

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 K390 MICROCLEAN is a high-alloyed, high-performance cold work tool steel manufactured using powder metallurgy. This material has the highest alloy content in the group of cold work tool steels with high vanadium content. The high alloy content gives this material outstanding wear resistance. At the same time, the powder metallurgical manufacturing process creates a uniform matrix with finely distributed primary carbides. Among other things, this leads to good material toughness. BÖHLER K390 MICROCLEAN is a problem solver for applications requiring extremely high wear resistance and compressive strength.

Erime rotası

[Powder metallurgy](#)

Özellikler

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

Uygulamalar

- > Machine knife (for producers)
- > Coining
- > Screws and Barrels
- > Haddeler
- > Pill punching dies
- > Rolling
- > Fine Blanking, Stamping, Blanking
- > Thread rolling (TR)
- > Comps. for Equip. Below Ground (Boring, Shafts, etc.)
- > Glasfibre reinforced plastics
- > Cold Forming
- > Powder Pressing
- > Makine Mühendisliği için Genel Parçalar
- > Geri Dönüşüm Endüstrisi için Parçalar

Kimyasal Bileşim

C	Si	Mn	Cr	Mo	V	W	Co
2,47	0,55	0,40	4,20	3,80	9,00	1,00	2,00

Malzeme özellikleri

	Basınç Dayanımı	Isıl işlem sırasında boyutsal kararlılık	Sertlik	Aşındırıcı aşınma direnci	Aşınma direnci yapıştırıcı
BÖHLER K390 MICROCLEAN®	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
BÖHLER K100	★★	★★	★	★★★	★★
BÖHLER K105	★★	★★	★	★★	★★
BÖHLER K107	★★	★★	★	★★★	★★
BÖHLER K110	★★	★★★	★	★★★	★★
BÖHLER K190 MICROCLEAN®	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
BÖHLER K294 MICROCLEAN®	★★★★★	★★★★★	★★★	★★★★★	★★★★★
BÖHLER K340 ECOSTAR®	★★★	★★★	★★	★★	★★
BÖHLER K340 ISODUR®	★★★	★★★★★	★★★	★★★	★★★★★
BÖHLER K346	★★★	★★★	★★★	★★★★★	★★
BÖHLER K353	★★	★★★	★★	★★	★★
BÖHLER K360 ISODUR®	★★★	★★★★★	★★★	★★★★★	★★★★★
BÖHLER K490 MICROCLEAN®	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
BÖHLER K497 MICROCLEAN®	★★★★★	★★★★★	★★★	★★★★★	★★★★★
BÖHLER K888 MATRIX	★★★★★	★★★★★	★★★★★	★★	★★
BÖHLER K890 MICROCLEAN®	★★★★★	★★★★★	★★★★★	★★★	★★★

Teslimat durumu

Annealed

Sertlik (HB)	maks. 280
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Isıl işlem

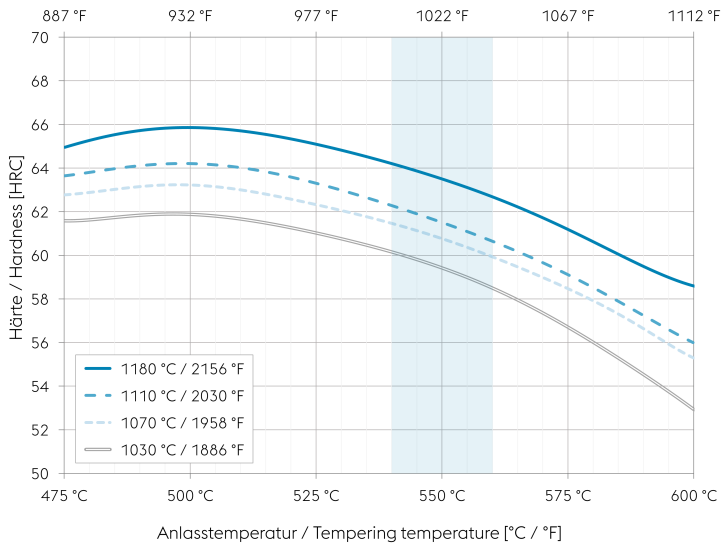
Stress relieving

Sıcaklık	650 kadar 700 °C	Once heated completely through, soak in neutral atmosphere at temperature for 1 to 2 hours. Slow cooling in furnace.
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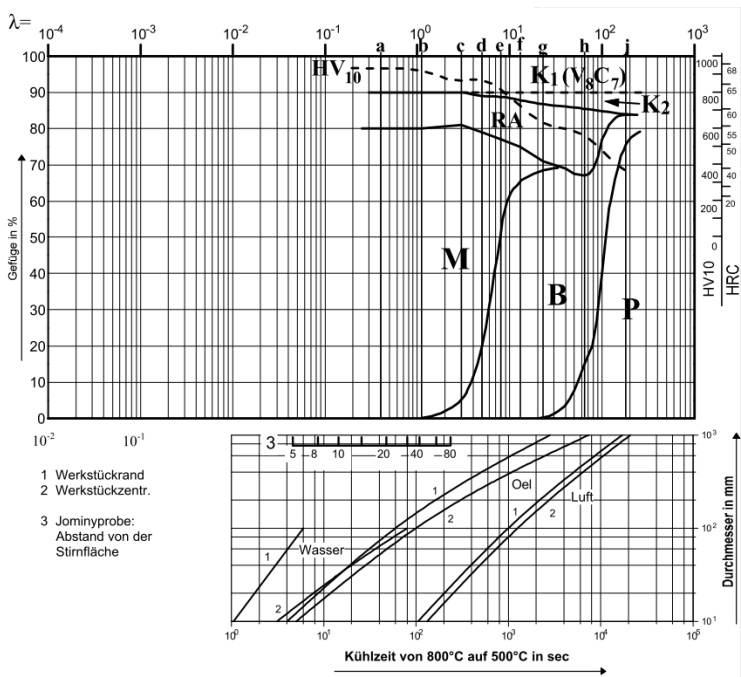
Sertleştirme ve Temperleme

Sıcaklık	1.030 kadar 1.180 °C	Oil, N ₂ . Once heated completely through: • 20 - 30 min (hardening temperature 1030 - 1150 °C) • 10 min (hardening temperature 1180 °C) For high toughness, use a low hardening temperature. For high wear resistance, use a high hardening temperature. After hardening, tempering to the desired working hardness, see tempering chart.
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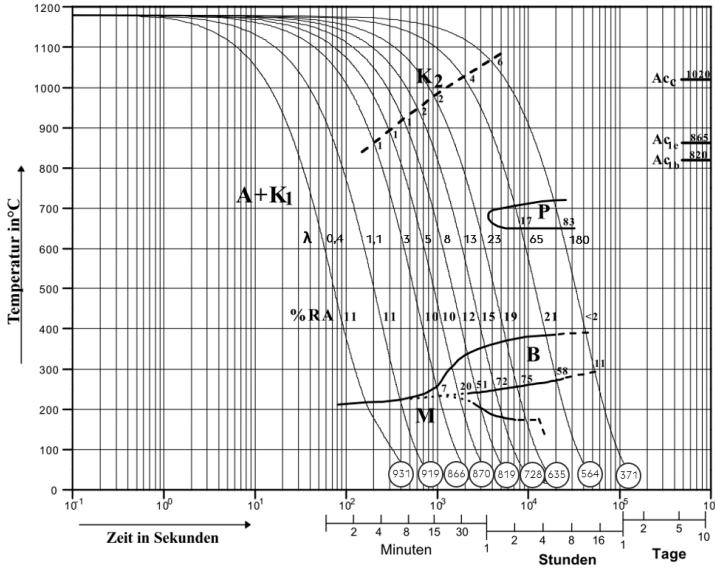
Tempering chart



Quantitative phase diagram



Continuous cooling CCT curves



Fiziksel özellikler

Sıcaklık (°C)	20
Yoğunluk (kg/dm ³)	7,6
Termal iletkenlik (W/(m.K))	21,5
Özgül ısı kapasitesi (kJ/kg K)	0,464
Spes. elektrik direnci (Ohm.mm ² /m)	0,59
Elastikiyet modülü (10 ³ N/mm ²)	220

Termal genleşmeler

Sıcaklık (°C)	100	200	300	400	500	600
Termal genleşme (10 ⁻⁶ m/(m.K))	10,3	10,67	11,03	11,38	11,7	11,97

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.