BÖHLER

BÖHLER S290 MICROCLEAN®

BRZOREZNI ČELICI

Dostupne varijante proizvoda

Šipkasti proizvodi* | Ploče

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

Opis proizvoda

BÖHLER S290 MICROCLEAN – tvrdi čelik"
Ova neuobičajena slitina predstavlja prijelaz između karbida i brzoreznih čelika s tvrdoćom do 70 HRC. Osim visoke tvrdoće u toplom stanju i dobre otpornosti na trošenje, tlačna čvrstoća jedno je od najvažnijih svojstava ove klase brzoreznih čelika proizvedenih postupcima praškaste metalurgije.

"

Put taljenja

Powder metallurgy

Karakteristike

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

Korištenje

- Hladno oblikovanje / utiskivanje
- Oblikovanje utiskivanjem praškastih materijala
- Precizno štancanje / štancanje / pečaćenje
- Posebni rezni alati
- Izrezivanje zupčanika, alati za brijanje i oblikovanje
- Potrošni dijelovi

Kemijski sastav

C	Cr	Mo	V	W	Co
2,0	3,8	2,5	5,1	14,3	11,0

Materijal

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

Isporuka

Annealed

Tvrdoća (HB)	max. 350

Toplinska obrada

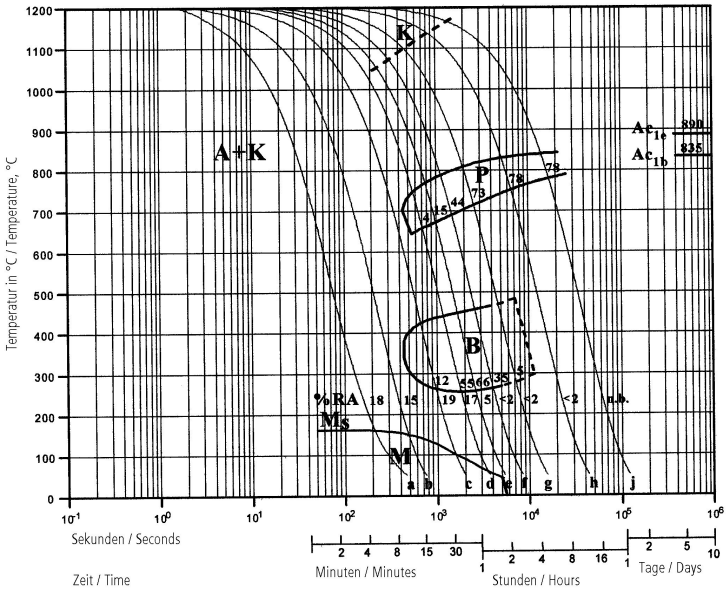
Stress relieving

Temperatura	600 do 650 °C	Slow cooling in 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.

Hardening and Tempering

Temperatura	1.150 do 1.210 °C	Salt bath, vacuum || Preheating: 1st stage ~ 500 °C (930 °F), 2nd stage ~ 850 °C (1560 °F), 3rd stage ~1050 °C (1920 °F)|| Austenitising: 1150 - 1210 °C (2100 °F - 2210 °F), holding time after complete heating 80 seconds, maximum 150 seconds, to avoid material damage due to overheating. || Quenching: oil, warm bath (500 - 550 °C (930 °F - 1020 °F)), gas
Temperatura	550 do 580 °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 between each tempering step || 3 tempering cycles recommended || Hardness see tempering chart

Continuous cooling CCT curves

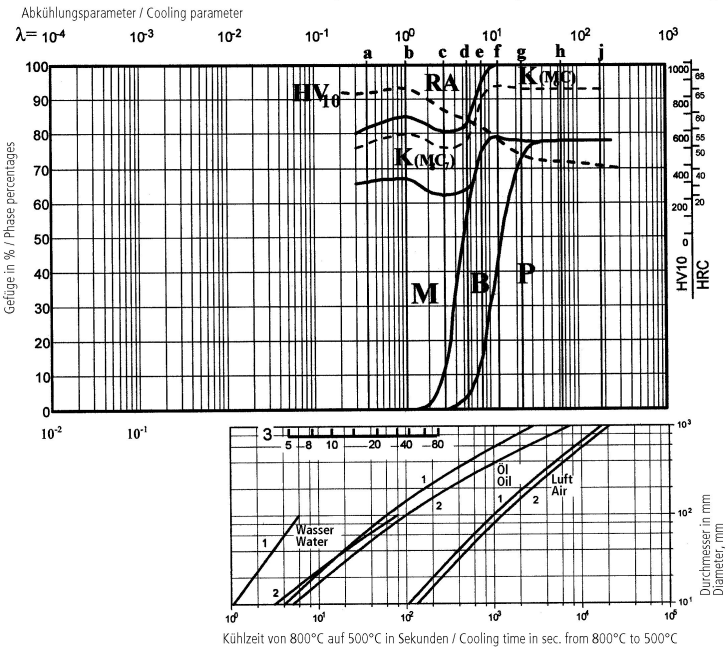


Austenitising temperature: 1210°C (2210°F)
Holding time: 180 seconds

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

Sample	λ	HV10	Sample	λ	HV10
a	0,4	842	f	12,5	562
b	1,1	864	g	23,0	476
c	3,0	737	h	65,0	444
d	5,5	678	j	180,0	418
e	8,0	626			

Quantitative phase diagram



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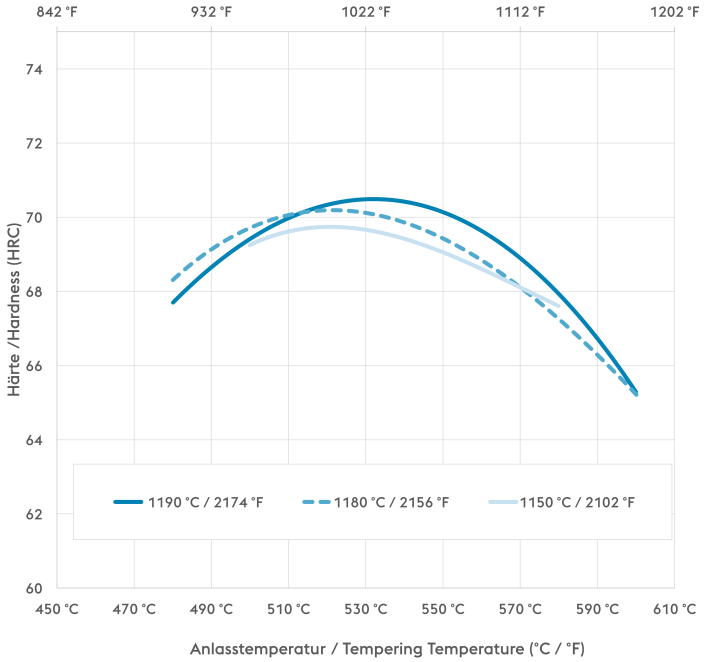
M....Martensite
RA...Retained Austenite

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

Tempering Chart



Holdingtime 3x2 hours

Specimensize: square 25mm

Fizička svojstva

Temperatura (°C)	20
Gustoća (kg/dm^3)	8,3
Toplinska vodljivost (W/(m.K))	19
Specifični toplinski kapacitet (kJ/kg K)	0,41
Spec. Otpornik (Ohm.mm^2/m)	0,56
Modul elastičnosti (10^{3}N/mm^2)	242

Toplinska ekspanzija

Temperatura (°C)	100	200	300	400	500	600	700
Toplinska ekspanzija (10^{-6} m/(m.K))	9,6	10	10,3	10,6	10,9	11,2	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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