

Advanced Materials

RenShape[®] 440

LOW DENSITY STYLING BOARD

DESCRIPTION :

RenShape[®] 440 board is a light reddish-brown colored, syntactic polyurethane material. RenShape[®] 440 has a moderately low density of approximately 31 to 34 lbs./ft.³. RenShape[®] 440 machines very easily and finishes to a good surface. The product is well suited for hand carving and CNC machining of styling, temporary and visual master models, architectural models, prototypes and CAD design verification models. Advantages include:

ADVANTAGES	<ul style="list-style-type: none"> • Easy to hand-work and machine • Non-abrasive • Fast cutting speeds • Good edge definition • Good dimensional stability
-------------------	--

ACCESSORIES	Matched Epoxy Adhesive Ren-Weld [®] 103	Polyurethane Repair Pastes RenPatch [®] 440 or RenPatch [®] 177-113/Ren [®] 177-113
--------------------	--	---

ADVANTAGES*	Test Method	Test Values
Color	Visual	Reddish brown
Density, lb./ft. ³ (g/cm ³)	ASTM D-792	34 (0.55)
Hardness, Shore D	ASTM D-2240	54
Ultimate Flexural Strength, psi (MPa)	ASTM D-790	2,300 (15.9)
Flexural Modulus, psi (MPa)	ASTM D-790	106,000 (731)
Ultimate Tensile Strength, psi (MPa)	ASTM D-638	1,300 (9)
Tg by DMA, E", °F(°C)	ASTM D-4065	203 (95)
Compressive Strength, 0.2% offset, psi (MPa)	ASTM D-695	1,400 (9.6)
Compressive Modulus, psi (MPa)	ASTM D-695	105,000 (724)
Coefficient of Thermal Expansion -22° to 86°F, in/in/°F -30° to 30°C, in/in/°C	ASTM D-3386	34.4 x 10 ⁻⁶ 62.0 x 10 ⁻⁶

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 Quality Control Department.

MACHINING	Roughing Speed	Roughing Feed	Finishing Speed	Finishing Feed
	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.

PACKAGING :

RenShape[®] 440 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 16 in. and 20 in. (40cm and 51cm) 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.

STORAGE :

RenShape[®] 440 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**

IMPORTANT LEGAL NOTICE

Sales of the product described herein ("Product") are subject to the general terms and conditions of sale of either Huntsman Advanced Materials LLC, or its appropriate affiliate including without limitation Huntsman Advanced Materials (Europe) BVBA, Huntsman Advanced Materials Americas Inc., or Huntsman Advanced Materials (Hong Kong) Ltd. ("Huntsman"). The following supercedes Buyer's documents.

Huntsman warrants that at the time and place of delivery all Products sold to Buyer shall conform to the specifications provided to Buyer by Huntsman.

While the information and recommendations included in this publication are, to the best of Huntsman's knowledge, accurate as of the date of publication, NOTHING CONTAINED HEREIN (EXCEPT AS SET FORTH ABOVE REGARDING CONFORMANCE WITH SPECIFICATIONS PROVIDED TO BUYER BY HUNTSMAN) IS TO BE CONSTRUED AS A REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHTS, OR WARRANTIES AS TO QUALITY OR CORRESPONDENCE WITH PRIOR DESCRIPTION OR SAMPLE, AND THE BUYER ASSUMES ALL RISK AND LIABILITY WHATSOEVER RESULTING FROM THE USE OF SUCH PRODUCT, WHETHER USED SINGLY OR IN COMBINATION WITH OTHER SUBSTANCES.

No statements or recommendations made herein are to be construed as a representation about the suitability of any Product for the particular application of Buyer or user or as an inducement to infringe any patent or other intellectual property right. Buyer is responsible to determine the applicability of such information and recommendations and the suitability of any Product for its own particular purpose, and to ensure that its intended use of the Product does not infringe any intellectual property rights.

The Product may be or become hazardous. The Buyer should obtain Material Safety Data Sheets and Technical Data Sheets from Huntsman containing detailed information on Product hazards and toxicity, together with proper shipping, handling and storage procedures for the Product, and should comply with all applicable governmental laws, regulations and standards relating to the handling, use, storage, distribution and disposal of, and exposure to the Product. Buyer shall also take all steps necessary to adequately inform, warn and familiarize its employees, agents, direct and indirect customers and contractors who may handle or be exposed to the Product of all hazards pertaining to and proper procedures for safe handling, use, storage, transportation and disposal of and exposure to the Product, and the containers or equipment in which the Product may be handled, shipped or stored.

Ren, RenShape, RenPatch and RenWeld are registered trademarks of Huntsman LLC or an affiliate thereof in one or more countries, but not all countries.

© 2007 Huntsman Advanced Materials Americas Inc.

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