

# ČELICI ZA TOPLI RAD

## Dostupne varijante proizvoda

Šipkasti proizvodi\*

Otvoreno kovanje

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

## Opis proizvoda

Alatni čelik koji se pokazao vrlo pogodnim za obradu u toplom i hladnom stanju, te kontinuiranu uporabu na temperaturama do približno 450 °C (842 °F) u raznovrsnim primjenama. Alati za hidrostatičke preše, alati za istiskivanje u hladnom stanju, alati za hladno valjanje i utiskivanje, kalupi za industriju plastike, alati za tlačno lijevanje aluminijskih i cinkovih slitina, alati za prešanje u toplom stanju, trnovi za hladno valjanje pilger postupkom.

## Put taljenja

VIM + VAR

## Korištenje

- > Istiskivanje
- > Lijevanje ubrizgavanjem
- > Elementi za pričvršćivanje, vijci i matice
- > Opći sklopovi za strojarstvo
- > Visokotlačno lijevanje

## Technički podaci

Oznaka materijala	
1.6358	SEL
K93120	UNS

## Kemijski sastav

C	Si	Mn	Mo	Ni	Co	Ti	Al
≤ 0,030	≤ 0,10	≤ 0,10	5,00	18,50	9,00	0,70	0,10

## Isporuka

### Solution annealed

Tvrdoća (HB)	max. 353
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### Solution annealed + precipitation hardened

Vlačna čvrstoća (UTS) (MPa)	min. 1900
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## Toplinska obrada

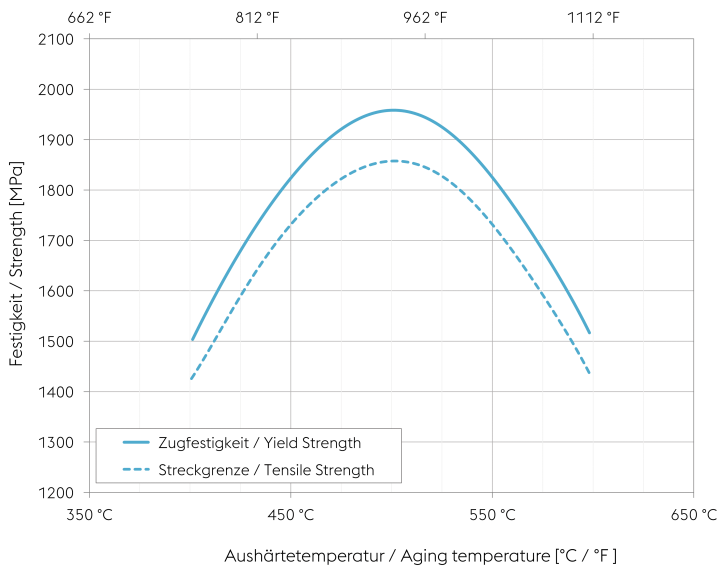
### Solution annealing

Temperatura	820 °C	1 hour air, gas
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### Precipitation hardening

Temperatura	430 °C	3 hours / air 1720 to 1870 N/mm <sup>2</sup>
Temperatura	480 °C	3 hours / air 1860 to 2260 N/mm <sup>2</sup>

## Ageing chart



### Aging:

Solution annealed 820°C (1508°F) / 1 hour / air  
Aging time: 3 hours

## Fizička svojstva

Temperatura (°C)	20
Gustoća (kg/dm <sup>3</sup> )	8,2
Toplinska vodljivost (W/(m.K))	14
Specifični toplinski kapacitet (kJ/kg K)	0,46
Spec. Otpornik (Ohm.mm <sup>2</sup> /m)	0,4
Modul elastičnosti (10 <sup>3</sup> N/mm <sup>2</sup> )	193

## Toplinska ekspanzija

Temperatura (°C)	100	200	300	400	500	600
Toplinska ekspanzija (10 <sup>-6</sup> m/(m.K))	10,2	10,8	11	11,4	11,8	11,8

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**Long Products:** For additional specifications and technical requirements, please contact our regional voestalpine BÖHLER sales companies.

**Open Die Forgings:** Product Variant may differ in terms of melting process, technical data, delivery, and surface condition as well as available product dimensions. Please contact the business unit Open Die Forgings of voestalpine BÖHLER Edelstahl GmbH & Co KG.

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