

# SOĞUK İŞ 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 K455 corresponds approximately to the material 1.2550 (~60WCrV7, ~S1) in terms of the alloy concept. This classic matrix steel is characterized by high toughness, good machinability, and polishability. BÖHLER K455 offers the advantage of simple heat treatment with low hardening temperatures and single tempering. BÖHLER K455 is widely used in the field of punching and cutting tools as well as in the field of embossing tools.

## Erime rotası

Airmelted

## Özellikler

- > Tokluk ve Süneklik : çok yüksek
- > Basınç Dayanımı : yüksek
- > Boyutsal kararlılık : iyi

## Uygulamalar

- > Cold Forming
- > Standard Parts (Molds, Plates, Pins, Punches)
- > Powder Pressing

## Teknik veriler

Malzeme Tanımı	
~1.2550	SEL
~60WCrV7	EN
~60WCrV8	
~S1	AISI

## Kimyasal Bileşim

C	Si	Mn	Cr	V	W
0,63	0,60	0,30	1,10	0,18	2,00

## Malzeme özellikleri

	Basınç Dayanımı	Isıl işlem sırasında boyutsal kararlılık	Sertlik	Aşındırıcı aşınma direnci
BÖHLER K455	★★★	★	★★★★★	★
BÖHLER K245	★★	★	★★★★★	★
BÖHLER K460	★★★★★	★	★★★★★	★★
BÖHLER K720	★★	★	★★★★★	★

## Teslimat durumu

### Annealed

Sertlik (HB)	maks. 225
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## Isıl işlem

### Annealing

Sıcaklık	710 kadar 750 °C	Slow controlled cooling in furnace at a rate of 50 to 68°F/hr (10 to 20°C/hr) down to approx. 1112°F (600°C), further cooling in air.
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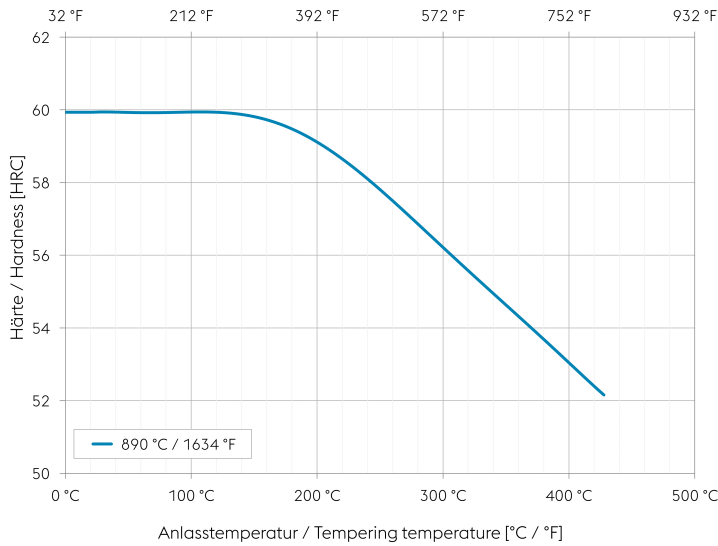
### Stress relieving

Sıcaklık	650 °C	Slow cooling in furnace. Intended to relieve stresses set up by extensive machining, or in complex shapes. After through heating, hold in neutral atmosphere for 1-2 hours
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### Sertleştirme ve Temperleme

Sıcaklık	870 kadar 900 °C	Oil, Holding time after temperature equalization: 15 to 30 minutes. After hardening, tempering to the desired working hardness, see tempering chart.
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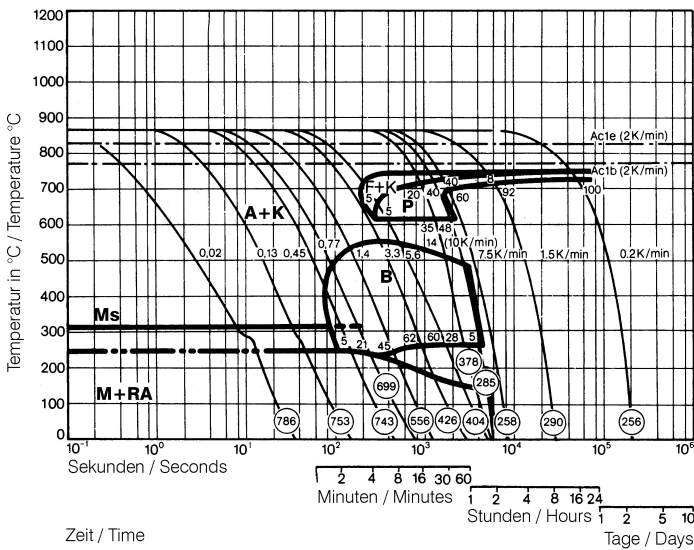
## Tempering chart



### Tempering:

Hardening temperature:  
 890°C / 1634°F  
 Specimen size: square 20mm

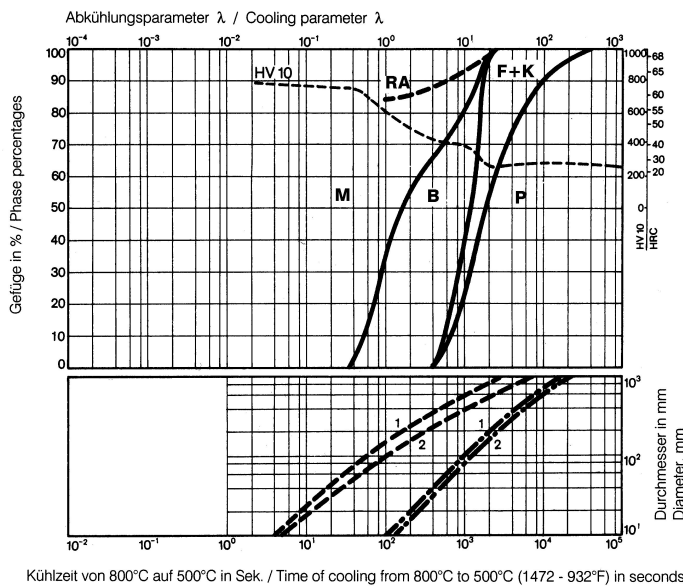
Continuous cooling CCT curves



Austenitising temperature: 880°C / 1616°F  
Holding time: 15 minutes

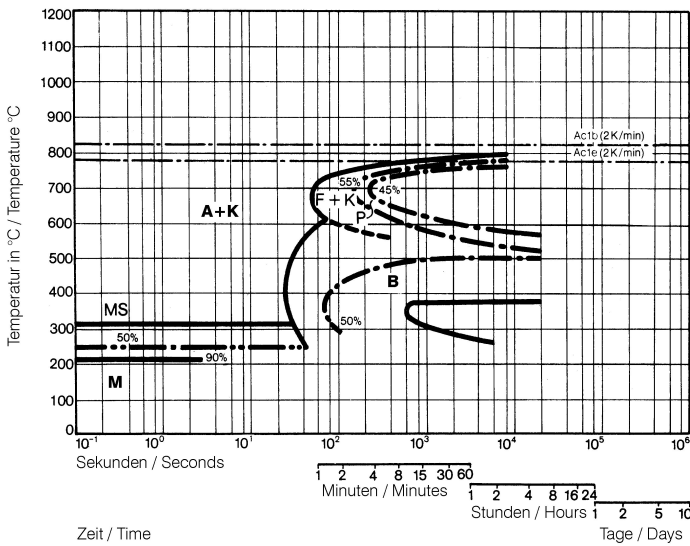
O Vickers hardness  
5...35 phase percentages  
0.02...14 cooling parameter, i.e. duration of cooling from 800°C to 500°C (1472°F to 932°F) in  $s \times 10^{-2}$   
10...0.2K/min cooling rate in K/min in the 800°C to 500°C (1472°F to 932°F) range

Quantitative phase diagram



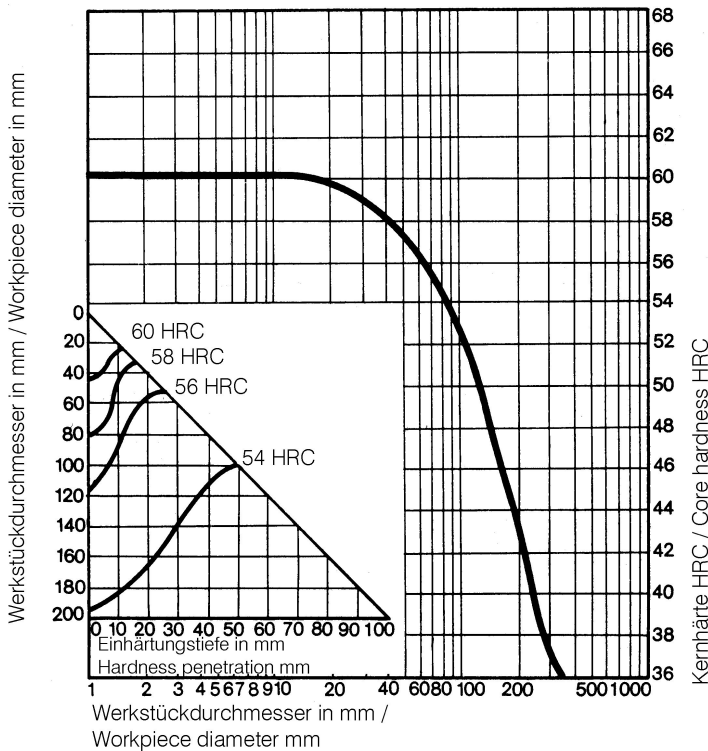
A... Austenite  
B... Bainite  
K... Carbide  
M... Martensite  
P... Pearlite  
RA... Retained austenite  
- - - - Oil cooling  
- • - Air cooling  
1... Edge or face  
2... Core

**Isothermal TTT curves**



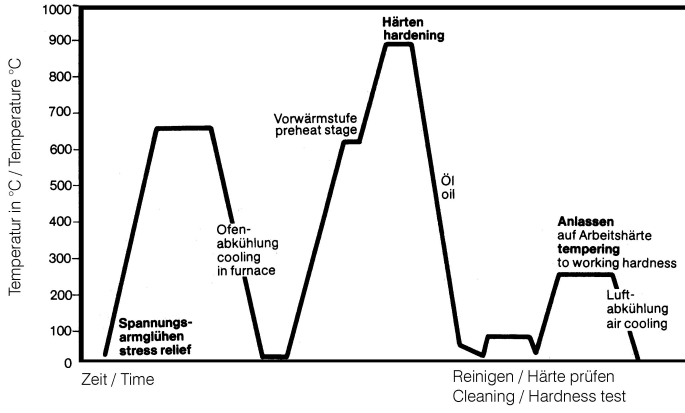
Austenitising temperature: 880°C / 1616°F  
Holding time: 15 minutes

**Influence of work diameter on core hardness and hardness penetration**



Quenched from: 890°C / 1634°F  
Agent: Oil

## Heat treatment sequence



## Fiziksel özellikler

Sıcaklık (°C)	20
Yoğunluk (kg/dm <sup>3</sup> )	8
Termal iletkenlik (W/(m.K))	25
Özgül ısı kapasitesi (kJ/kg K)	0,46
Spes. elektrik direnci (Ohm.mm <sup>2</sup> /m)	0,3
Elastikiyet modülü (10 <sup>3</sup> N/mm <sup>2</sup> )	210

## Termal genişmeler

Sıcaklık (°C)	100	200	300	400	500
Termal genişme (10 <sup>-6</sup> m/(m.K))	11	12,5	13	13,5	14

**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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