

# HIGH SPEED STEELS

## Available Product Shapes

Long Products

## Product Description

### BÖHLER S601 – "The high-speed steel"

Ideal for mills, spiral bits, and taps, broaches, cold-work tools. BÖHLER S601 is the most commonly used high-speed steel and is the starting material for our customers who deal with high-speed steel.

## Properties

High Toughness & Ductility

High Wear Resistance

High Compressive strength

High high Edge Stability

High Grindability

High Hot Hardness

## Applications

- > Blades for Sawing Machines
- > Powder Pressing
- > Wear parts
- > Cold Forming / Coining
- > Rolling
- > Fine Blanking, Stamping, Blanking
- > Shearing / Machine Knives

Material designation		Standards	
1.3339	SEL	4957	EN ISO
1.3343		G4403	JIS
~1.3343			
HS6-5-2	EN		
SKH51	JIS		

## Chemical composition

C	Si	Mn	Cr	Mo	V	W
0.85	0.35	0.25	4.10	5.00	1.90	6.40

### Material characteristics

	Compressive strength	Grindability	Red hardness	Toughness	Wear resistance	Edge Stability
<b>BÖHLER S601</b>	★★★	★★★	★★★	★★	★★	★★★
<b>BÖHLER S200</b>	★★★	★★	★★★	★★	★★★	★★
<b>BÖHLER S290 MICROCLEAN</b>	★★★★★	★	★★★★	★★	★★★★★	★★★★
<b>BÖHLER S390 MICROCLEAN</b>	★★★★	★★★	★★★★	★★★★	★★★★	★★★★
<b>BÖHLER S400</b>	★★★	★★★	★★★	★★★	★★	★★
<b>BÖHLER S401</b>	★★	★★★	★★	★★★	★★	★★★
<b>BÖHLER S404</b>	★★	★★★	★★	★★★	★★	★★
<b>BÖHLER S500</b>	★★★★	★★★	★★★★	★★	★★★	★★★
<b>BÖHLER S590 MICROCLEAN</b>	★★★★	★★★	★★★★	★★★	★★★	★★★
<b>BÖHLER S600</b>	★★★	★★★	★★★	★★	★★	★★★
<b>BÖHLER S607</b>	★★★	★★★	★★★	★★	★★★	★★★
<b>BÖHLER S690 MICROCLEAN</b>	★★★	★★★	★★	★★★★★	★★★	★★
<b>BÖHLER S700</b>	★★★	★★	★★★★	★★	★★★★	★★★★
<b>BÖHLER S705</b>	★★★	★★★	★★★★	★★	★★	★★★★
<b>BÖHLER S790 MICROCLEAN</b>	★★★	★★★	★★	★★★★	★★	★★★

### Delivery condition

#### Annealed

Hardness	max. 280 HB
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### Heat treatment

#### Annealing

Temperature (°C / °F)	770 / 1418 - 840 / 1544	Controlled slow cooling in furnace (10 - 20°C / h (50 - 68°F / h)) to approx. 600°C (1110°F), air cooling.
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#### 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.
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#### Hardening and Tempering

Temperature (°C / °F)	1190 / 2174 - 1230 / 2246	Oil, air, salt bath (500 - 550°C (932 - 1022°F)), gas.
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**Physical Properties at 20°C / 68°F**

Density	8.1 / 0.29	[kg/dm <sup>3</sup> / lb/in <sup>3</sup> ]
Thermal conductivity	19 / 10.98	[W/(m.K) / BTU (IT) ft/hr/ft <sup>2</sup> /F]
Specific heat	460 / 109.87	[J/(kg.K) / BTU (IT) lb/F]
Spec. electrical resistance	0.54 / 0	[Ohm.mm <sup>2</sup> /m / Ohm.inch <sup>2</sup> /ft]
Modulus of elasticity	217 / 31.47	[10 <sup>3</sup> N/mm <sup>2</sup> / 10 <sup>3</sup> ksi]

**Thermal Expansions**

Temperature (°C / °F)	100 / 212	200 / 392	300 / 572	400 / 752	500 / 932	600 / 1112	700 / 1292
Thermal expansion (10 <sup>-6</sup> m/(m.K) / 10 <sup>-6</sup> inch/(inch.F))	11.5 / 6.389	11.7 / 6.5	12.2 / 6.778	12.4 / 6.889	12.7 / 7.056	13 / 7.222	12.9 / 7.167

For more information see [www.voestalpine.com/boehler-edelstahl](http://www.voestalpine.com/boehler-edelstahl)

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ONE STEP AHEAD.