

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 K245 corresponds to the material 1.2101 (62SiMnCr4). This cold work tool steel is essentially a spring steel optimized for cold work, with very good toughness and spring properties. BÖHLER K245 offers the advantage of simple heat treatment with very low hardening temperatures and single tempering. However, this characteristic tempering behaviour limits the use of advanced coatings. BÖHLER K245 is especially suitable for thin-walled tools such as screwdrivers, hole punches, center punches, ejector pins, punches and cutting tools.

Erime rotası

Airmelted

Özellikler

- > Tokluk ve Süneklik : çok yüksek
- > Basınç Dayanımı : iyi
- > Boyutsal kararlılık : iyi
- > Çekme mukavemeti / Akma mukavemeti : yüksek

Uygulamalar

- > Cold Forming
- > Makine Mühendisliği için Genel Parçalar
- > Standard Parts (Molds, Plates, Pins, Punches)
- > Geri Dönüşüm Endüstrisi için Parçalar

Teknik veriler

Malzeme Tanımı		
	1.2101	SEL
	62SiMnCr4	EN

Kimyasal Bileşim

C	Si	Mn	Cr
0,63	1,10	1,10	0,60

Malzeme özellikleri

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

Teslimat durumu

Annealed

Sertlik (HB)	maks. 235
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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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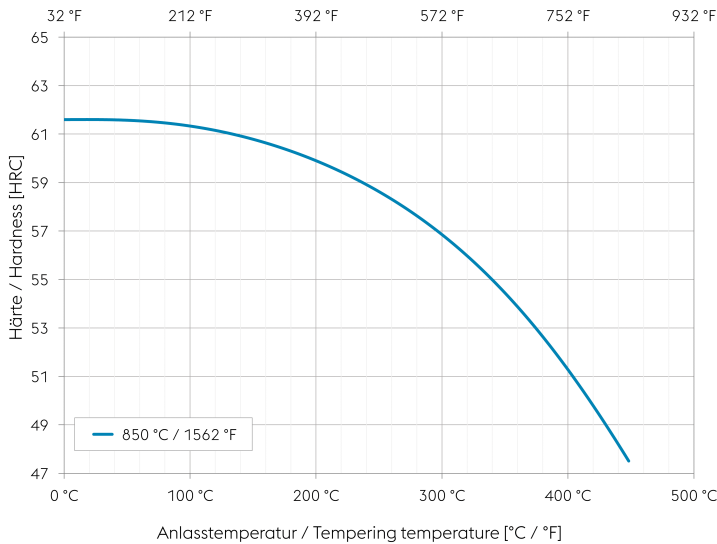
Stress relieving

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 to 2 hours.
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Sertleştirme ve Temperleme

Sıcaklık	830 kadar 860 °C	Oil, salt bath (for small sizes) Holding time at hardening temperature: 15 to 30 minutes. After hardening, tempering to the desired working hardness, see tempering chart.
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Tempering chart



Tempering:

Specimen size: square 0,787 inch (20 mm)

Slow heating to tempering temperature immediately after hardening.

Time in furnace 1 hour for each 0,787 inch (20 mm) of workpiece thickness but at least 2 hours.

Slow cooling to room temperature after each tempering step is recommended.

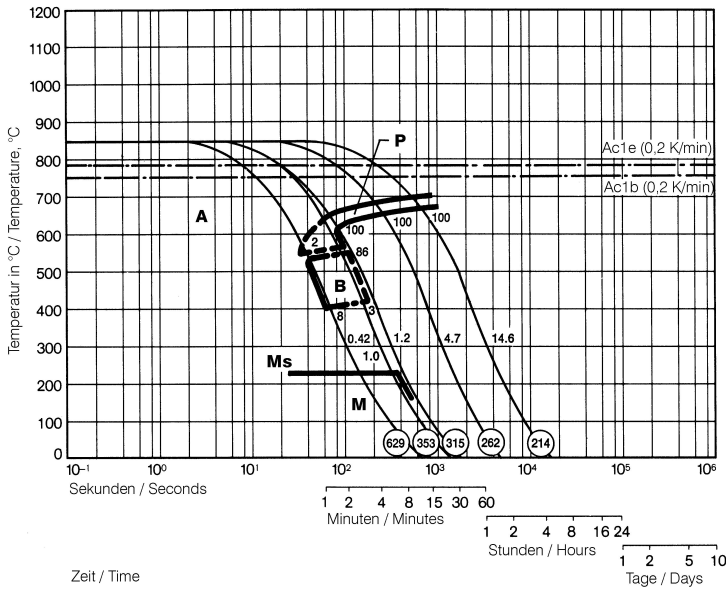
1. Tempering at 392 to 482 °F (200 to 250 °C) to working hardness

2. Partial tempering at 932 to 1022 °F (500 to 550 °C) to spring hardness

Please refer to the tempering chart for guide values for the hardness achievable after tempering.

Tempering for stress relieving 86 to 122 °F (30 to 50 °C) below the highest tempering temperature.

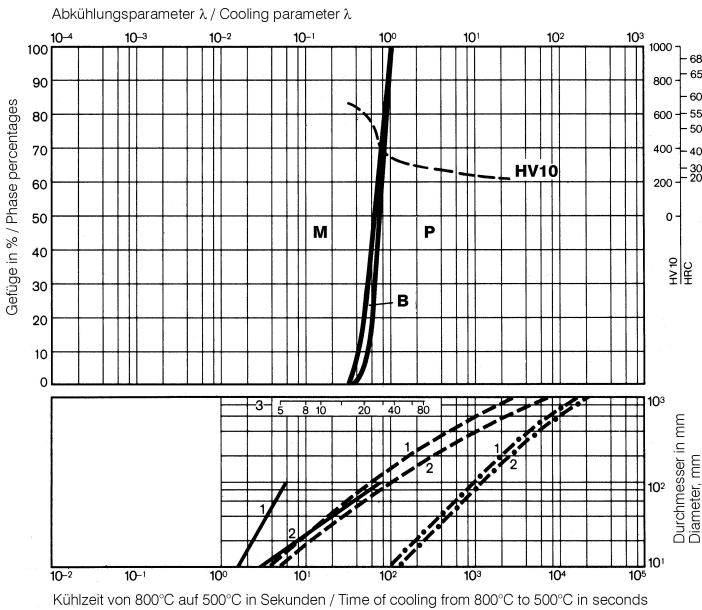
Continuous cooling CCT curves



Austenitising temperature: 845°C / 1553°F
Holding time: 15 minutes

O Vickers hardness
2...100 phase percentages
0.42...14.6 cooling parameter, i.e. duration of cooling from 800°C to 500°C (1472°F to 932°F) in $s \times 10^{-2}$

Quantitative phase diagram

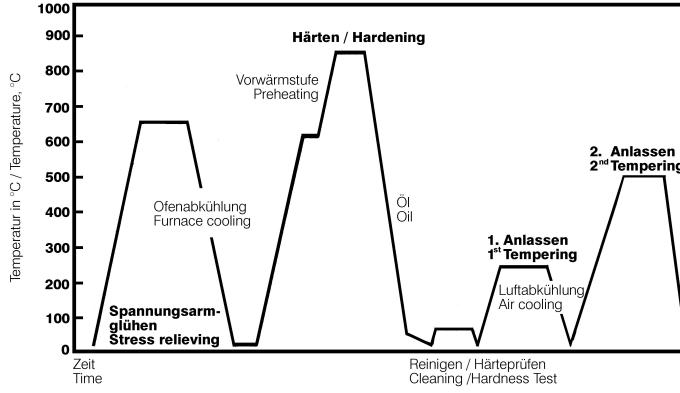


A... Austenite
B... Bainite
P... Pearlite
M... Martensite

— Watercooling
- - - Oil cooling
- · - Air cooling

1... Edge or face
2... Core
3... Jominy test: distance from end

Heat treatment sequence



Fiziksel özellikler

Sıcaklık (°C)	20
Yoğunluk (kg/dm ³)	7,7
Termal iletkenlik (W/(m.K))	30
Özgül ısı kapasitesi (kJ/kg K)	0,46
Spes. elektrik direnci (Ohm.mm ² /m)	0,35
Elastikiyet modülü (10 ³ N/mm ²)	210

Termal genişmeler

Sıcaklık (°C)	100	200	300	400	500
Termal genişme (10^{-6} m/(m.K))	12,4	12,1	12,6	12,8	13

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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