

Product Data

PATTERN PLANK® - The "Red Stuff"® PP-1052

Pattern Plank® **PP-1052** is a dense, filled urethane Tooling Plank. This plank is a light-weight, tough, cost effective alternative to metal. Its tough, high-impact resistant properties will produce dimensionally stable tools. Applications include prototype and low-volume foundry patterns, core boxes, match plates, gating and risering. Other uses include metal forming, hammer forming, stretch press dies, and production checking and assembly fixtures.

PHYSICAL PROPERTIES

<u>Test Performed</u>	<u>U.S. Test Results</u>	<u>Metric Test Results</u>
Color	Red	
Hardness @ 75°F ¹	80 Shore D	
Density ²	71 lbs/ft ³	1.14 g/cm ³
Flexural Strength ³	12,800 psi	88.2 MPa
Flexural Modulus ³	331,000 psi	2,280 MPa
Tensile Strength ⁴	8,900 psi	61.4 MPa
Elongation@ Break ⁴	6.88%	
Compressive Strength ⁵	10,700 psi	74.1 MPa
Unnotched Izod Impact ⁶ (complete break)	8.39 ft lbs/in	468 J/m
Heat Deflection Temperature @ 264 psi ⁷	192°F	89°C
Operating Temperature @ 220°F	55 Shore D	
Coefficient of Linear Thermal Expansion ⁸	3.55 x 10 ⁻⁵ in/in/°F	6.39 x 10 ⁻⁵ mm/mm/°C
Machinability	Excellent	
Stability	See next page	

Recommended Adhesive	TCC-230/102 or 104 Adhesive System
Thixotropic Adhesive (matching)	TCC-252 A/B Adhesive System
Patch Paste	TCC-52 A/B Patch Paste
Fast Patch Paste	TCC-5220 A/B Fast Patch Paste

Standard Size Available: 2", 3", 4" T x 16" W x 60" L
50mm, 75mm, 100mm x 400mm x 1500mm

Testing performed by an Independent Certified Laboratory.

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|-------------------|------------------|
| 1. ASTM D 2240-91 | 5. ASTM D 695-96 |
| 2. ASTM D 792-91 | 6. ASTM D 256-93 |
| 3. ASTM D 790-96a | 7. ASTM D 648-95 |
| 4. ASTM D 638-96 | 8. ASTM D 696-91 |

STORAGE: Store all Tooling Planks on a flat surface at 60° - 100°F.

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STABILITY OF PP-1052 PATTERN PLANK®

	<u>Weight (g)</u>	<u>Length (mm)</u>
Initial (4" x 4" pieces)	593.81	99.69
After 24 hours at -30°F	594.00	99.40
After 24 hours at standard lab conditions	593.85	99.68
After 6 hours at 130°F	593.80	99.94
After 24 hours at standard lab conditions	593.86	99.69
After 168 hours at 100°F/100% Relative Humidity	595.74	99.75
After 24 hours at standard lab conditions	594.32	99.70
After 24 hours at standard lab conditions	594.31	99.70

RECOMMENDED CNC MACHINING INFORMATION

(Carbide Cutters are highly recommended)

	Inches per minute (Feed IPM)	Plunge (mm)	Spindle Speed (rpm)
2" E-Mill for Roughing	100	25	6000
3/4" Ball	75	20	3000+
1/2" Ball	60-75	10-20	3000+
1/2" x 1/32" R	40	20	4000
1/4" Ball	60	10-20	5000

These are possible recommendations. There may be some variance depending on cutters and CNC mill capabilities.

CUTTING SUGGESTIONS FOR TOOLING PLANKS

CUTTING HORIZONTALLY ON A PLANNER MILL: Head is a 10 insert, 8" in diameter. For best results use 5 inserts. Inserts are SFE-42E-10J-C5. We have found a C2 Carbide insert does not chip as easily. RPM 2200-2400 table feed 50-55 inches per minute. Some modifications may be needed.

SAW BLADES: A carbide-tipped, positive rake saw blade with air slots should be used, if possible. We suggest alternate top bevel ATB or triple chip grind TCG rpm, depending on the saw. We suggest 3,500 max rpm. Check with manufacturer on saw and blade size.

12" blade, 48 teeth

16" blade, 48 teeth

18" blade, 60 teeth

When sawing, you may need to back part away from blade to relieve heat and binding, then proceed with cut. It may be necessary to take more than one cut to achieve best finish.

PP1052.doc/Revised 071002
Supercedes 120699