



# SB Specialty Metals LLC

Your **First Choice** in Specialty Metals

## SB Wear – Technical Data

### General Descriptions:

SB Wear is an air hardening tool steel with an excellent combination of high wear resistance and toughness. The grade is intended for applications that require higher wear resistance than D2 and toughness similar to A2.

The high tempering temperatures of SB Wear makes it a good substrate material for coating.

### Example of applications:

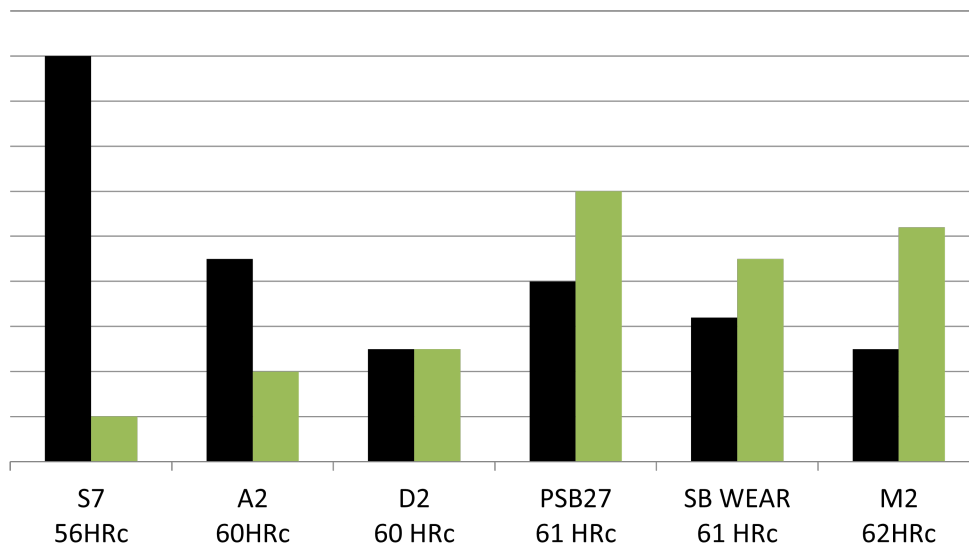
Shredder blades, shear blades, punches, knives, blanking dies, thread rolling dies, coining dies, trim dies, gauges and various wear parts.

### Chemical Composition

Carbon	Manganese	Silicon	Chromium	Vanadium	Tungsten	Molybdenum
1.00-1.15%	0.25-0.40%	1.00- 1.20%	7.25-7.75%	2.20-2.60%	1.05-1.25%	1.45-1.65%

### Comparison Chart

■ Toughness ■ Wear Resistance



### Typical Heat Treat Response

Tempering Temp °F	Hardness (HRC)		
	1850 °F	1950 °F	2050 °F
As quenched	64	64	63
900	62	63	62
950	62	63	65
1000	59	61	64
1025	57	59	62
1050	55	56	60

### Size Changes During Hardening

Hardening Temp (F)	Tempering Temp	HRC	Longitudinal Size Change %
1850	950	62	0.0/+0.06%
1950	950	63	0.0/+0.08%

### Surface Treatment

SB Wear can be nitrided, or titanium-nitride coated. If the CVD TiN treatment is used, care is required in vacuum hardening.



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### Heat Treatment

#### Annealing

Heat to 1600 °F, hold two hours.  
Slow cool 50 °F/hour to 1200 °F.  
Then air cool or furnace cool to room temperature. Hardness BHN 220/260.

#### Stress Relieving

After rough machining and prior to heat treatment.  
1200°F, hold two hours, then air or furnace cool to room temperature.

#### Hardening

Protective atmosphere or vacuum furnace equipment preferred.

#### High Heat (Austenitizing)

Preheat 1550°F-let parts equalize. High heat-1850/2050 °F, hold at temperature for 20-30 minutes.

#### Quench

Air or positive pressure quench to below 150 °F. Surface protection techniques are necessary to prevent decarburization or oxidation (scaling).

Temper immediately following quench.

#### Tempering

900 / 1050 °F tempering temperature required.  
Double tempering is required, triple tempering recommended. Two hours at tempering temperature per temper. Air cool to room temperature between tempers.

### Physical Properties

<b>Modulus of Elasticity</b>	30-32 PSI x 10 <sup>6</sup> (207-221 GPa)	<b>Density</b>	0.283 lb/in <sup>3</sup>
<b>Annealed Hardness</b>	220 - 260 Brinell Hardness (BHN)	<b>Machinability</b>	60 % of O1