

# OȚELURI DE MARE VITEZĂ

## Application Segments

Unelte de tăiere

Industria auto

## Available Product Variants

Long Products\*

Plates

\* Datele prezentate se referă exclusiv la produsele lungi. Vă rugăm să respectați explicațiile detaliate de la sfârșitul fișei tehnice (pdf).

## Product Description

### BÖHLER S600 – "The high-speed steel"

Ideal for mills, twist drills, and taps, broaches, cold-work tools. BÖHLER S600 is the most commonly used high-speed steel and is the starting material for our customers who deal with high-speed steel.

## Process Melting

Aer topit sau aer topit + ESR (ISORAPID)

## Properties

- > Rezistență și ductilitate : high
- > Rezistență la uzură : high
- > Rezistența la compresiune : high
- > Stabilitatea marginilor : high
- > Măcinabilitate : high
- > Duritate la cald (duritate roșie) : high

## Applications

- |  |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>&gt; Răzuitoare și alezoare</li> <li>&gt; Unelte de tăiat, rindeluit și modelat angrenaje</li> <li>&gt; Laminare</li> <li>&gt; Piese standard (matrițe, plăci, pini, perforatoare)</li> <li>&gt; Rularea firelor</li> <li>&gt; Wear Applications</li> <li>&gt; Clamping</li> <li>&gt; Roll Forming</li> </ul> | <ul style="list-style-type: none"> <li>&gt; Cold Forming / Coining</li> <li>&gt; Componente de injecție</li> <li>&gt; Cuțite industriale</li> <li>&gt; Burghie cu răsucire și tarod</li> <li>&gt; Lame pentru mașini de tăiat</li> <li>&gt; Mineral Processing</li> <li>&gt; Other Industrial Components</li> <li>&gt; Industria ambalajelor</li> </ul> | <ul style="list-style-type: none"> <li>&gt; Blanking fin, ștanțare, blanking</li> <li>&gt; Pulbere de presare</li> <li>&gt; Unelte de tăiere speciale</li> <li>&gt; Piese de uzură</li> <li>&gt; Cuțit de mașină (pentru producători)</li> <li>&gt; Drilling</li> <li>&gt; Turbo Chargers</li> </ul> |
|--|---|--|

## Technical data

Material designation		Standards	
1.3343	SEL	4957	EN ISO
HS6-5-2C	EN		

## Chemical composition (wt. %)

C	Cr	Mo	V	W
0.9	4.1	5	1.8	6.2

## Material characteristics

	Compressive strength	Grindability	Red hardness	Toughness	Wear resistance	Edge Stability
BÖHLER S600	★★★	★★★	★★★	★★	★★	★★★
BÖHLER S200	★★★	★★	★★★	★★	★★★	★★
BÖHLER S401	★★	★★★	★★	★★★	★★	★★★
BÖHLER S404	★★	★★★	★★	★★★	★★	★★
BÖHLER S405	★★★	★★★	★★	★★★	★★	★★
BÖHLER S430	★★	★★★	★★	★★★	★★	★★
BÖHLER S500	★★★★	★★★	★★★★	★★	★★★	★★★
BÖHLER S607	★★★	★★★	★★★	★★	★★★	★★★
BÖHLER S630	★★★	★★★	★★★	★★	★★	★★★
BÖHLER S705	★★★	★★★	★★★★	★★	★★	★★★★
BÖHLER S730	★★★	★★★	★★★★	★★	★★	★★★★

## Delivery condition

Recoaptă	
Hardness (HB)	max. 280
Ultimate tensile strength (UTS) (MPa)	max. 950
Tensile Strength (MPa)	max. 950

Durificat și temperat	
Hardness (HRC)	min. 62   bars hardened and tempered (BHT)

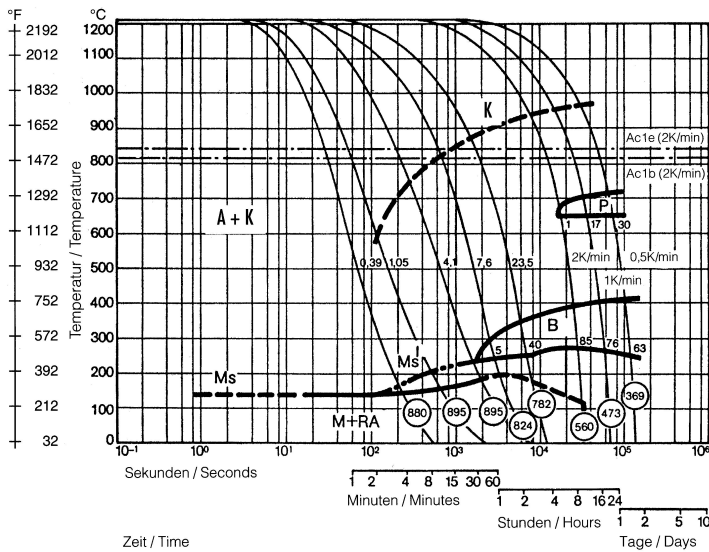
## Heat treatment

Recoacere		
Temperature	770 to 840 °C	Controlled slow cooling in furnace (10 - 20°C / h (50 - 68°F / h)) to approx. 600°C (1110°F), air cooling.

Eliminarea stresului		
Temperature	600 to 650 °C	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.

Călire și revenire		
Temperature	1,100 to 1,210 °C	Salt bath, vacuum    Preheating: 1st stage ~ 500 °C, 2nd stage ~ 850 °C, 3rd stage ~1050 °C    Austenitising: 1100 - 1210 °C, holding time after complete heating 80 seconds, maximum 150 seconds, to avoid material damage due to overheating.    Quenching: oil, warm bath (500 - 550 °C), gas
Temperature	550 to 570 °C	Slow heating to tempering temperature immediately after austenitising.    Dwell time in the furnace at least 2 hours    Slow cooling to room temperature    3 tempering cycles recommended    Hardness see tempering chart

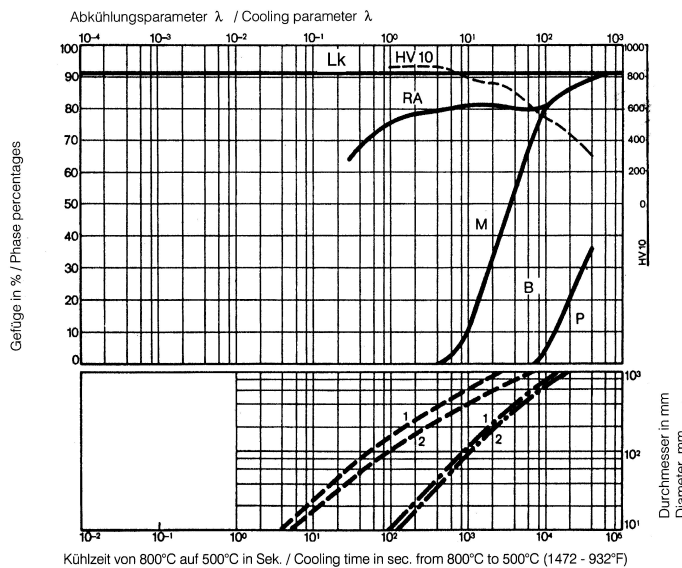
Continuous cooling CCT curves



Austenitising temperature: 1210°C (2210°F)  
Holding time: 180 seconds

- A...Austenite
- B...Bainite
- K...Carbide
- P...Pearlite
- M...Martensite
- RA...Retained Austenite

Quantitative phase diagram

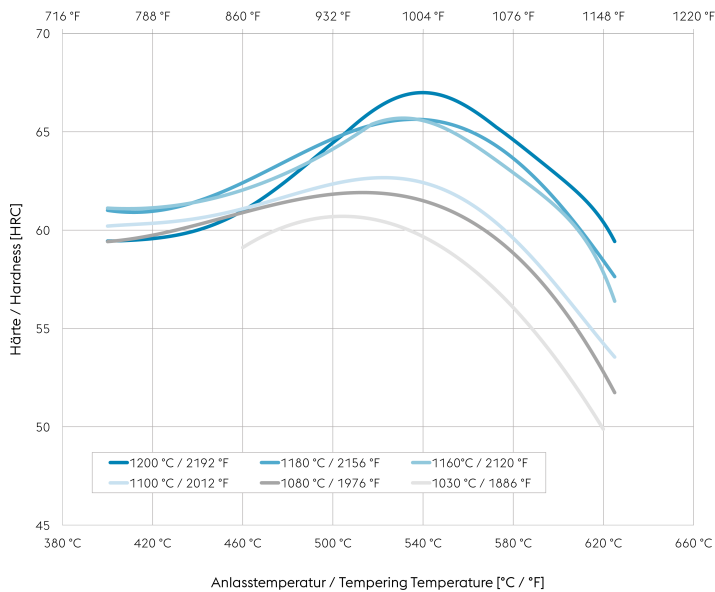


- A...Austenite
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- 1....Edge or Face
- 2....Core
- 3....Jominy test: distance from quenched end

- - oilcooling
- · - aircooling

### Tempering Chart



Vacuum

Holding time 3 x 2 hours  
Specimen size: square 25 mm

### Physical Properties

<b>Temperature (°C)</b>	<b>20</b>
Density (kg/dm <sup>3</sup> )	8.07
Thermal conductivity (W/(m.K))	21.8
Specific heat (kJ/kg K)	0.433
Spec. electrical resistance (Ohm.mm <sup>2</sup> /m)	0.47
Modulus of elasticity (10 <sup>3</sup> N/mm <sup>2</sup> )	219

### Thermal Expansions between 20°C | 68°F and ...

Temperature (°C)	100	200	300	400	500	600	700
Thermal expansion (10 <sup>-6</sup> m/(m.K))	11.5	11.7	12.2	12.4	12.7	13	12.9

If other available product variants are listed in addition to long products, please note that these may differ in terms of melting process, technical data, delivery and surface condition as well as available product dimensions. For mandatory technical specifications, other requirements and dimensions, please contact our regional voestalpine BÖHLER sales companies. 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.

**voestalpine BÖHLER Edelstahl GmbH & Co KG**  
 Mariazeller Straße 25  
 8605 Kapfenberg, AT  
 T. +43/50304/20-0  
 E. info@bohler-edelstahl.at  
<https://www.voestalpine.com/bohler-edelstahl/de/>