

SNELDRAAISTAAL

Beschikbare uitvoeringen

Stafstaal*

Plaat

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

Product omschrijving

BÖHLER S390 MICROCLEAN – "De decatleet"

Dit is de kwaliteit van ons PM-staal met vele positieve gebruikseigenschappen. Of het nu gaat om spiraalboren, schroefdraadtappen, frezen, ruimgereedschap of koudbewerkingstoepassingen, het BÖHLER S390 MICROCLEAN levert altijd zijn prestaties.

Smeltroute

Powder metallurgy

Eigenschappen

- > Taaiheid & Vervormbaarheid : hoog
- > Slijtageweerstand : hoog
- > Samenpersende sterkte : zeer hoog
- > Randstabiliteit : zeer hoog
- > Slijpbaarheid : hoog
- > Hete hardheid (rode hardheid) : zeer hoog

Toepassingen

- > Autoracen
- > Kopfrezen
- > Persen van poeders
- > Speciale snijwerktuigen
- > Pill punching dies
- > Trekfrezen en ruimers
- > Fijn stanswerk / ponsen / stampen
- > Walsen
- > Spiraalboren en tappen
- > Koudvervorming / munten
- > Gereedschap voor snijden, schrapen en steken van tandwielen
- > Knippen / machinale messen
- > Slijtstukken

Chemische samenstelling

C	Cr	Mo	V	W	Co
1,64	4,80	2,00	4,80	10,40	8,00

Materiaaleigenschappen

	Drukbelastingcapaciteit	Werkzaamheid	Hete hardheid	Taaheid	Slijtvastheid	Behoud van snijkant
BÖHLER S390 MICROCLEAN®	★★★★	★★★	★★★★	★★★★	★★★★	★★★★
BÖHLER S290 MICROCLEAN®	★★★★★	★	★★★★	★★	★★★★★	★★★★
BÖHLER S393 MICROCLEAN®	★★★★	★★★	★★★★	★★★★	★★★★	★★★★
BÖHLER S590 MICROCLEAN®	★★★★	★★★	★★★★	★★★	★★★	★★★
BÖHLER S690 MICROCLEAN®	★★★	★★★	★★	★★★★★	★★★	★★
BÖHLER S790 MICROCLEAN®	★★★	★★★	★★	★★★★	★★	★★★
BÖHLER S792 MICROCLEAN®	★★★	★★★	★★	★★★★	★★	★★★
BÖHLER S793 MICROCLEAN®	★★★	★★★	★★★★	★★★	★★★	★★★

Leveringsconditie

gegloeid

Hardheid (HB)	max. 320 drawn execution max. 320 HB
Treksterkte (N/mm ²)	max. 1.080

Hardened and Tempered

Hardheid (HRC)	64 naar 68
----------------	------------

Warmtebehandeling

Annealing

Temperatuur	870 naar 900 °C	4 h, controlled slow cooling in furnace (10 to 20°C/h / (50 to 68°F/h) to 740°C/2h (1364°F/2 h) cooling in furnace,
-------------	-----------------	--

Stress relieving

Temperatuur	600 naar 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.
-------------	-----------------	--

Harden en ontlaten

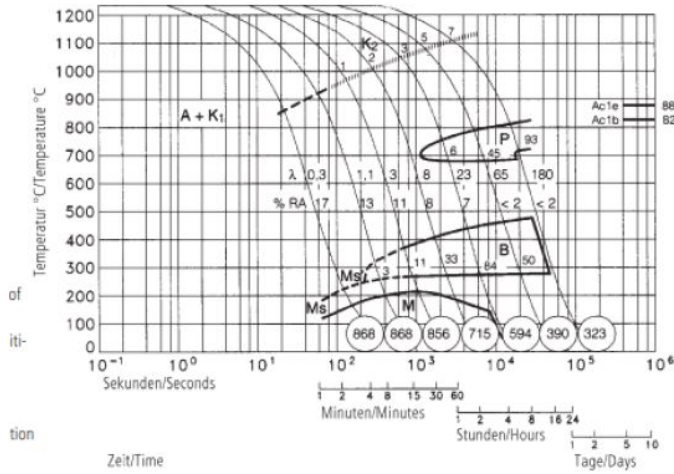
Temperatuur	1.100 naar 1.200 °C	Salt bath, vacuum Preheating: 1st stage ~ 500 °C (930 °F), 2nd stage ~ 850 °C (1560 °F), 3rd stage ~1050 °C (1920 °F) Austenitising: 1100 - 1200 °C (2010 °F - 2190 °F), holding time after complete heating 80 seconds, maximum 150 seconds, to avoid material damage due to overheating. Quenching: oil, warm bath (500 - 550 °C (930 °F - 1020 °F)), gas
Temperatuur	550 naar 570 °C	Slow heating to tempering temperature immediately after austenitising. Holding 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: 1230°C
Haltedauer: 180 Sekunden

Austenitising temperature: 1230°C (2246°F)
Holding time: 180 seconds

Austenitising temperature: 1230°C (2246°F)
Holding time: 180 seconds

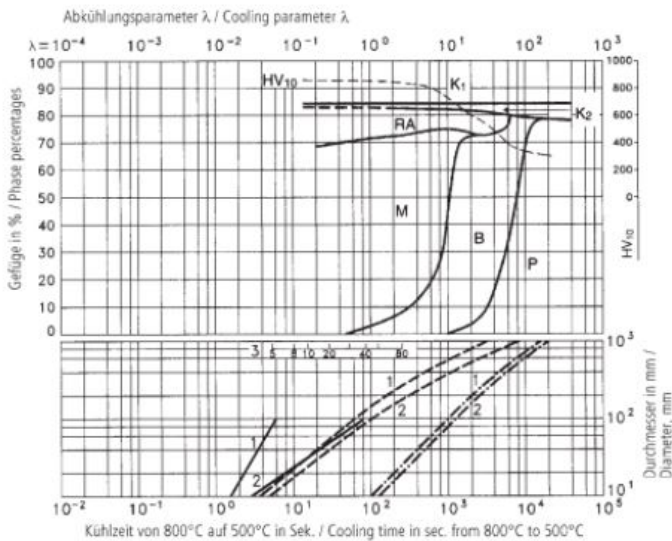


- A....Austenite
- B....Bainite
- K....Carbide
- P....Pearlite
- M....Martensite
- RA...Retained Austenite

Quantitative phase diagram

Austenitising temperature: 1230°C
Haltedauer: 180 Sekunden

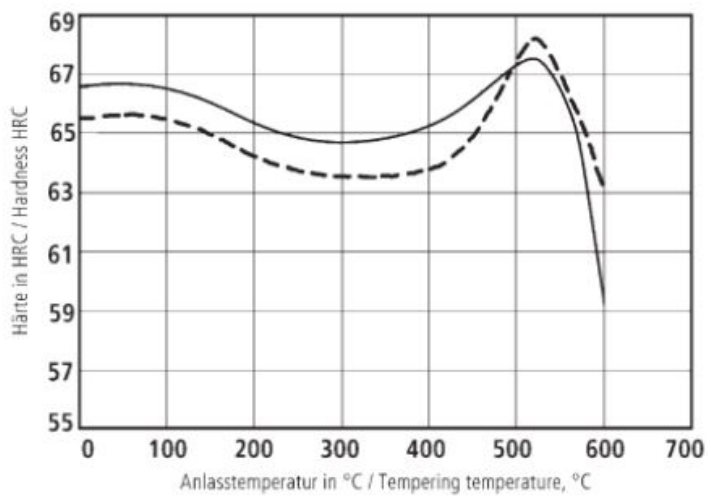
Austenitising temperature: 1230°C (2246°F)
Holding time: 180 seconds



- 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



Holdingtime 3x2 hours

Specimensize: square 25mm

Austenitising in saltbath

Hardeningtemperature:

———— 1150°C (2102°F)

- - - - - 1210°C (2210°F)

Fysische eigenschappen

Temperatuur (°C)	20
Soortelijk gewicht (kg/dm ³)	8,1
Thermische conductiviteit (W/(m.K))	17
Soortelijke warmte (kJ/kg K)	0,42
Specifieke elektrische weerstand (Ohm.mm ² /m)	0,61
Elasticiteitsmodus (10 ³ N/mm ²)	231

Thermische expansie

Temperatuur (°C)	100	200	300	400	500	600	700
Thermische expansie (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.

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.