

RENSHAP MODELING BOARDS

The first name worldwide in modeling & styling boards, RenShape is designed and formulated to meet the wide scope of tooling, modeling, prototyping and fabricating applications found throughout the industry today. RenShape continues to lead the industry in providing the perfect balance of machinability, surface finish, edge definition, stability, and durability, all available from the largest modeling board distributor in the world, Freeman.

How to Choose a Modeling Board

Consider your project requirements and refer to the chart below for recommended applications. More specifications tables can be found on the last page.

Application Guide*

RenShape #	440	5440	BM-70	450	5460	460
CNC Proofing	●	◐	◐	◐	◐	○
Models (Architectural, styling, temporary)	●	●	●	●	●	●
Low-density substructure	◐	○	○	○	○	○
Tooling aids & fixtures	○	◐	◐	◐	◐	◐
Intermediate-temp master & lay-up tools	○	○	○	○	○	○
High-temp master & lay-up tools	○	○	○	○	○	○
Foundry patterns	◐	◐	◐	◐	◐	◐
Vacuum-form molds	◐	◐	◐	◐	◐	◐
Metallforming tools	○	○	○	○	○	○

● Ideal ◐ Acceptable ○ Not recommended

*Results may vary depending on your specific project



Machining Parameters

Cutters

Roughing

1" Ball End mill,
4-Flute, Carbide

Finishing

3/8" Ball End mill,
2-Flute, Carbide

Depth

Roughing

Varied from 1/4" to 2 1/2"
deep with a 40% stepover

Finishing

1/8" deep leaving 0.002"
scallop height

Please Note

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



	Roughing Speed (RPM)	Roughing Feed (IPM)	Finishing Speed (RPM)	Finishing Feed (IPM)
440	2,000	200	15,000	200
5440	2,000	100	15,000	200
450	2,000	100	15,000	200
BM-70	2,000	100	15,000	200
5460	2,000	100	15,000	200
460	1,600	40	10,000	100

RENSHAP[®] MODELING & STYLING BOARDS

Quick Facts

- Formulated for styling, modeling, prototyping & fabricating applications
- Can be worked by hand or machine
- Less abrasive to cutting tools



RenShape 5440 Polyurethane Styling Board

RenShape 5440 is a higher density version of 440, offering an improved surface finish without sacrificing ease of machining. These boards are manufactured in metric sizes (500mm x 1500mm). The Imperial equivalent sizes are provided below.

	SKU	Thickness	Width	Length	Bd. ft.
▶ 35 lb./ft. ³ density	075501	0.98"	19.7"	59.1"	7.92
▶ Light brown color	075502	1.97"	19.7"	59.1"	15.85
▶ Ideal for master patterns	075503	2.96"	19.7"	59.1"	23.9
	075504	3.94"	19.7"	59.1"	31.8

RenShape 440 Polyurethane Styling Board

RenShape 440 is a medium-low density board used for master models, CNC styling models, prototypes, and visual models. RenShape 440 machines easily at fast cutting speeds, finishes to a good surface with excellent edge definition and produces very little tool wear.

- ▶ 34 lb./ft.³ density
- ▶ Light red-brown color
- ▶ General purpose & economical

SKU	Thickness	Width	Length	Bd. ft.
075236	2"	16"	60"	13.33
075240	4"	16"	60"	26.67
075146	1"	20"	60"	8.33
075147	2"	20"	60"	16.67
075148	3"	20"	60"	25
075149	4"	20"	60"	33.33
075151	6"	20"	60"	50



RenShape 450 Polyurethane Modeling Board

RenShape 450 is the original medium density polyurethane modeling and styling board. An ideal material for models and prototypes, master patterns, and tooling aids, this material will produce very stable, dimensionally accurate tools with well-defined edges and surface detail. RenShape 450 can be machined using standard woodworking tools and will not result in objectionable dust particles when planed, milled, sawed or drilled. It resists warping and can be easily painted and finished for appearance and prototype models.

- ▶ 41 lb./ft.³ density
- ▶ Light brown color
- ▶ Superior machinability and stability

SKU	Thickness	Width	Length	Bd. ft.
075139	2"	20"	15"	4.17
075202	2"	16"	60"	13.33
075205	4"	16"	60"	26.67
075140	1"	20"	60"	8.33
075141	2"	20"	60"	16.67
075142	3"	20"	60"	25
075143	4"	20"	60"	33.33
075203	1"	24"	60"	10
075206	2"	24"	60"	20
075211	3"	24"	60"	30



RenShape 440, 5440, and 450 offer excellent ease of machining.

MODELING BOARDS CONTINUED



Well-defined edges are possible with BM-70 due to its excellent surface finish.



RenShape 460 offers an excellent surface finish for many large and lightweight styling applications.



RenShape BM-70 Medium-Density Modeling Board

RenShape BM-70 is a polyurethane modeling board that features excellent machinability, while holding precise tolerances and well-defined edges. Applications include master patterns, models, prototype foundry patterns, and automotive and architectural models.

- ▶ 42 lb./ft.³ density
- ▶ Light brown color
- ▶ Excellent edge definition

SKU	Thickness	Width	Length	Bd. ft.
075532	1.97"	19.7"	59.1"	15.9
075533	2.95"	19.7"	59.1"	23.9
075534	3.94"	19.7"	59.1"	31.8
075541	5.9"	19.7"	59.1"	47.7
075535	2"	24"	60"	20.0
075536	3"	24"	60"	20.0
075537	4"	24"	60"	40.0
075539	6"	24"	60"	60.0



RenShape 460 Polyurethane Modeling Board

RenShape 460 is a medium-high density polyurethane modeling and styling board. It was developed to meet the growing demand for higher-quality, more dimensionally accurate, machined master patterns and prototypes. With a smoother surface finish than RenShape 450, this board is an ideal material for prototype vacuum-forming tools, styling prototypes, master models, tooling aids, and automotive die models. Carbide cutters are recommended, but not necessary.

- ▶ 48 lb./ft.³ density
- ▶ Light brown color
- ▶ Excellent surface finish

SKU	Thickness	Width	Length	Bd. ft.
075213	2"	16"	60"	13.33
075214	4"	16"	60"	26.67
075229	1"	20"	60"	8.33
075219	2"	20"	60"	16.67
075221	3"	20"	60"	25
075222	4"	20"	60"	33.33
075169	1"	24"	60"	10
075170	2"	24"	60"	20
075171	3"	24"	60"	30
075172	4"	24"	60"	40



RenShape 5460 Polyurethane Modeling Board

RenShape 5460 is lower density version of 460, offering excellent surface finish and ease of machining while minimizing the dust prevalent in many other modeling boards in this range.

- ▶ 43 lb./ft.³ density
- ▶ Light brown color
- ▶ High-quality surface finish

SKU	Thickness	Width	Length	Bd. ft.
075518	2"	24"	60"	20
075519	3"	24"	60"	30
075520	4"	24"	60"	40

General Specifications

	Hardness (Shore D)	Density (g/cc)	Density (lb./ft. ³)	Tensile Strength (psi)	Compressive Strength (psi)	Compressive Modulus (psi)	Flexural Strength (psi)	Flexural Modulus (psi)	Glass Transition Temp (°F)	C.T.E. (in./in./°F)	Color
RenShape 440	54	0.55	34	1,300	1,400	105,000	2,300	106,000	203	34.4 x 10 ⁻⁶	Red-Brown
RenShape 5440	60	0.60	37	1,300	2,900	101,526	2,900	106,000	203	30.5 x 10 ⁻⁶	Lt. Brown
RenShape 450	65	0.66	41	2,300	2,800	135,000	4,000	144,000	205	36.0 x 10 ⁻⁶	Lt. Brown
RenShape BM-70	60	0.67	42	1,570	3,600	139,104	4,340	125,770	185	27.7 x 10 ⁻⁶	Lt. Brown
RenShape 5460	60	0.70	43	1,886	3,625	139,236	4,351	152,000	187	30.5 x 10 ⁻⁶	Lt. Brown
RenShape 460	64	0.77	48	1,800	2,200	181,000	3,700	185,000	219	29.9 x 10 ⁻⁶	Lt. Brown
ASTM	D-2240	D-792	D-792	D-638	D-695	D-695	D-790	D-790	D-4065	D-3386	—

*Epoxy boards

Matched Adhesives & Repair Materials Guide

	RenShape 440	RenShape 5440	RenShape 450	RenShape BM-70	RenShape 5460	RenShape 460	Mix Ratio (by wt.)	Viscosity (cps)	Gel time (min.) @ 77°F	Light handling time (hr.)	Hardness (Shore D)	Density	Service temp. (°F)	Color	Notes
Adhesives															
Repro Light	X	X	X	X	X	X	1:1	1,200	10-11	4	55	0.59	128°F	Tan	Low-density polyurethane with good bond strength
Fast Set 505	X	X	X	X	X	X	1:1	10,000	5	0.5	85	1.11	200	Clear	Economical 5-minute epoxy
Fast Set 517	X	X	X	X	X	X	1:1	14,000	15-20	4	80	1.15	200	Clear	Epoxy w/longer gel times and short light handling time
Ren-Weld 103	X	X	X	X	X	X	100:26	2,100	20	10	68	1.08	128	Lt. Yellow	Low-viscosity epoxy, flow control agents prevent run-out
RenLam 1700-1	X	X	X	X	X	X	100:26	2,000	20	24	90	1.13	128	Lt. Yellow	Low-viscosity epoxy laminating resin, excellent bond strength
Repair Materials															
Quik-Fil	X	X	X	X	X	X	100:1.5	208,000	11	0.5	70	0.89	128°F	Brown	Low-density and low-viscosity polyester repair paste
TUF-Carv	X	X	X	X	X	X	100:1.5	581,000	10	0.5	71	1.14	128°F	4 options	Easy to machine polyester repair paste

LOCATIONS & TERMS

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Please see our website, www.FreemanSupply.com/aboutus for complete details and contact information on all of our locations.

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