HIGH SPEED STEELS

Available Product Variants

Long Products | Round Bar | Plates | Round Ground Bar

Product Description

BÖHLER S705 – "The industrial one"

The conventional high-speed steel for industrial applications in machining. With a well-balanced alloy position and cobalt content, this type always manages to get the job done. Cobalt-alloyed molybdenum high-speed steel with high hardness, excellent cutting properties, outstanding compressive strength, high hot hardness, and good toughness.

Process Melting

Airmelted

Properties

- Toughness & Ductility: good
- Wear Resistance: high
- Compressive strength: very high
- Edge Stability: high
- Grindability: good
- Hot Hardness (red hardness): very high

Applications

- Broaches and Reamers
- Twist Drills and Taps
- End Mills
- Special Cutting Tools
- Gear Cutting, Shaving and Shaping Tools
- Blades for Sawing Machines

Technical data

Material designation	
1.3243	SEL
HS6-5-2-5	EN

Standards	
4957	EN ISO

Chemical composition (wt. %)

C	Cr	Mo	V	W	Co
0.92	4.1	5	1.9	6.2	4.8

Material characteristics

	Compressive strength	Grindability	Red hardness	Toughness	Wear resistance	Edge Stability
BÖHLER S705	★★★	★★★	★★★★	★★	★★	★★★★
BÖHLER S200	★★★	★★	★★★	★★	★★★	★★
BÖHLER S400	★★★	★★★	★★★	★★★	★★	★★
BÖHLER S401	★★	★★★	★★	★★★	★★	★★★
BÖHLER S404	★★	★★★	★★	★★★	★★	★★
BÖHLER S500	★★★★	★★★	★★★★	★★	★★★	★★★
BÖHLER S600	★★★	★★★	★★★	★★	★★	★★★
BÖHLER S607	★★★	★★★	★★★	★★	★★★	★★★
BÖHLER S630	★★★	★★★	★★★	★★	★★	★★★
BÖHLER S730	★★★	★★★	★★★★	★★	★★	★★★★

Delivery condition

Annealed

Hardness (HB)	max. 280 | drawn execution max. 290HB
Tensile Strength (N/mm² | ksi)	980 | 143

Heat treatment

Annealing

Temperature	770 to 840 °C | 1418 to 1544 °F	Controlled slow cooling in furnace (10 to 20°C/h / (50 to 68°F/h)) to approx. 600°C (1112°F), air cooling.

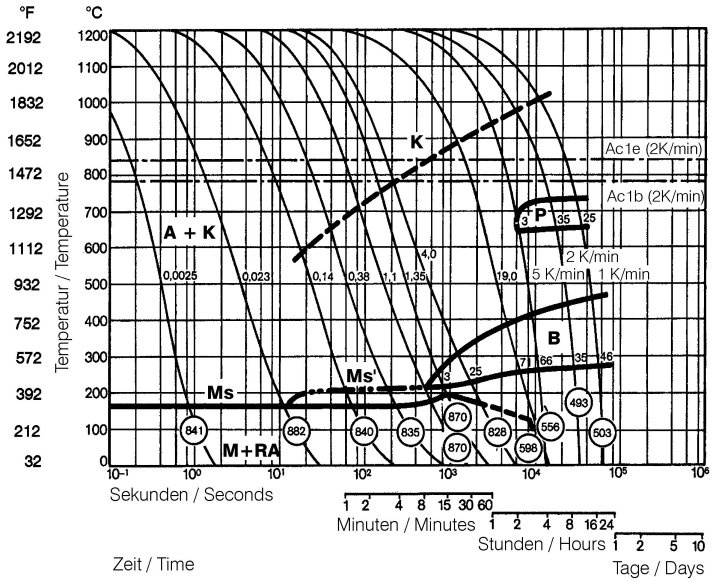
Stress relieving

Temperature	600 to 650 °C | 1112 to 1202 °F	Slow cooling in 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.

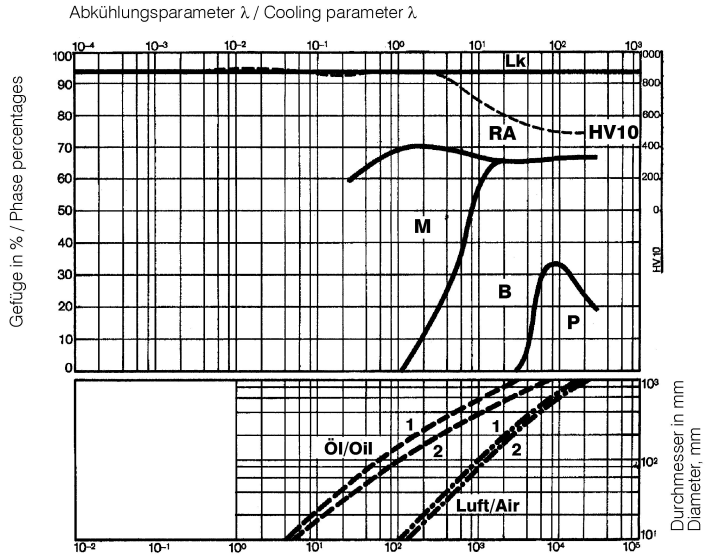
Hardening and Tempering

Temperature	1190 to 1210 °C | 2174 to 2210 °F	Oil, air, salt bath (500 - 550°C (932 - 1022°F)), gas.

Continuous cooling CCT curves

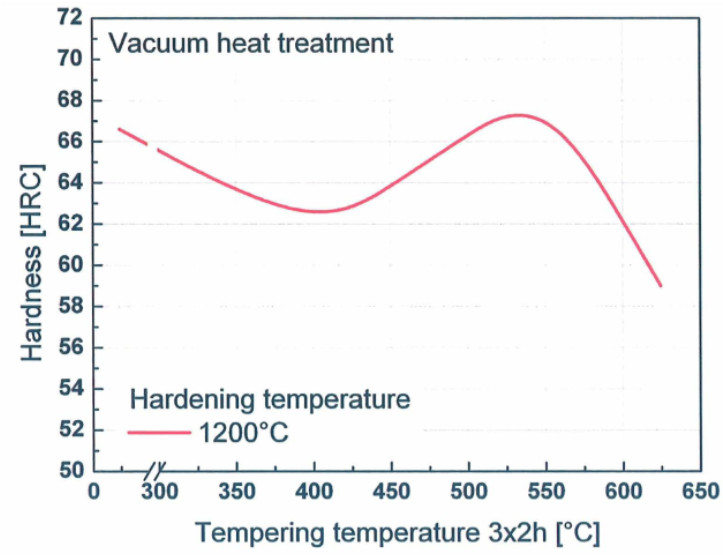


Quantitative phase diagram



Kühlzeit von 800°C auf 500°C in Sek. / Cooling time in sec. from 800°C to 500°C (1472 - 932°F)

Tempering Chart



Physical Properties

Temperature (°C | °F)	20 | 68
Density (kg/dm^3 | lb/in^3)	7.9 | 0.29
Thermal conductivity (W/(m.K) | BTU (IT) ft/hr/ft^2/F)	21 | 12.13
Specific heat (J/(kg.K) | BTU (IT) lb/F)	420 | 100.32
Spec. electrical resistance (Ohm.mm^2/m | 10^{-4} Ohm.inch^2/ft)	0.49 | 2.32
Modulus of elasticity (10^{3}N/mm^2 | 10^{3}ksi)	224 | 32.49

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))	10.5 | 5.8	10.83 | 6	11.14 | 6.2	11.47 | 6.4	11.81 | 6.6	12.12 | 6.7	12.44 | 6.9

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

The data contained in this brochure is merely for general information and therefore shall not be binding on the company. We may be bound only through a contract explicitly stipulating such data as binding. Measurement data are laboratory values and can deviate from practical analyses. The manufacture of our products does not involve the use of substances detrimental to health or to the ozone layer.

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voestalpine
ONE STEP AHEAD.