DP-1051 Die Plank®

Technical Data Sheet

DENSITY 52 lbs/ft³ (0.83g/cc)
HARDNESS 75 SHORE D
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 charateristics 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.*

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			
Color			gray
Density at 74°F (23°C)	ASTM D 792-91	lbs/ft³ (g/cc)	52 (0.83)
MECHANICAL PROPERTIES at 23°C			
Hardness 77°F (25°C)	ASTM D 2240	Shore D1	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/in (J/m)	2.52 (135)
Heat deflection temperature@264 psi	ASTM D 648-82	°F (°C)	188 (87)
Coefficient of thermal expansion (CTE)	TMA	10^{-6}.°F^{-1} (°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

Ambient Use Adhesive System – TCC-230 Epoxy Adhesive with TCC-102 or TCC-104 Hardeners
Elevated Use Temperature Adhesive – EL-336 R/H
Patch Paste – P-17 Gray with White Cream Hardener

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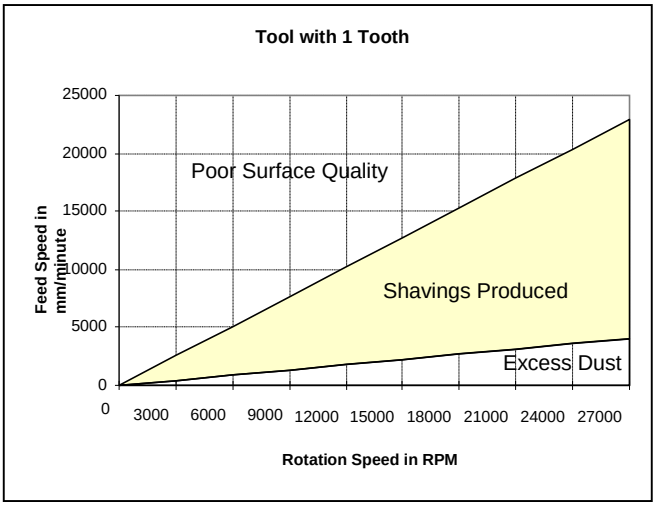
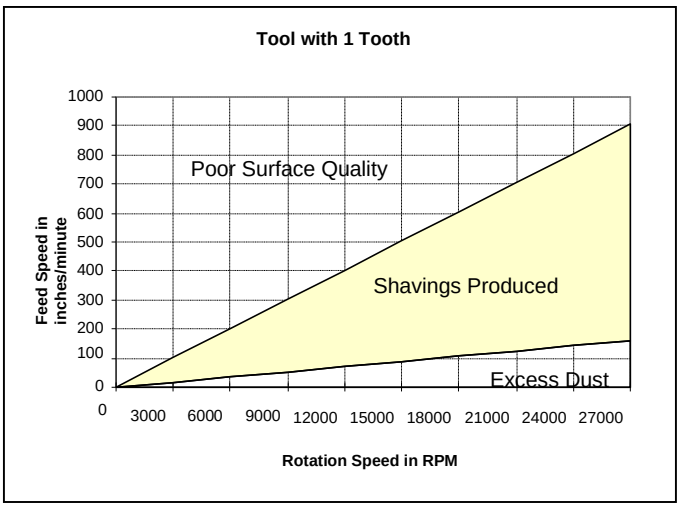
Machining Recommendations



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 -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)*
- *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 further information, please consult the material safety data sheet.

GUARANTEE

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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