



## Technical Information: SB Wear

**SB WEAR IS AN AIR HARDENING TOOL STEEL WITH AN EXCELLENT COMBINATION OF HIGH WEAR RESISTANCE AND TOUGHNESS**

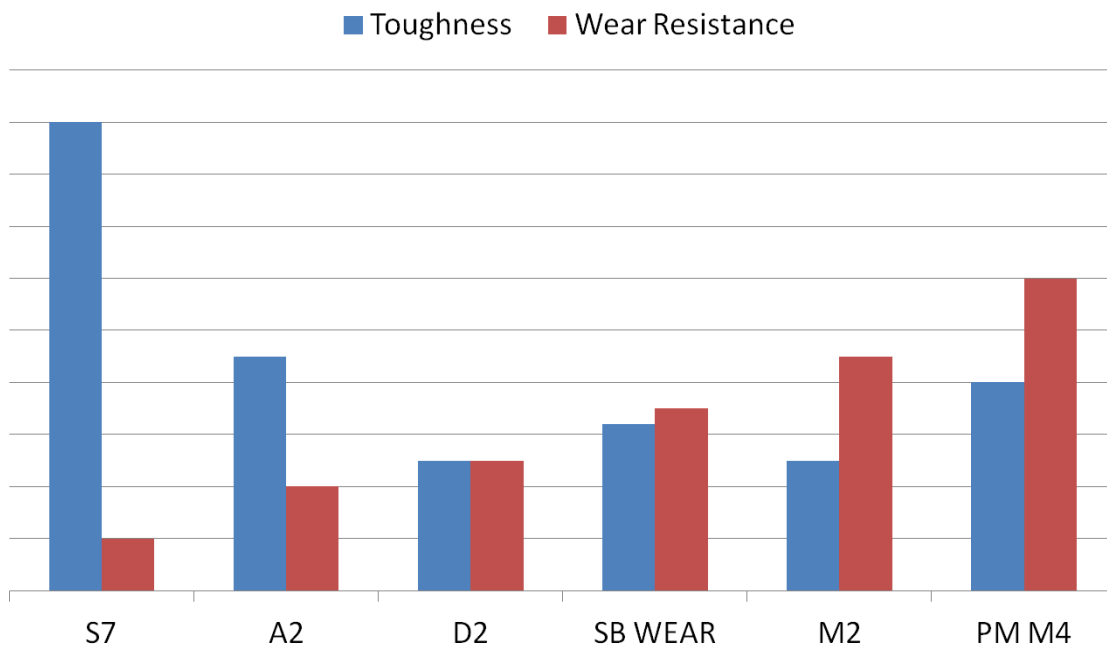
**THE GRADE IS INTENDED FOR APPLICATIONS THAT REQUIRE HIGHER WEAR RESISTANCE THAN D2 AND TOUGHNESS SIMILAR TO A2**

**SB WEAR'S HIGH TEMPERING TEMPERATURES MAKE IT A GOOD SUBSTRATE MATERIAL FOR COATINGS**

### TYPICAL CHEMICAL COMPOSITION

CARBON	1.10%	CHROMIUM	7.50%
MOLYBDENUM	1.60%	SILICON	1.10%
VANADIUM	2.40%	MANGANESE	0.35%
SULFUR	0.03% MAX	TUNGSTEN	1.15%

### 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**.....225-255 BRINELL HARDNESS (BHN)

**MACHINABILITY**.....SIMILAR TO M2 TOOL STEEL



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### HEAT TREATMENT

#### ANNEALING

HEAT TO 1600°F, HOLD TWO HOURS  
SLOW COOL 20°F/HOUR TO 600°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)

1850/2050°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.  
TEMPER IMMEDIATELY FOLLOWING QUENCH

#### TEMPERING

MINIMUM 900°F TEMPERING TEMPERATURE REQUIRED.  
DOUBLE TEMPERING IS REQUIRED, TRIPLE TEMPERING RECOMMENDED.  
AIR COOL TO ROOM TEMPERATURE BETWEEN TEMPERS.

### TYPICAL HEAT TREAT RESPONSE

TEMPERING TEMP °F	HARDENING TEMP 1850°F	HARDENING TEMP 1950°F	HARDENING TEMP 2050°F
As QUENCHED	64	64	63
900	62	63	62
950	62	62	64
1000	59	61	64
1025	58	59	62
11050	56	56	60