BUILDING TRUST

TECHNICAL DATA SHEET

DP-1051 DIE PLANK®

POLYURETHANE TOOLING BOARD
FIXTURES - THERMOFORMING - FOUNDRY

DESCRIPTION

DIE PLANK® DP-1051 is an aluminum filled urethane Tooling Plank specifically developed as a lightweight, tough, and cost effective alternative to aluminum for abrasion-resistant applications such as checking and assembly fixtures that experience abusive production environments. DP-1051 is a dimensionally stable material with superior machining characteristics used to produce fast and accurate checking fixtures, holding fixtures, and many other types of tooling including vacuum-form tools, low-volume foundry patterns, temporary models, and headliner tools.

- *Dense fine surface*
- *Very high dimensional stability*
- *Easy to seal and good to varnish*
- *Low dust formation when milled*
- *Very high dimensional stability*
- *Good compressive strength and edge stability*
- *Good heat distortion temperature*
- *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			Gray
Density at 74°F (23°C)	ASTM D 792-91	lbs/ft3 (g/cc)	52 (0.83)
Hardness	ASTM D 2240	Shore D	75
Flexural strength	ASTM D 790-95a	psi (MPa)	7,180 (49)
Flexural modulus	ASTM D 790-95a	psi (MPa)	317,000 (2,190)
Tensile strength	ASTM D 638-95	psi (MPa)	2,910 (20)
Elongation	ASTM D 638-95	%	2
Compressive strength	ASTM D 695-91	psi (MPa)	7,420 (51)
Unnotched Izod Impact (complete break)	ASTM D 256-93	ft.Lbf/in2 (kJ/m2)	2.52 (135)

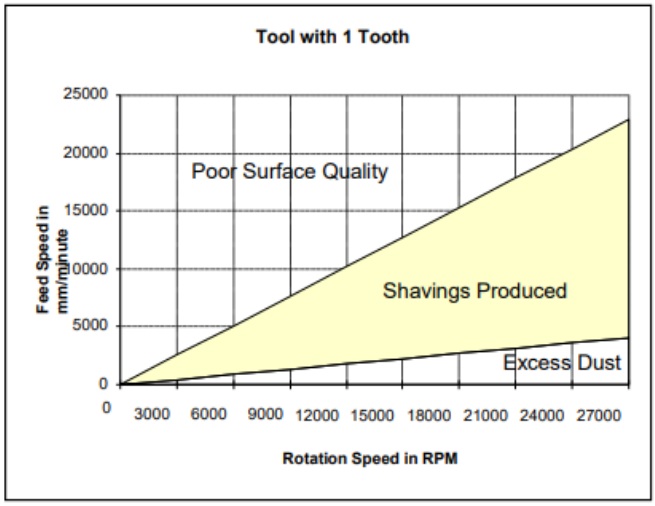
Heat deflection temperature @ 264 psi	ASTM D 648-82	°F (°C)	188 (87)
Coefficient of thermal expansion (CTE)	TMA	ppm/°F (°C)	28 (50)

STABILITY OF DP-1051 MODEL PLANK®		
Condition	Weight(g)	Length(mm)
Initial (2" x 4" x 4" pieces)	429.62	101.05
After 24 hours at -30°F	430.15	100.77
After 24 hours at standard lab conditions	429.57	101.03
After 6 hours at 130°F	429.58	101.28
After 24 hours at standard lab conditions	429.60	101.08
After 168 hours at 100°F/100% Relative Humidity	430.37	101.10
After 24 hours at standard lab conditions	429.97	101.09
Additional 24 hours at standard lab conditions	429.94	101.10

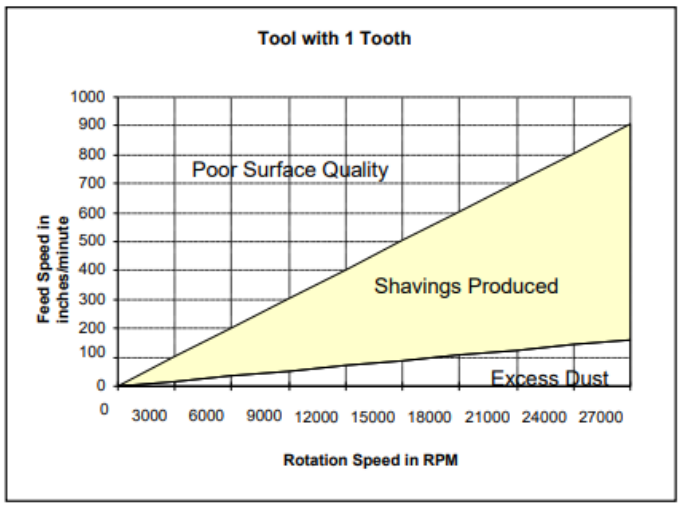
ASSEMBLY / FINISH

DP-1051 board can be bonded with adhesive system - TCC230 Epoxy with TCC-102 or TCC-104 Hardeners.
Patch Paste – P-17 Gray with White Cream Hardener

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 -1640 (100 to 500)	0.006 – 0.028 (0.15 to 0.70)
Finish	1312 – 2625 (400 to 800)	0.003 – 0.004 (0.07 to 0.10)

n = (12 English or 1000 metric) X Vc) / (PI X Dc)	Vf = n X fz X Z
• *Vc: Cutter edge velocity in ft/min (m/minute)*	• *fz: Feed per tooth in inches (mm)/revolution*
• *Dc: Cutting diameter in inches (mm)*	• *Z: Number of teeth*
• *n: Spindle speed in revolution/minute*	• *Vf: Feed speed in inches (mm)/minute*

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.

HANDLING PRECAUTIONS

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

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

PACKAGING

Packaging information on request, please contact your local sales representative or find your local contact on www.sikaadvancedresins.us

LEGAL NOTICE

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CONTACT

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
Website: www.sikaadvancedresins.us