

# HIGH SPEED STEELS

## Available Product Shapes

Round Bar

## Product Description

**BÖHLER S690 MICROCLEAN – "The simple one"**  
The tough high-speed steel for challenging machining and cold forming.

## Properties

- Very high Toughness & Ductility
- Good Wear Resistance
- Good Compressive strength
- Good Edge Stability
- High Grindability
- Good Hot Hardness

## Chemical composition

C	Si	Mn	Cr	Mo	V	W
1.40	0.60	0.30	4.10	5.00	4.10	5.90

## Material characteristics

	Compressive strength	Grindability	Red hardness	Toughness	Wear resistance	Edge Stability
<b>BÖHLER S690 MICROCLEAN</b>	★★★	★★★	★★	★★★★★	★★★	★★
<b>BÖHLER S200</b>	★★★	★★	★★★	★★	★★★	★★
<b>BÖHLER S290 MICROCLEAN</b>	★★★★★	★	★★★★	★★	★★★★★	★★★★★
<b>BÖHLER S393 MICROCLEAN</b>	★★★★★	★★★	★★★★★	★★★★★	★★★★★	★★★★★
<b>BÖHLER S400</b>	★★★	★★★	★★★	★★★	★★	★★
<b>BÖHLER S401</b>	★★	★★★	★★	★★★	★★	★★★
<b>BÖHLER S404</b>	★★	★★★	★★	★★★	★★	★★
<b>BÖHLER S590 MICROCLEAN</b>	★★★★★	★★★	★★★★★	★★★	★★★	★★★
<b>BÖHLER S600</b>	★★★	★★★	★★★	★★	★★	★★★
<b>BÖHLER S607</b>	★★★	★★★	★★★	★★	★★★	★★★
<b>BÖHLER S705</b>	★★★	★★★	★★★★★	★★	★★	★★★★★
<b>BÖHLER S790 MICROCLEAN</b>	★★★	★★★	★★	★★★★★	★★	★★★

## Physical Properties

<b>Temperature (°C / °F)</b>	<b>20 / 68</b>
Density (kg/dm <sup>3</sup> / lb/in <sup>3</sup> )	8.1 / 0.29
Thermal conductivity (W/(m.K) / BTU (IT) ft/hr/ft <sup>2</sup> /F)	19 / 10.98
Specific heat (J/(kg.K) / BTU (IT) lb/F)	460 / 109.87
Spec. electrical resistance (Ohm.mm <sup>2</sup> /m / Ohm.inch <sup>2</sup> /ft)	-
Modulus of elasticity (10 <sup>3</sup> N/mm <sup>2</sup> / 10 <sup>3</sup> ksi)	217 / 31.47

## 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.