations of 2 in. and 4 in. (5cm, 10cm) thicknesses, width of 20 in. (51cm) and lengths of 30 in. and 60 in. (76cm, 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/HANDLING:**

Store boards flat in original cartons at 60°F to 100°F (15°C to 38°C). In accord with good industrial practice, handle with due care. Avoid dusty conditions, use adequate ventilation. Avoid breathing dust. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

**SHELF LIFE:**

Provided this material is stored under the recommended storage condition in the original container, it will remain in useable condition for an unlimited amount of time.

**CAUTION:**

Huntsman Advanced Materials Americas Inc. 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. Copies of the latest MSDS may be requested by calling our customer service group at 800-367-8793 or emailing your request to kathy\_dewey@huntsman.com.

**FIRST AID!**

Eyes and skin: Flush eyes with water for 15 minutes. Contact a physician if irritation persists. Wash skin thoroughly with soap and water. Remove and wash contaminated clothing before reuse.

Inhalation: Remove subject to fresh air.

Swallowing: Dilute by giving water to drink and contact a physician promptly. Never give anything to drink to an unconscious person.

**KEEP OUT OF REACH OF CHILDREN****FOR PROFESSIONAL AND INDUSTRIAL USE ONLY****IMPORTANT LEGAL NOTICE:**

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