

Technical Information – PSF27

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PSF27 is a chromium, molybdenum, and vanadium alloyed cold work tool steel(AISI D2 analysis +) produced using the Spray Forming Process. The Spray Forming Process allows for rapid solidification resulting in materials with a very fine grain and homogeneous structure. This structure results in improved toughness, wear resistance, crack resistance, and higher hardness. It also yields more predictable heat treatment results-dimensional stability.

Typical Chemical Composition

Carbon 1.55%
Silicon .40%
Manganese .40%
Vanadium 1.00%
Chromium 12.00%
Molybdenum .75%
Nitrogen 0.30%

Common Applications

Blanking Dies
Forming Rolls
Punches
Knives
Thread Roll Dies
Crush Cutting Tools

SBSM Tool Steel Properties Comparison

Physical Properties

Modulus of Elasticity ...30 psi x 10⁶ ...(207 GPa)
Density ...0.2833 lb/in³ ...(7861kg/M³)
Annealed Hardness ...215-255 Brinell Hardness(BHn)
Machinability ...50-60% of 1% carbon Steel
Thermal Conductivity ...15 BTU/hr/ft/°F(200F)

Heat Treatment

Preheat: 1200/1300°F, equalize.

High Heat (Austenitizing): 1875/1900°F, hold 30 minutes at temperature.

Quench: Air or positive pressure vacuum. Cool to 150°F.

Temper: 400°F/975°F - hold 2 hours at temperature, air cool to room temperature between temps. Temper twice. Recommended tempering temperature 930-975°F.

Size Change During Heat Treat

Hardening Temp		Tempering Temp		HRC	Longitudinal Size Change %
F	C	F	C		
1900	1040	500	260	60.5	+03
1900	1040	950	510	62	+04

Annealing: Heat to 1600°F, hold for two hours at temperature, then cool slowly(25°F/hr) to 1000°F, then air cool.

Or

Heat to 1600°F, hold two hours at temperature, cool to 1425°F, hold six hours then air cool.

Stress Relieving:

Annealed Material: Heat to 1200°F, hold for two hours at temperature, cool in still air to room temperature.

Hardened Material: Heat to 25/50°F below tempering temperature, hold two hours then cool in still air to room temperature

Service Center Locations:

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321 West 32nd Street
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Fax: 704-342-0985

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