



SB Specialty Metals LLC

Your **First Choice** for Specialty Metals

PSB27 - Technical Data

General Description:

PSB27 is a premium spray formed high carbon, high chrome steel. The spray forming process yields evenly distributed round carbides which improves wear resistance and toughness. In addition, the high chromium content provides good corrosion resistance. PSB27 has been used extensively for industrial knives, cutlery knives, and powder compaction dies.

Example of applications:

Powder compaction tooling, powder manufacture parts for sintering, industrial knives, cutlery knives, rotational cutting dies and thread rolling dies.

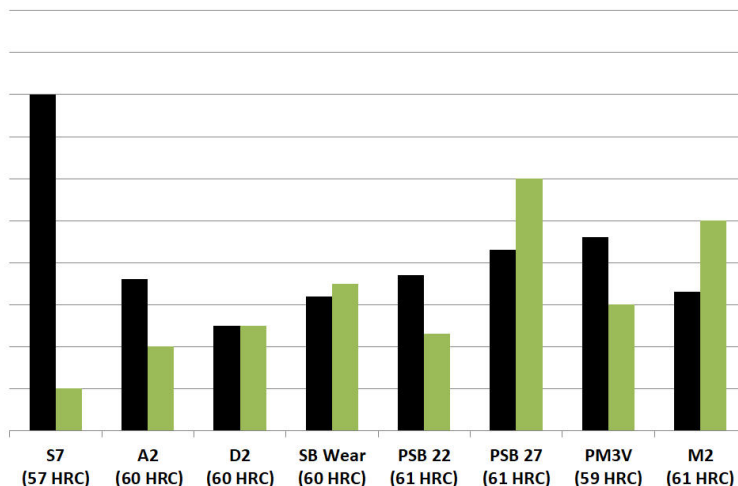
Chemical Composition

Carbon	Molybdenum	Vanadium	Chromium	Silicon	Manganese
1.50 - 1.60%	0.65 - 0.80%	0.75 - 0.90%	11.00 - 12.50%	0.40 - 0.50%	0.30 - 0.45%

Comparison Chart

Coldwork / PM Comparison Chart

■ Toughness ■ Wear Resistance



Typical Heat Treat Response

Hardening Temp °F	Tempering Temp °F	Hardness HRC	Charpy C-Notch Ft.-lbs
1900	400	61	24
	500	60	26
	650	59	25
	800	58	24
	950	61	23

Size Changes During Hardening

Hardening Temp °F	Tempering Temp °F	HRC	Longitudinal Size Change %
1900	500	60.5	+0.03%
1900	950	61	+0.04%

Surface Treatment

Standard surface treatments such as nitriding, titanium-nitride coating, or hard chrome plating can be used. Prior to nitriding or PVD treatment, must double temper at or above process temperature.



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Heat Treatment

Annealing

Heat to 1600°F, hold for 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)

Preheat to 1350-1400°F - let part equalize. Then austenitize at 1870/1900°F for a minimum of 30 minutes at austenitizing temperature.

Quench

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

Physical Properties

Modules of Elasticity	30 PSI x 10 ⁶(207GPa)	Density	0.283 lb/in ³
Annealed Hardness	215-255 Brinell Hardness (BHN)	Machinability	90% of D2