

# YÜKSEK HIZ ÇELİKLERİ

## Mevcut Ürün Şekilleri

Uzun Ürünler\*

Levhalar

\* ) Presented data refer exclusively to long products. Please observe the detailed explanations at the end of the data sheet (pdf).

## Ürün Tanımı

### 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.

## Erime rotası

Airmelted or Airmelted + ESR (ISORAPID)

## Özellikler

- > Tokluk ve Süneklik : yüksek
- > Aşınma Direnci : yüksek
- > Basınç Dayanımı : yüksek
- > Kenar Stabilitesi : yüksek
- > Öğütülebilirlik : yüksek
- > Sıcak Sertlik (kırmızı sertlik) : yüksek

## Uygulamalar

- > Broaches and Reamers
- > Gear Cutting, Shaving and Shaping Tools
- > Powder Pressing
- > Special Cutting Tools
- > Wear parts
- > Cold Forming / Coining
- > Injection Components
- > Rolling
- > Standard Parts (Molds, Plates, Pins, Punches)
- > Thread rolling (TR)
- > Fine Blanking, Stamping, Blanking
- > Diğer Otomotiv bileşenleri (Turboşarjlar, Piston Halkaları, Sensörler vb.)
- > Shearing / Machine Knives
- > Twist Drills and Taps
- > Blades for Sawing Machines

## Teknik veriler

Malzeme Tanımı		Standartlar	
1.3343	SEL	4957	EN ISO
HS6-5-2C	EN		

## Kimyasal Bileşim

C	Cr	Mo	V	W
0,9	4,1	5	1,8	6,2

## Malzeme özellikleri

	Basınç Dayanımı	Öğütülebilirlik	Sıcak sertlik	Sertlik	Aşınma direnci	Kesilme direnci
BÖHLER S600	★★★	★★★	★★★	★★	★★	★★★
BÖHLER S200	★★★	★★	★★★	★★	★★★	★★
BÖHLER S400	★★★	★★★	★★★	★★★	★★	★★
BÖHLER S401	★★	★★★	★★	★★★	★★	★★★
BÖHLER S404	★★	★★★	★★	★★★	★★	★★
BÖHLER S500	★★★★	★★★	★★★★	★★	★★★	★★★
BÖHLER S607	★★★	★★★	★★★	★★	★★★	★★★
BÖHLER S630	★★★	★★★	★★★	★★	★★	★★★
BÖHLER S705	★★★	★★★	★★★★	★★	★★	★★★★
BÖHLER S730	★★★	★★★	★★★★	★★	★★	★★★★

## Teslimat durumu

### Annealed

Sertlik (HB)	maks. 280
Çekme dayanımı (UTS) (MPa)	maks. 950
Çekme mukavemeti (MPa)	maks. 950

### Hardened and Tempered

Sertlik (HRC)	min. 62   bars hardened and tempered (BHT)
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## Isıl işlem

### Annealing

Sıcaklık	770 kadar 840 °C	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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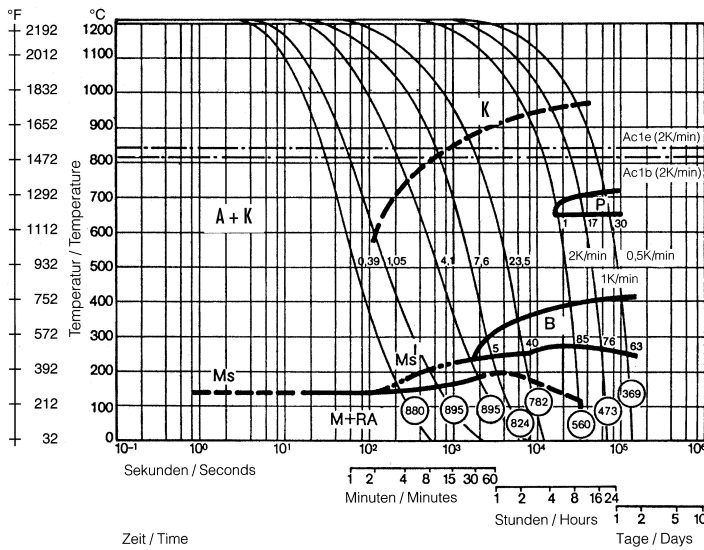
### Stress relieving

Sıcaklık	600 kadar 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.
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### Sertleştirme ve Temperleme

Sıcaklık	1.100 kadar 1.210 °C	Salt bath, vacuum    Preheating: 1st stage ~ 500 °C, 2nd stage ~ 850 °C, 3rd stage ~1050 °C    Austenitising: 1180 - 1240 °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
Sıcaklık	550 kadar 570 °C	Slow heating to tempering temperature immediately after austenitising.    Dwell time in the furnace 1 hour per 20 mm material thickness (at least 1 hour)    Slow cooling to room temperature    3 tempering cycles recommended    Hardness see tempering chart

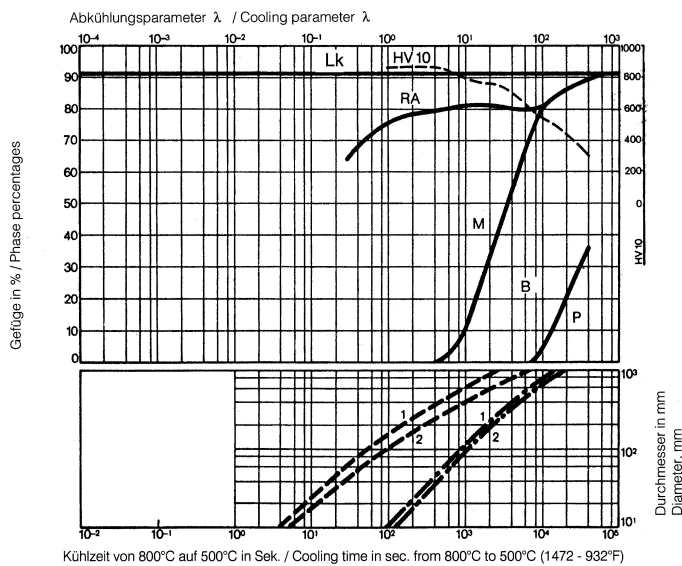
Continuous cooling CCT curves



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

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

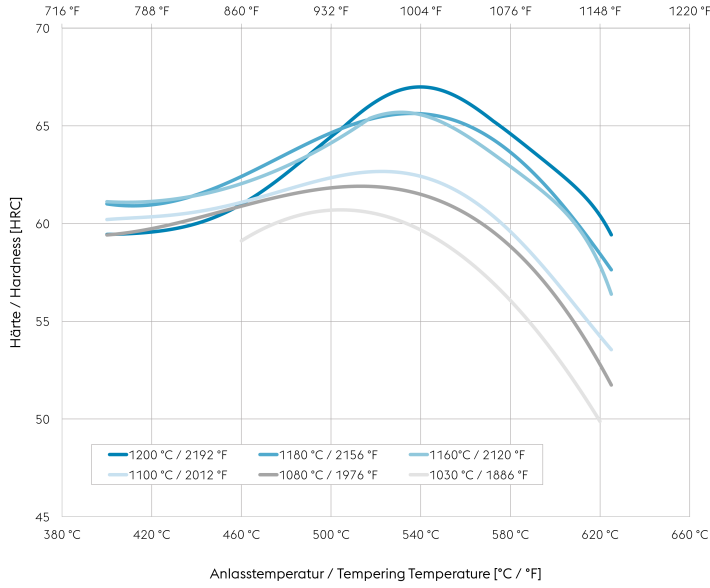
Quantitative phase diagram



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

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

## Tempering Chart



Vacuum

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

## Fiziksel özellikler

Sıcaklık (°C)	20
Yoğunluk (kg/dm <sup>3</sup> )	8,07
Termal iletkenlik (W/(m.K))	21,8
Özgül ısı kapasitesi (kJ/kg K)	0,433
Spes. elektrik direnci (Ohm.mm <sup>2</sup> /m)	0,47
Elastikiyet modülü (10 <sup>3</sup> N/mm <sup>2</sup> )	219

## Termal genişlemeler

Sıcaklık (°C)	100	200	300	400	500	600	700
Termal genişleme (10 <sup>-6</sup> m/(m.K))	11,5	11,7	12,2	12,4	12,7	13	12,9

**Long Products:** For additional specifications and technical requirements, please contact our regional voestalpine BÖHLER sales companies.

**Sheet & Plates:** Product Variant may differ in terms of melting process, technical data, delivery, and surface condition as well as available product dimensions. Please contact voestalpine BÖHLER Bleche GmbH & Co KG.

*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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ONE STEP AHEAD.