Specialty Metals LLC

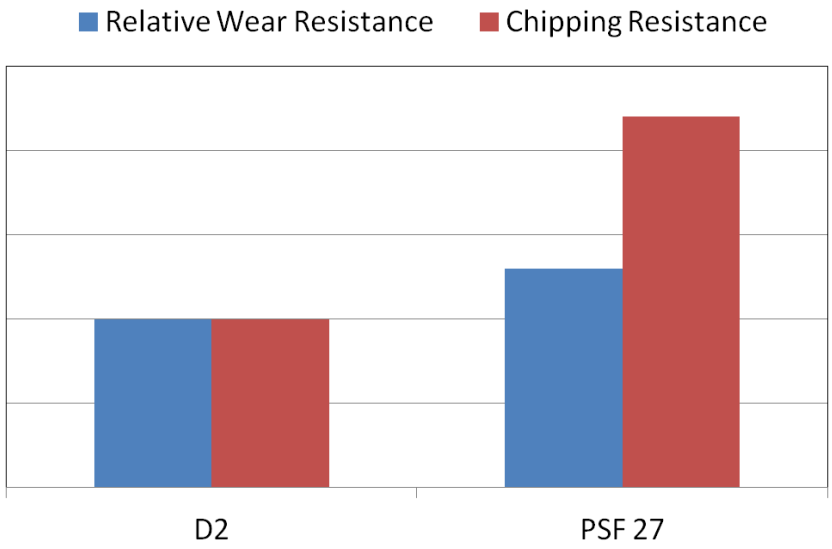
Technical Information: PSF 27

DanSpray -High Performance Steels

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 10^6 …….(207 GPa)
Density…… 0.283 lb/in^3
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 °F	Hardening Temp °C	Tempering Temp °F	Tempering Temp °C	Hardness HRC	Longitudinal Size Change
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

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