

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 S200 – "The old man"

This traditional tungsten high-speed steel shows its class as it always has in a tough working environment. High hot hardness and good wear resistance are characteristic of this class.

Erime rotası

Airmelted

Özellikler

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

Uygulamalar

- > Special Cutting Tools
- > Gear Cutting, Shaving and Shaping Tools
- > Twist Drills and Taps
- > Cutting-typical instruments and knives
- > Machine knife (for producers)
- > End Mills
- > Thread rolling (TR)

Teknik veriler

Malzeme Tanımı		Standartlar	
1,3355	SEL	4957	EN ISO
T12001	UNS	A600	ASTM
HS18-0-1	EN		
T1	AISI		

Kimyasal Bileşim

C	Si	Mn	Cr	V	W
0,75	0,25	0,30	4,10	1,10	18,00

Malzeme özellikleri

	Basınç Dayanımı	Öğütülebilirlik	Sıcak sertlik	Sertlik	Aşınma direnci	Kesilme direnci
BÖHLER S200	★★★	★★	★★★	★★	★★★	★★
BÖHLER S400	★★★	★★★	★★★	★★★	★★	★★
BÖHLER S401	★★	★★★	★★	★★★	★★	★★★
BÖHLER S404	★★	★★★	★★	★★★	★★	★★
BÖHLER S405	★★★	★★★	★★	★★★	★★	★★
BÖHLER S500	★★★★	★★★	★★★★	★★	★★★	★★★
BÖHLER S600	★★★	★★★	★★★	★★	★★	★★★
BÖHLER S607	★★★	★★★	★★★	★★	★★★	★★★
BÖHLER S630	★★★	★★★	★★★	★★	★★	★★★
BÖHLER S705	★★★	★★★	★★★★	★★	★★	★★★★
BÖHLER S730	★★★	★★★	★★★★	★★	★★	★★★★

Teslimat durumu

Annealed

Sertlik (HB)	maks. 280
Çekme mukavemeti (N/mm ²)	maks. 980

Isıl işlem

Annealing

Sıcaklık	770 kadar 840 °C	Controlled slow cooling in furnace (10 to 20°C/h / (50 to 68°F/h) to approx. 600°C (1112°F), air cooling.
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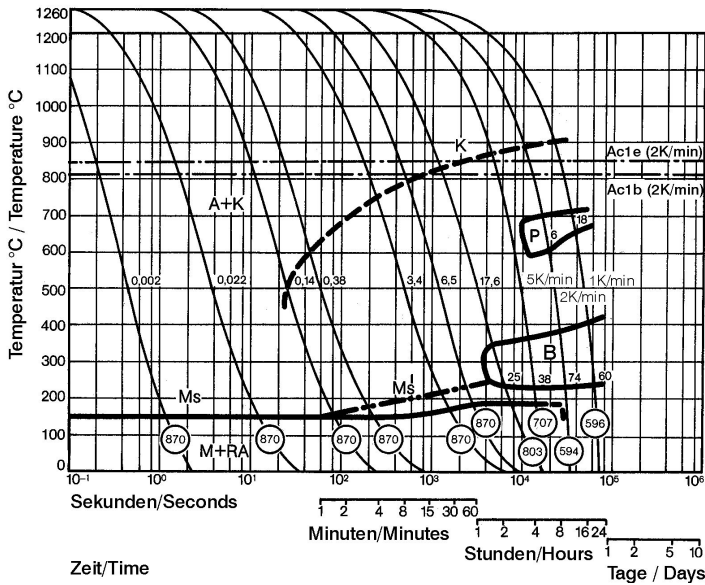
Stress relieving

Sıcaklık	600 kadar 650 °C	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.
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Sertleştirme ve Temperleme

Sıcaklık	1.250 kadar 1.290 °C	Salt bath, vacuum Preheating: 1st stage ~ 500 °C (930 °F), 2nd stage ~ 850 °C (1560 °F), 3rd stage ~ 1050 °C (1920 °F) Austenitising: 1250 - 1290 °C (2280 - 2350 °F), holding time after complete heating 80 seconds, maximum 150 seconds, to avoid material damage due to overheating. Quenching: oil, warm bath (500 - 550 °C (930 - 1020 °F)), vacuum (nitrogen)
Sıcaklık	550 kadar 580 °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

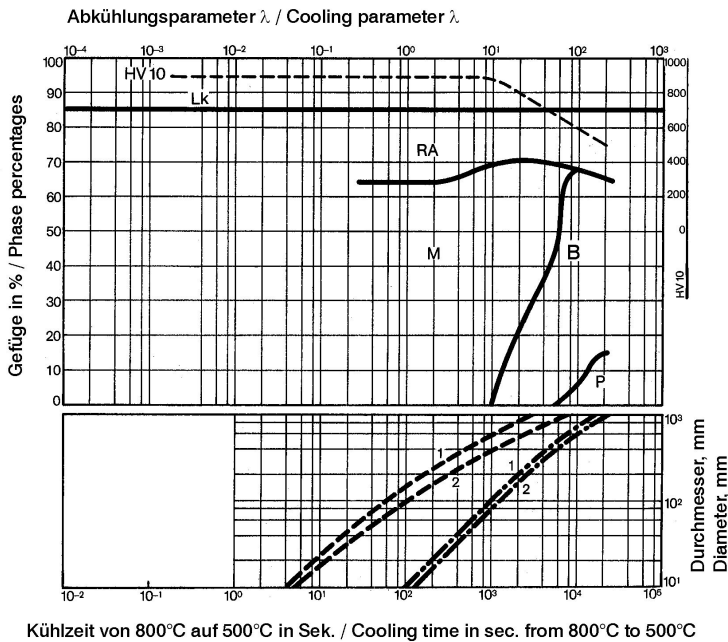
Continuous cooling CCT curves



Austenitising temperature: 1260°C (2300°F)
Holding time: 150 seconds

○ ...Vickers hardness
6 ... 18 phase percentages
0.002 ... 17.6 cooling parameter, i.e. duration of cooling from 800-500°C (1472-932°F) in $s \times 10^{-2}$
5 K/min ... 1 K/min cooling rate in K/min in the 800 - 500°C (1472 - 932°F) range
Ms-Ms'...range of grain boundary martensite formation

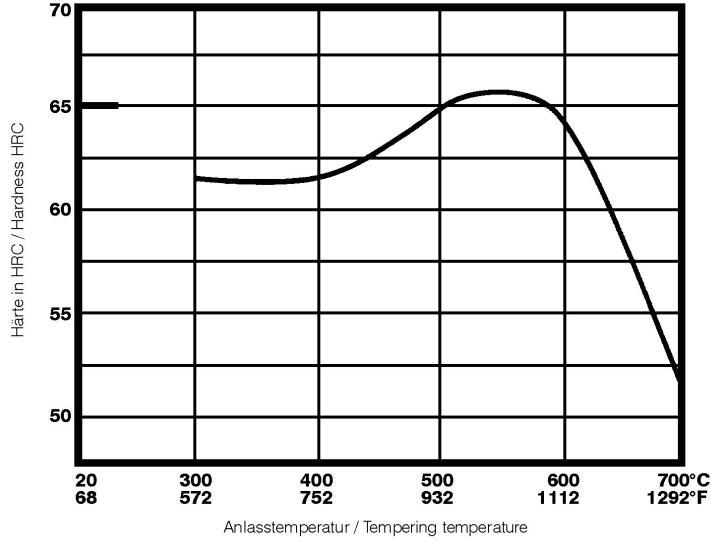
Quantitative phase diagram



- A .. Austenite
- B .. Bainite
- K .. Carbide
- M .. Martensite
- P .. Perlite
- Lk .. Ledeburite carbide
- RA .. Retained austenite

- Oil cooling
- .-.- Air cooling
- 1 ... Edge or face
- 2 ... Core

Tempering Chart



Hardening temperature: 1260°C (2300°F)

Specimen size: square 20 mm

Fiziksel özellikler

Sıcaklık (°C)	20
Yoğunluk (kg/dm ³)	8,7
Termal iletkenlik (W/(m.K))	19
Özgül ısı kapasitesi (kJ/kg K)	0,46
Spes. elektrik direnci (Ohm.mm ² /m)	0,5
Elastikiyet modülü (10 ³ N/mm ²)	217

Termal genişmeler

Sıcaklık (°C)	100	200	300	400	500	600	700
Termal genişme (10 ⁻⁶ m/(m.K))	10	10,5	10,8	11,2	11,3	11,4	11,6

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.

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