

# YÜKSEK HIZ ÇELİKLERİ

## Mevcut Ürün Şekilleri

Uzun Ürünler

## Ürün Tanımı

### BÖHLER S400 – "The fast one"

This class comes from the family of molybdenum-alloyed high-speed steels and its winning performance is matched by its good cost effectiveness.

## Erime rotası

Airmelted

## Özellikler

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

## Uygulamalar

- > Twist Drills and Taps
- > Gear Cutting, Shaving and Shaping Tools
- > Broaches and Reamers

## Teknik veriler

Malzeme Tanımı		Standartlar	
1.3348	SEL	4957	EN ISO
HS2-9-2	EN	A600	ASTM
M7	AISI		

## Kimyasal Bileşim

C	Si	Mn	Cr	Mo	V	W
1,02	0,4	0,3	3,8	8,6	1,9	1,8

## Malzeme özellikleri

	Basınç Dayanımı	Öğütülebilirlik	Sıcak sertlik	Sertlik	Aşınma direnci	Kesilme direnci
BÖHLER S400	★★★	★★★	★★★	★★★	★★	★★
BÖHLER S200	★★★	★★	★★★	★★	★★★	★★
BÖHLER S401	★★	★★★	★★	★★★	★★	★★★
BÖHLER S404	★★	★★★	★★	★★★	★★	★★
BÖHLER S405	★★★	★★★	★★	★★★	★★	★★
BÖHLER S430	★★	★★★	★★	★★★	★★	★★
BÖHLER S500	★★★★	★★★	★★★★	★★	★★★	★★★
BÖHLER S600	★★★	★★★	★★★	★★	★★	★★★
BÖHLER S607	★★★	★★★	★★★	★★	★★★	★★★
BÖHLER S630	★★★	★★★	★★★	★★	★★	★★★
BÖHLER S705	★★★	★★★	★★★★	★★	★★	★★★★
BÖHLER S730	★★★	★★★	★★★★	★★	★★	★★★★

## Teslimat durumu

### Annealed

Sertlik (HB)	maks. 280   Drawn max 300 HB
Çekme mukavemeti (N/mm <sup>2</sup> )	maks. 1.020

## 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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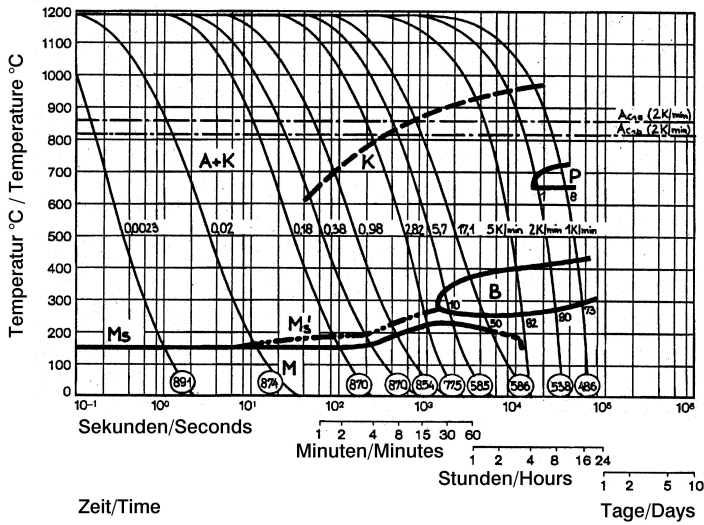
### Stress relieving

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	1.170 kadar 1.210 °C	Salt bath, vacuum    Preheating: 1st stage ~ 500 °C, 2nd stage ~ 850 °C, 3rd stage ~1050 °C    Austenitising: 1170 - 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
Sıcaklık	540 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

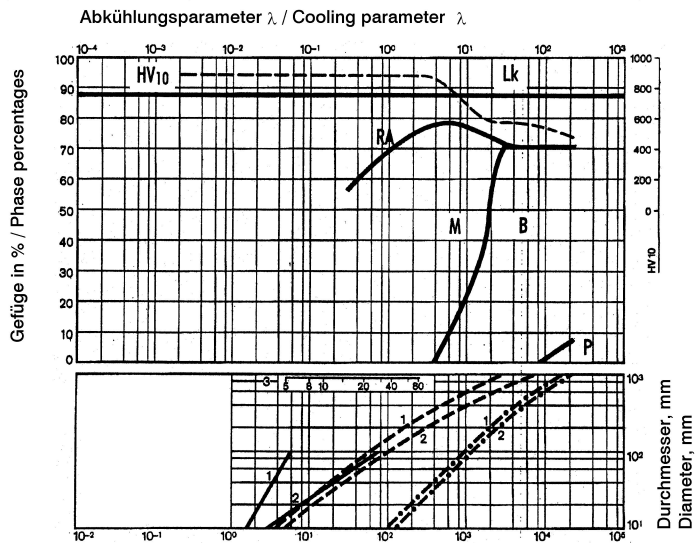
Continuous cooling CCT curves



Austenitising temperature: 1190°C (2174°F)  
Holding time: 180 seconds

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

Quantitative phase diagram

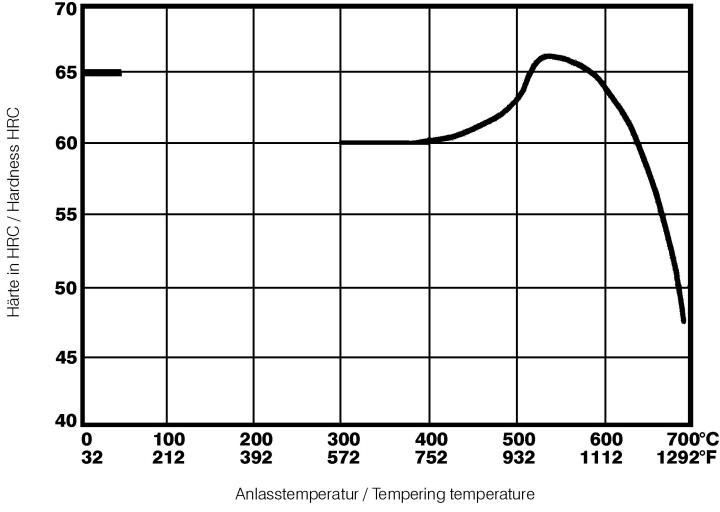


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- 1....Edge or Face
- 2....Core
- 3....Jominy test: distance from quenched end

Kühlzeit von 800°C auf 500°C in Sek. / Cooling time in sec. from 800°C to 500°C

## Tempering Chart



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

## Fiziksel özellikler

Sıcaklık (°C)	20
Yoğunluk (kg/dm <sup>3</sup> )	8,3
Termal iletkenlik (W/(m.K))	19
Özgül ısı kapasitesi (kJ/kg K)	0,46
Spes. elektrik direnci (Ohm.mm <sup>2</sup> /m)	0,65
Elastikiyet modülü (10 <sup>3</sup> N/mm <sup>2</sup> )	217

## Termal genleşmeler

Sıcaklık (°C)	100	200	300	400	500	600	700
Termal genleşme (10 <sup>-6</sup> m/(m.K))	11	11,5	11,9	12,3	12,4	12,5	12,5

For additional specifications and technical requirements, 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.*

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ONE STEP AHEAD.