

BRZOREZNI ČELICI

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

BÖHLER S590 MICROCLEAN – ekspertni čelik"

Brzorezni čelik proizveden postupcima praškaste metalurgije, odlikuje se dobrom tvrdoćom u toplom stanju, tlačnom čvrstoćom i otpornošću na trošenje. PM tehnologija daje ovom čeliku dobru žilavost i izvrsnu obradivost, npr. strojnu obradivost.

"

Put taljenja

Powder metallurgy

Karakteristike

- > Žilavost i duktilnost : visok
- > Otpornost na habanje : dobar
- > Tlačna čvrstoća : visok
- > Stabilnost rubova : visok
- > Mogućnost brušenja : visok
- > Tvrdoća pri visokim temperaturama : visok

Korištenje

- > Listovi za šivaće strojeve
- > Precizno štancanje / štancanje / pečačenje
- > Valjanje
- > Strugači i razvrtači
- > Izrezivanje zupčanika, alati za brijanje i oblikovanje
- > Rezanje / strojni noževi
- > Glodala
- > Oblikovanje utiskivanjem praškastih materijala
- > Svrdla i konusi

Tehnički podaci

Oznaka materijala		Standardi	
1.3244	SEL	4957	EN ISO
HS6-5-3-8	EN		

Kemijski sastav

C	Cr	Mo	V	W	Co
1,29	4,2	5	3	6,3	8,4

Materijal

	Kapacitet tlaka	Brušenje	Vruća tvrdoća	Žilavost	Otpornost na habanje	Točnost rezanja
BÖHLER S590 MICROCLEAN®	★★★★	★★★	★★★★	★★★	★★★	★★★
BÖHLER S290 MICROCLEAN®	★★★★★	★	★★★★	★★	★★★★★	★★★★★
BÖHLER S390 MICROCLEAN®	★★★★	★★★	★★★★	★★★★	★★★★	★★★★
BÖHLER S393 MICROCLEAN®	★★★★	★★★	★★★★	★★★★	★★★★	★★★★
BÖHLER S592 MICROCLEAN®	★★★★	★★★	★★★★	★★★	★★★	★★★
BÖHLER S690 MICROCLEAN®	★★★	★★★	★★	★★★★★	★★★	★★
BÖHLER S692 MICROCLEAN®	★★★	★★★	★★	★★★★★	★★★	★★
BÖHLER S790 MICROCLEAN®	★★★	★★★	★★	★★★★	★★	★★★
BÖHLER S792 MICROCLEAN®	★★★	★★★	★★	★★★★	★★	★★★
BÖHLER S793 MICROCLEAN®	★★★	★★★	★★★★	★★★	★★★	★★★

Isporuka

Annealed

Tvrdoća (HB)	max. 300
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Toplinska obrada

Annealing

Temperatura	870 do 900 °C	The steel needs to be protected against decarburization. Through heating of the material is followed by controlled, slow furnace cooling at a maximum cooling rate of 10°C (50°F) per hour, down to approx. 700°C (1292°F). Final cooling in air.
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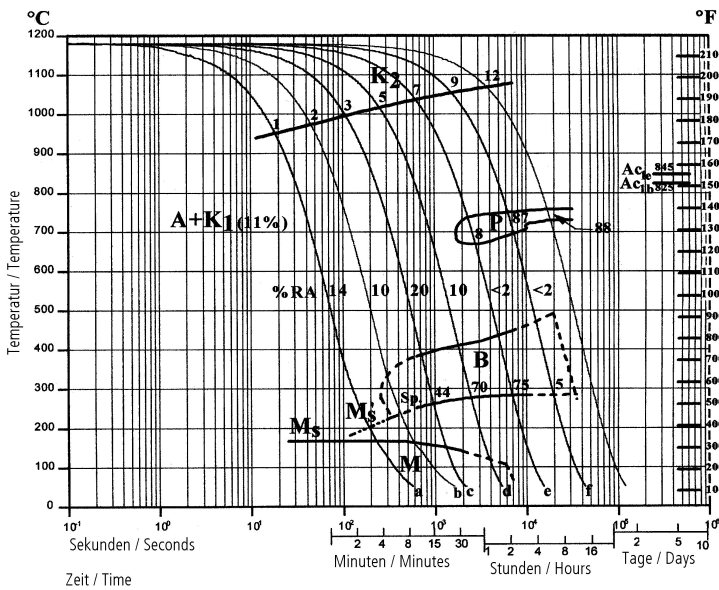
Stress relieving

Temperatura	600 do 650 °C	Slow cooling furnace. To relieve stresses set up by extensive machining or in tools of intricate shape. After through heating, hold in neutral atmosphere for 1 to 2 hours.
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Hardening and Tempering

Temperatura	1.075 do 1.180 °C	Salt bath, vacuum Preheating: 1st stage ~ 500 °C, 2nd stage ~ 850 °C, 3rd stage ~1050 °C (for higher austenitising temperature) Austenitising: for cutting applications at higher austenitising temperatures (>1100 °C), holding time after complete heating 80 seconds, maximum 150 seconds, to avoid material damage due to overtime. Austenitising: for cold work applications at lower austenitising temperatures (<1100°C). Holding time after complete heating 15 to 30 min Quenching: oil, warm bath (500 - 550 °C), gas.
Temperatura	540 do 570 °C	Slow heating to tempering temperature immediately after austenitising. Dwell time in the furnace 1 hour per 20 mm material thickness (at least 1 hour) Slow cooling to room temperature 3 tempering cycles recommended Hardness see tempering chart

Continuous cooling CCT curves

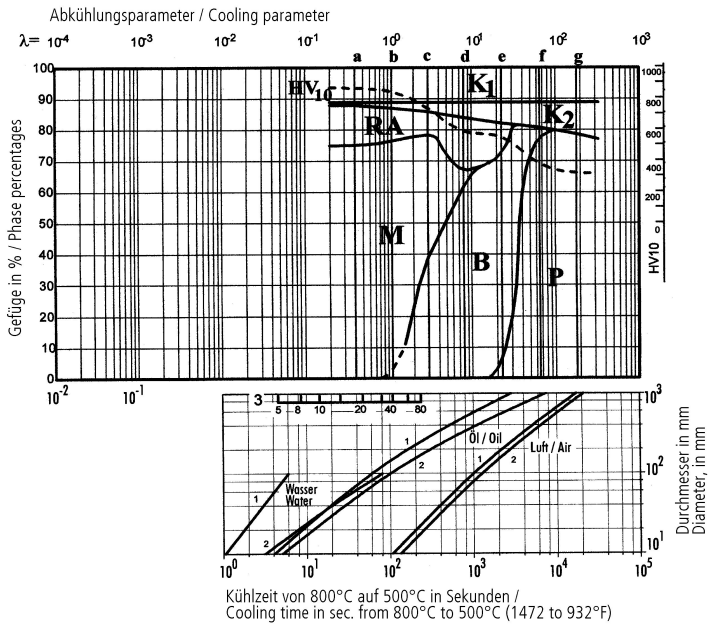


Austenitising temperature: 1180°C (2156°F)
Holding time: 180 seconds

A....Austenite
B....Bainite
K....Carbide
P....Pearlite
M....Martensite
RA...Retained Austenite

Sample	λ	HV10	Sample	λ	HV10
a	0,4	870	e	23,0	549
b	1,1	845	f	65,0	384
c	3,0	740	g	180,0	325
d	8,0	592			

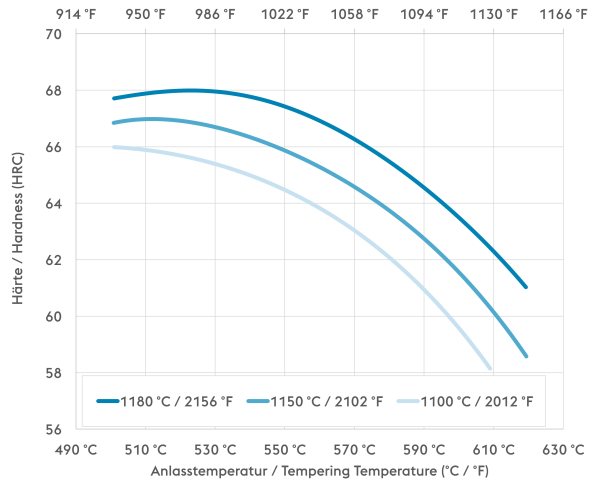
Quantitative phase diagram



A....Austenite
B....Bainite
K....Carbide
P....Pearlite
M....Martensite
RA...Retained Austenite

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

Tempering Chart



Holding time 3 x 2 hours
Specimen size: square 25 mm

Fizička svojstva

Temperatura (°C)	20
Gustoća (kg/dm ³)	8,05
Toplinska vodljivost (W/(m.K))	22
Specifični toplinski kapacitet (kJ/kg K)	0,42
Spec. Otpornik (Ohm.mm ² /m)	0,61
Modul elastičnosti (10 ³ N/mm ²)	240

Toplinska ekspanzija

Temperatura (°C)	100	200	300	400	500	600	700
Toplinska ekspanzija (10 ⁻⁶ m/(m.K))	10	10,5	10,8	11,2	11,3	11,4	11,6

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.