



# Technical Information: PSF 27

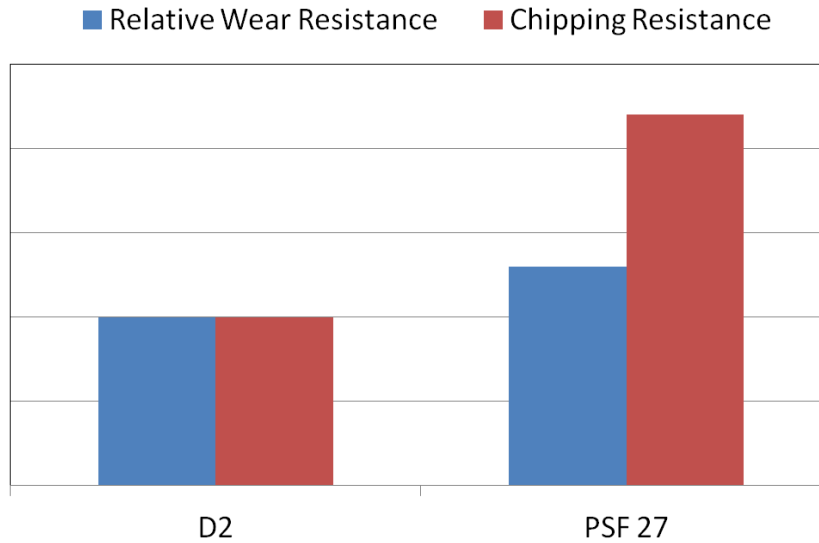


PSF 27 is a premium powdered metal tool steel. Supplied by DanSpray.  
 PSF 27 has an enhanced D2 chemical composition making it ideal for many cold work applications requiring higher toughness and higher wear resistance than D2.  
 The PM structure results in improved toughness and chip resistance compared to conventionally produced tool steels.

**Typical Chemical Composition**

Carbon	1.55%	Chromium	12.00%
Molybdenum	0.75%	Silicon	0.40%
Vanadium	1.00%	Manganese	0.40%
Nitrogen	0.07%		

## SBSM Tool Steel Properties Comparison



## Physical Properties

- Modulus of Elasticity.....30 psi x 10<sup>6</sup> .....(207 GPa)
- Density..... 0.283 lb/in<sup>3</sup>
- Annealed Hardness.....215-255 Brinell Hardness (BHN)
- Machinability.....Similar to D2 Tool Steel



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### Heat Treatment

#### Annealing

Heat to 1600°F, hold two hours  
Slow cool 25°F/hour to 1000°F  
Then air or furnace cool to room temperature

#### Stress Relieving

Performed prior or after machining to minimize distortion in heat treating  
1100/1200°F, hold two hours  
then air cool to room temperature

#### Hardening

Salt bath, protective atmosphere, or vacuum furnace equipment preferred.

#### High Heat (Austenitizing)

1870/1900°F for 30 minutes at heat.

#### Quench

Salt bath quench to 1000-1100°F, equalize, then air cool to 150°F.  
Vacuum or atmosphere quench rate of a minimum 50 degrees F per minute down to 1200F is critical to achieve best heat treat response.  
Cool to 150°F.

Temper immediately following quench

#### Tempering

Minimum 400°F tempering temperature required.  
Double tempering is required, triple tempering recommended.  
Air cool to room temperature between tempers.

### Typical Heat Treat Response

Hardening Temp		Tempering Temp		Hardness HRC	Longitudinal Size Change
°F	°C	°F	°C		
1900	1038	500	260	60.5	+0.03 %
		950	510	62	+0.04 %

Thermal Conductivity

Room T  
200 F

BTU/hr/ft/Degree F

15