BÖHLER

BÖHLER S500

HIGH SPEED STEELS

Available Product Shapes

Long Products	Plates	Round Bar	Round Ground Bar

Product Description

BÖHLER S500 – "The fireproof one"
In the family of conventional high-speed steels, this alloy combines excellent cutting properties with very high hot hardness.

Properties

Good Toughness & Ductility

High Wear Resistance

Very high Compressive strength

High Edge Stability

Good Grindability

Very high Hot Hardness

Applications

- Blades for Sawing Machines
- End Mills
- Twist Drills and Taps
- Broaches and Reamers
- Gear Cutting, Shaving and Shaping Tools
- Thread rolling
- Cold Forming / Coining
- Special Cutting Tools

Material designation	
1.3247	SEL
HS2-9-1-8	EN

Standards	
4957	EN ISO

Chemical composition

C	Si	Mn	Cr	Mo	V	W	Co
1.10	0.50	0.20	3.90	9.20	1.00	1.40	7.80

voestalpine BÖHLER Edelstahl GmbH & Co KG
www.voestalpine.com/bohler-edelstahl

voestalpine
ONE STEP AHEAD.

Material characteristics

	Compressive strength	Grindability	Red hardness	Toughness	Wear resistance	Edge Stability
BÖHLER S500	★★★★	★★★	★★★★	★★	★★★	★★★
BÖHLER S200	★★★	★★	★★★	★★	★★★	★★
BÖHLER S290 MICROCLEAN	★★★★★	★	★★★★	★★	★★★★★	★★★★
BÖHLER S390 MICROCLEAN	★★★★	★★★	★★★★	★★★★	★★★★	★★★★
BÖHLER S400	★★★	★★★	★★★	★★★	★★	★★
BÖHLER S401	★★	★★★	★★	★★★	★★	★★★
BÖHLER S404	★★	★★★	★★	★★★	★★	★★
BÖHLER S590 MICROCLEAN	★★★★	★★★	★★★★	★★★	★★★	★★★
BÖHLER S600	★★★	★★★	★★★	★★	★★	★★★
BÖHLER S607	★★★	★★★	★★★	★★	★★★	★★★
BÖHLER S690 MICROCLEAN	★★★	★★★	★★	★★★★★	★★★	★★
BÖHLER S700	★★★	★★	★★★★	★★	★★★★	★★★★
BÖHLER S705	★★★	★★★	★★★★	★★	★★	★★★★
BÖHLER S790 MICROCLEAN	★★★	★★★	★★	★★★★	★★	★★★

Delivery condition

Heat treatment

Annealing

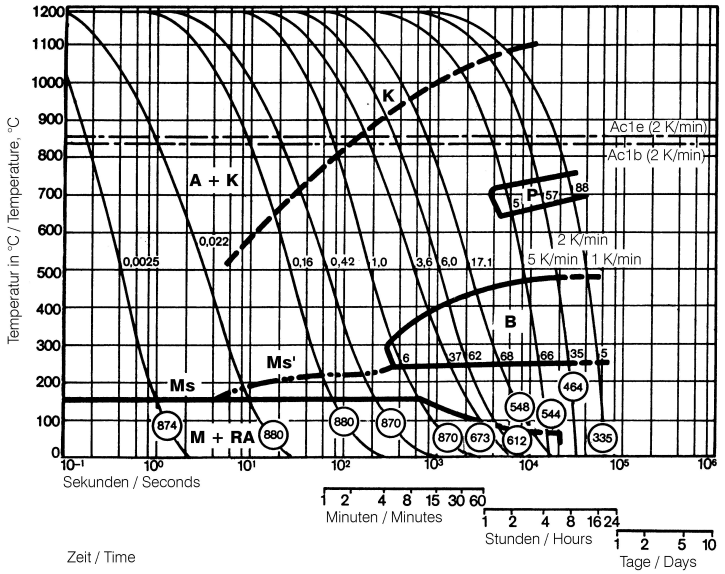
Temperature (°C / °F)	770 / 1418 - 840 / 1544	Controlled slow cooling in furnace (10 to 20°C / h) to approx. 600°C (1110°F), air cooling.

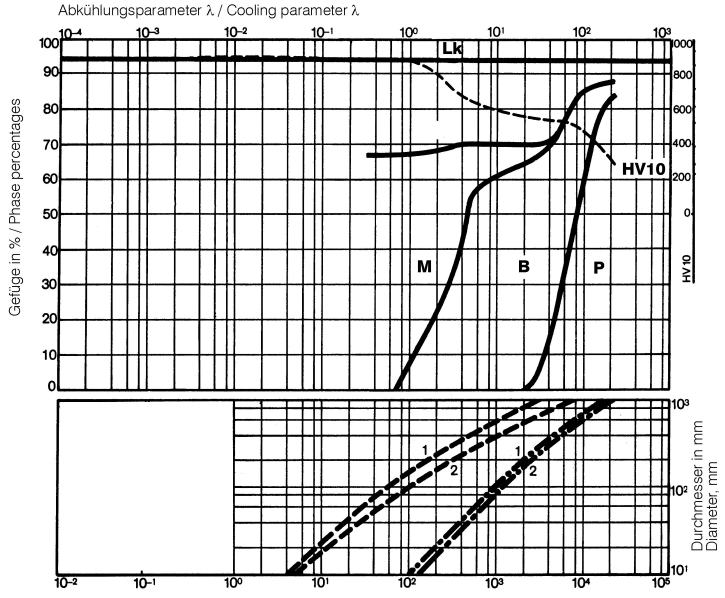
Stress relieving

Temperature (°C / °F)	600 / 1112 - 650 / 1202	Slow cooling furnace. To relieve stresses set up by extensive machining or in tools of intricate shape. After through heating, hold in neutral atmosphere for 1 to 2 hours.

Hardening and Tempering

Temperature (°C / °F)	1160 / 2120 - 1180 / 2156	Oil, air, salt bath (500 - 550°C (932 - 1022°F)), gas.


Temperatur in °C / Temperature, °C
K
Ac1e (2 K/min)
Ac1b (2 K/min)
A + K
P
2 K/min
5 K/min
1 K/min
B
Ms'
Ms
M + RA
Sekunden / Seconds
Minuten / Minutes
Stunden / Hours
Tage / Days
Zeit / Time


Abkühlungsparameter λ / Cooling parameter λ
Gefüge in % / Phase percentages
Lk
HV10
M
B
P
Durchmesser in mm
Diameter, mm
Kühlzeit von 800°C auf 500°C in Sek. / Cooling time in sec. from 800°C to 500°C (1472 - 932°F)

Physical Properties

Temperature (°C / °F)	20 / 68
Density (kg/dm^3 / lb/in^3)	8.1 / 0.29
Thermal conductivity (W/(m.K) / BTU (IT) ft/hr/ft^2/F)	20 / 11.56
Specific heat (J/(kg.K) / BTU (IT) lb/F)	429 / 102.46
Spec. electrical resistance (Ohm.mm^2/m / Ohm.inch^2/ft)	0.52 / 0
Modulus of elasticity (10^{3}N/mm^2 / 10^{3}ksi)	220 / 31.91

Thermal Expansions

Temperature (°C / °F)	100 / 212	200 / 392	300 / 572	400 / 752	500 / 932	600 / 1112	700 / 1292
Thermal expansion (10^{-6} m/(m.K) / 10^{-6} inch/(inch.F))	11 / 6.111	11.5 / 6.389	11.9 / 6.611	12.3 / 6.833	12.4 / 6.889	12.5 / 6.944	12.5 / 6.944

For more information see www.voestalpine.com/bohler-edelstahl

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