



PP-1052 PATTERN PLANK®

Technical Data Sheet POLYURETHANE TOOLING BOARD Metal Forming - Patterns - Foundry

Density 71 lbs/ft³ (1.14g/cc), Hardness 80 Shore D

DESCRIPTION

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 to high volume foundry patterns, core boxes, match plates, gating and risering. Other uses include metal forming, hammer forming, stretch press dies, hemmingbucks and production checking and assembly fixtures. Capable of a polished surface suitable for thermoforming of plastics for optical applications.

PROPERTIES

- Dense fine surface
- Easy to seal and good to varnish
- Low dust formation when milled
- Easy machinability
- Very high dimensional stability
- Good compressive strength and edge stability
- Good heat distortion temperature

PHYSICAL PROPERTIES			
	Test Method	Units	Test Value
Color	Visual		red
Density at 74°F (23°C)	ASTM D 792-91	lbs/ft ³ (g/cc)	71 (1.14)
MECHANICAL PROPERTIES at 23°C			
Hardness (77°F/220°F: 25°C/104°C)	ASTM D 2240	Shore D1	80/55
Flexural strength	ASTM D 790-95a	psi (MPa)	12,800 (88)
Flexural modulus	ASTM D 790-95a	psi (MPa)	331,000 (2,280)
Tensile strength	ASTM D 638-95	psi (MPa)	8,900 (61)
Elongation	ASTM D 638-95	%	7
Compressive strength	ASTM D 695-91	psi (MPa)	4,054 (28)
Unnotched Izod Impact (complete break)	ASTM D 256-93	ft.Lbf/in (J/m)	8.39 (468)
Heat deflection temperature@264 psi	ASTM D 648-82	°F (°C)	140 (60)
Coefficient of thermal expansion (CTE)	TMA	10 ⁻⁶ .°F ⁻¹ (°C)	36 (64)
STABILITY OF PP-1052 MODEL PLANK®			
Condition	Weight(g)	Length(mm)	
Initial (2" x 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	
Additional 24 hours at standard lab conditions	594.31	99.70	

ASSEMBLY / FINISH

Ambient Use Adhesive System - TCC230 Epoxy Adhesive with TCC-102 or TCC-104 Hardeners
Fast Patch Paste - TCC-5220 A/B Fast Patch Paste

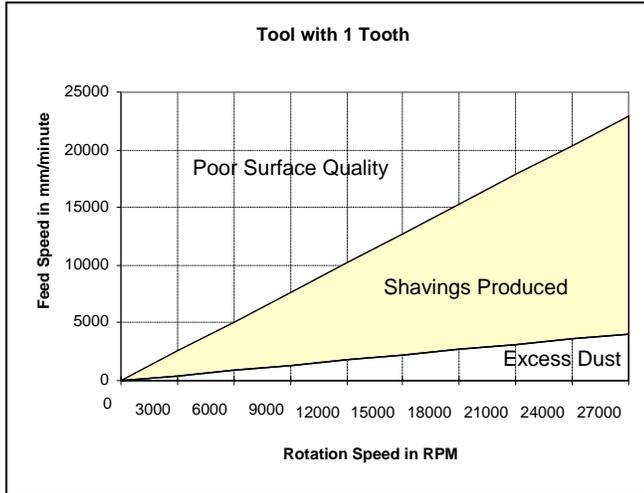
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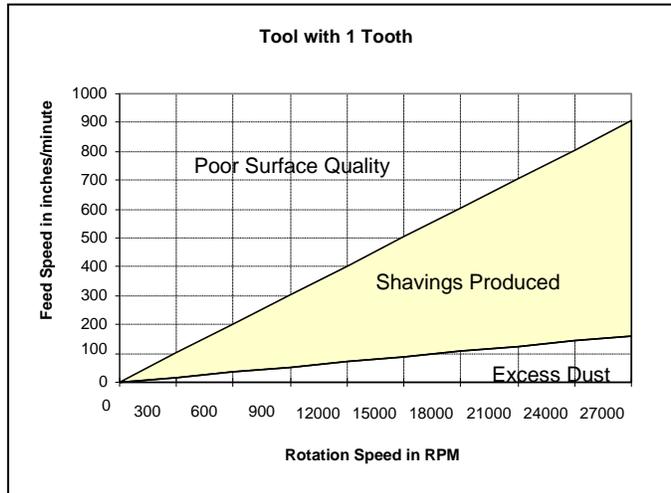
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Machining Recommendations



Metric Machining Envelope



English Machining Envelope

Machining Parameters

	Cutter edge velocity (Vc in ft/min (m/min))	Feed per tooth (fz in inches (mm)/revolution)
Rough shape	328 - 1312 (100 to 400)	0.006 – 0.028 (0.15 to 0.70)
Finish	1312 – 2625 (400 to 800)	0.002 – 0.004 (0.06 to 0.10)

$$n = ((12 \text{ English or } 1000 \text{ metric}) \times Vc) / (\pi \times Dc)$$

$$Vf = n \times fz \times Z$$

- Vc*: Cutter edge velocity in ft/min (m/minute)
- Dc*: Cutting diameter in inches (mm)
- n*: Spindle speed in revolution/minute
- fz*: Feed per tooth in inches (mm)/revolution
- Z*: Number of teeth
- Vf*: Feed speed in inches (mm)/minute

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 PLANER 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.



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STORAGE CONDITIONS

- Store flat in a dry place. Allow time for material to come to ambient temperature prior to bonding or machining.

HANDLING PRECAUTIONS

Normal health and safety precautions should be observed when handling these products:

- Ensure good ventilation to prevent dust or chip accumulation
- Wear gloves, and safety glasses.
- Do not smoke when machining.

For additional information, please consult Safety Data Sheet (SDS).

DISCLAIMER

The information contained in this technical data sheet results from research and tests conducted in our laboratories under precise conditions. Seller cannot anticipate all conditions under which seller's products, or the products of other manufacturers in combination with seller's products, may be used. It is the responsibility of the user to determine the suitability of the SikaAxson's products, under their own conditions, before commencing with the proposed application. In no event shall SikaAxson US be liable for any direct, indirect, punitive, incidental, special, and/or consequential damages, to property or life, whatsoever arising out of or connected with the use or misuse of our products.

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