

## TECHNICAL DATA SHEET

### PP-1052 PATTERN PLANK®

#### POLYURETHANE TOOLING BOARD METAL FORMING - PATTERNS - FOUNDRY

#### 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.*

- Dense fine surface
- Easy to seal and good to varnish
- Low dust formation when milled
- High dimensional stability
- Good compressive strength and edge stability
- Easy machinability

#### APPLICATIONS

- Checking fixtures
- Holding fixtures
- Temporary models
- Vacuum forming molds
- Headliner tools
- Low-volume foundry patterns

#### PHYSICAL PROPERTIES

Property	Test method	Unit(s)	Value
Color			Red
Density at 74°F (23°C)	ASTM D 792-91	lbs/ft3 (g/cc)	71 (1.14)
Hardness (77°F/220°F: 25°C/104°C)	ASTM D 2240	Shore D	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)	4,051 (28)
Unnotched Izod Impact (complete break)	ASTM D 256-93	ft.Lbf/in2 (kJ/m2 )	8.39 (468)
Heat deflection temperature @ 264 psi	ASTM D 648-82	°F (°C)	140 (60)

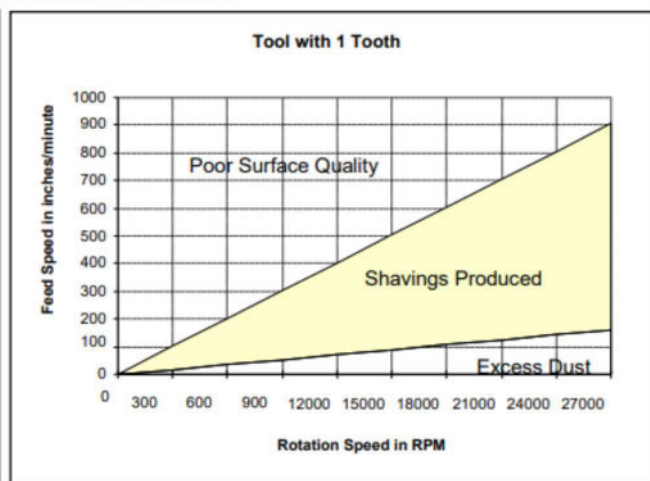
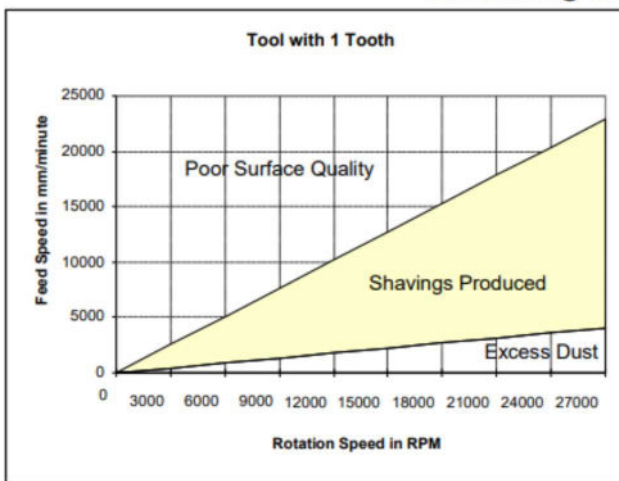
Coefficient of thermal expansion (CTE)	TMA	ppm/°F (°C)	36 (64)
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STABILITY OF PP-1052 MODEL PLANK®		
Condition	Weight(g)	Length(mm)
Initial (2" x 4" x 4" pieces)	593.81	99.69
After 24 hours at -30°F	594.00	99.40
After 24 hours at standard lab conditions	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

DP-1052 board can be bonded with adhesive system - TCC230 Epoxy with TCC-102 or TCC-104 Hardeners  
Fast Patch Paste - TCC-5220 A/B Fast Patch

### 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)

$n = ((12 \text{ English or } 1000 \text{ metric}) \times Vc) / (\pi \times Dc)$	$Vf = n \times fz \times Z$
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- 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 TCC 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.



## HANDLING PRECAUTIONS

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

- Ensure good ventilation.
- Wear gloves, glasses and protective clothes.
- Do not smoke when machining.

For further information, please consult the Safety Data Sheets.

## STORAGE CONDITIONS

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

## PACKAGING

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Packaging information on request, please contact your local sales representative or find your local contact on [www.sikaadvancedresins.us](http://www.sikaadvancedresins.us)

## LEGAL NOTICE

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## CONTACT

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### UNITED STATES

#### **Sika Corporation**

30800 Stephenson Highway

Madison Heights, Michigan 48071 – USA

Tel.: (+1) 248 588-2270

Fax: (+1) 248 577-0810

E-mail: [advanced.resins@us.sika.com](mailto:advanced.resins@us.sika.com)

Website: [www.sikaadvancedresins.us](http://www.sikaadvancedresins.us)

