

ČELICI ZA HLADNI RAD

Dostupne varijante proizvoda

[Šipkasti proizvodi*](#)[Ploče](#)

*) Presented data refer exclusively to long products. Please observe the detailed explanations at the end of the data sheet (pdf).

Opis proizvoda

Probojci i matrice za prosijecanje, probijanje, hladno valjanje i hladno istiskivanje. Valjci za hladno oblikovanje. Noževi za uzdužno rezanje, peletiranje i obradu drveta. Puževi, mlaznice i cilindri za ekstrudiranje plastike i injekciono prešanje. Alati za kompaktiranje metalnog praha.

Put taljenja

[Powder metallurgy](#)

Karakteristike

- > Žilavost i duktilnost : dobar
- > Otpornost na habanje : vrlo visoka
- > Tlačna čvrstoća : vrlo visoka
- > Dimenzionalna stabilnost : vrlo visoka

Korištenje

- > Strojni mjerni noževi (za proizvodnju)
- > Vijci i cijevi
- > Cold Forming
- > Opći sklopovi za strojarstvo
- > Precizno štancanje / štancanje / pečačenje

Technički podaci

Oznaka materijala		
1.2395	SEL	
T30111	UNS	
PM A11	AISI	

Kemijski sastav

C	Si	Mn	Cr	Mo	V
2,45	0,90	0,50	5,20	1,30	9,70

Materijal

	Kapacitet tlaka	Dimenzionalna stabilnost u toplinskoj obradi	Žilavost	Abraziv otpora na habanje	Ljepilo za otpornost na habanje
BÖHLER K294 MICROCLEAN®	★★★★★	★★★★★	★★★	★★★★★	★★★★★
BÖHLER K100	★★	★★	★	★★★	★★
BÖHLER K105	★★	★★	★	★★	★★
BÖHLER K107	★★	★★	★	★★★	★★
BÖHLER K110	★★	★★★	★	★★★	★★
BÖHLER K190 MICROCLEAN®	★★★★	★★★★★	★★★★	★★★★	★★★★
BÖHLER K340 ECOSTAR®	★★★	★★★	★★	★★	★★
BÖHLER K340 ISODUR®	★★★	★★★★	★★★	★★★	★★★★
BÖHLER K346	★★★	★★★	★★★	★★★★	★★
BÖHLER K353	★★	★★★	★★	★★	★★
BÖHLER K360 ISODUR®	★★★	★★★★	★★★	★★★★	★★★★
BÖHLER K390 MICROCLEAN®	★★★★★	★★★★★	★★★★	★★★★★	★★★★★
BÖHLER K490 MICROCLEAN®	★★★★	★★★★★	★★★★	★★★★	★★★★
BÖHLER K497 MICROCLEAN®	★★★★★	★★★★★	★★★	★★★★★	★★★★★
BÖHLER K888 MATRIX	★★★★	★★★★★	★★★★★	★★	★★
BÖHLER K890 MICROCLEAN®	★★★★	★★★★★	★★★★★	★★★	★★★

Isporuka
Annealed

Tvrdoća (HB)	max. 277
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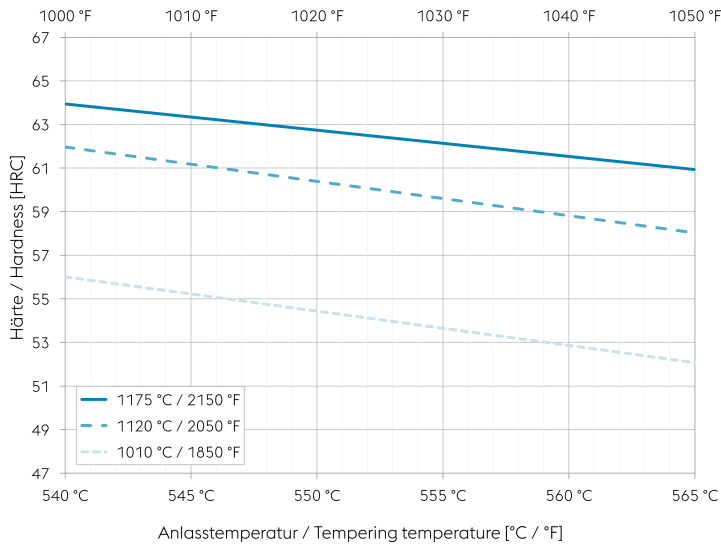
Toplinska obrada
Annealing

Temperatura	570 do 870 °C	Protect steel from scaling and/or decarburization. Heat through to 1600°F (870°C). Control cool at 30°F (15°C) maximum per hour to 1000°F (540°C), then furnace or air cool to room temperature.
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Stress relieving

Temperatura	595 do 700 °C	If required after Rough machining to minimize distortion during final heat treatment, heat to 1100-1300°F (595-700°C) and hold for 2 hrs followed by furnace. Cool slowly to 930°F (500°C), then air cool.
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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/cooling in air.

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

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

It is recommended to temper at least three times above the secondary hardness maximum.

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

Fizička svojstva

Temperatura (°C)	20
Gustoća (kg/dm ³)	7,42
Toplinska vodljivost (W/(m.K))	20,39
Specifični toplinski kapacitet (kJ/kg K)	0,46
Spec. Otpornik (Ohm.mm ² /m)	-
Modul elastičnosti (10 ³ N/mm ²)	221

Toplinska ekspanzija

Temperatura (°C)	93	260	427	593
Toplinska ekspanzija (10 ⁻⁶ m/(m.K))	10,7	11,1	11,8	12,3

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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ONE STEP AHEAD.