BÖHLER

BÖHLER S790 MICROCLEAN®

RYCHLOŘEZNÉ OCELI

Rozměrový sortiment k dispozici

Tyčová ocel*	Plech

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

Popis produktu

BÖHLER S790 MICROCLEAN – „Der 1. MICROCLEAN“

Rychlořezná ocel vyrobená metodou práškové metalurgie s dobrou tvrdostí za tepla, tlakovou zatížitelností a odolností proti opotřebení otěrem. Díky použití práškové metalurgie má dobrou houževnatost a výbornou zpracovatelnost, jako např. vynikající brousitelnost.

Trasa tavení

Prášková metalurgie

Vlastnosti

- Houževnatost a tažnost : vysoká
- Odolnost proti opotřebení : dobré
- Pevnost v tlaku : dobré
- Stabilita hran : dobré
- Brousitelnost : vysoká
- Tvrdost za tepla (červená tvrdost) : dobré

Použití

- Výrobky pro závodní motoristiku
- Lisování prášků za studena
- Zvláštní řezné nástroje
- Protahovací trny a výstružníky
- Válcování
- Díly odolné proti opotřebení
- Tváření za studena a ohraňování
- Průmyslové nože

Technické údaje

Označení materiálu	
1.3345	SEL
HS6-5-3C	EN

Normy	
4957	EN ISO

Chemické složení

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

Materiálové vlastnosti

	Tlaková zatížitelnost	Rozm?lnitelnost	Tvrdost za tepla	Houževnatost	Odolnost proti opotřebení	Udrení ost?í
BÖHLER S790 MICROCLEAN®	★★★	★★★	★★	★★★★	★★	★★★
BÖHLER S290 MICROCLEAN®	★★★★★	★	★★★★	★★	★★★★★	★★★★
BÖHLER S390 MICROCLEAN®	★★★★	★★★	★★★★	★★★★	★★★★	★★★★
BÖHLER S393 MICROCLEAN®	★★★★	★★★	★★★★	★★★★	★★★★	★★★★
BÖHLER S590 MICROCLEAN®	★★★★	★★★	★★★★	★★★	★★★	★★★
BÖHLER S592 MICROCLEAN®	★★★★	★★★	★★★★	★★★	★★★	★★★
BÖHLER S690 MICROCLEAN®	★★★	★★★	★★	★★★★★	★★★	★★
BÖHLER S692 MICROCLEAN®	★★★	★★★	★★	★★★★★	★★★	★★
BÖHLER S792 MICROCLEAN®	★★★	★★★	★★	★★★★	★★	★★★
BÖHLER S793 MICROCLEAN®	★★★	★★★	★★★★	★★★	★★★	★★★

Stav dodání

Žíháno

Tvrdost (HB)	max. 280 | drawn max. 300 HB
Pevnost v tahu (MPa)	max. 1 020
Pevnost v tahu (N/mm^2)	max. 1 020

Tepelné zpracování

Annealing

Teplota	870 na 900 °C	870 to 900°C (1598 to 1652°F) || 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.

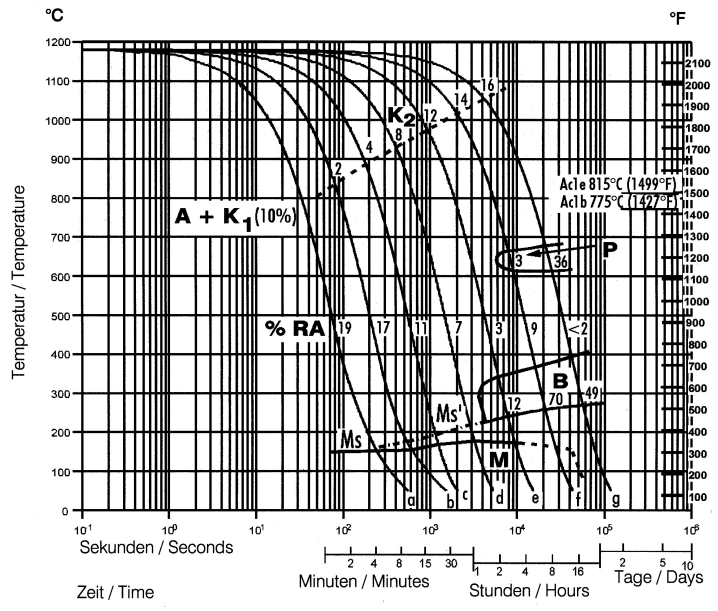
Žíhání na odstranění vnitřního pnutí

Teplota	600 na 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.

Kalení a popouštění

Teplota	1 050 na 1 200 °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 (>1130 °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.
Teplota	560 na 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

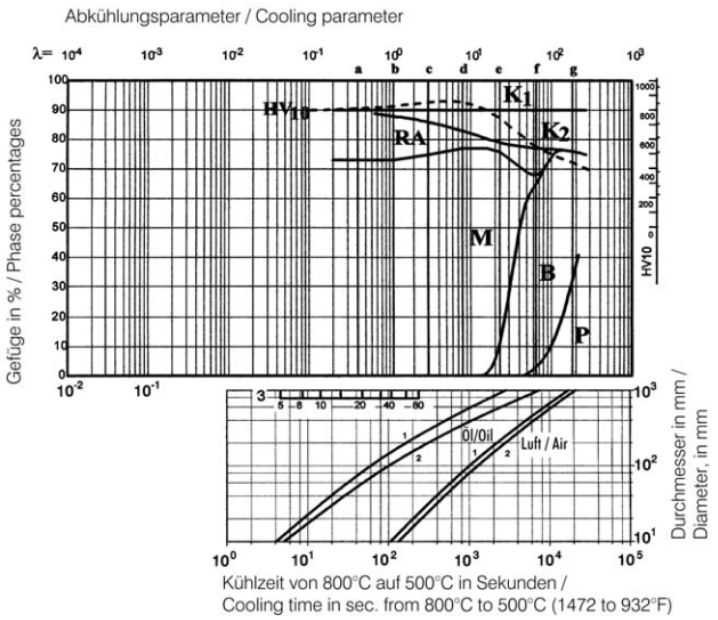


Austenitising temperature: 1180°C (2156°F)
Holding time: 180 seconds

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

Sample	λ	HV10	Sample	λ	HV10
a	0,4	811	e	23,0	751
b	1,1	827	f	65,0	560
c	3,0	854	g	180,0	448
d	8,0	855			

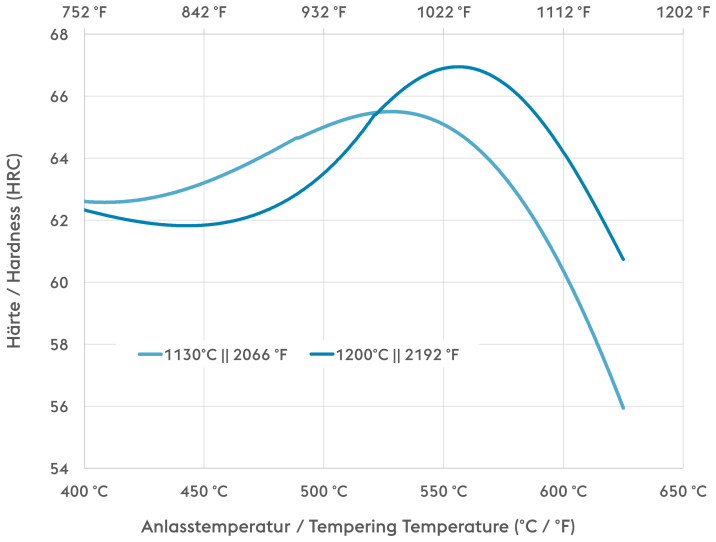
Quantitative phase diagram



A....Austenite
B....Bainite
K....Carbide
P....Perlite
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

Fyzikální vlastnosti

Teplota (°C)	20
Hustota (kg/dm^3)	8
Tepelná vodivost (W/(m.K))	24
Měrná tepelná kapacita (kJ/kg K)	0,42
Měrný elektrický odpor (Ohm.mm^2/m)	0,54
Modul pružnosti (10^{3}N/mm^2)	230

Tepelná roztažnost

Teplota (°C)	100	200	300	400	500	600	700
Tepelná roztažnost (10^{-6} m/(m.K))	11,5	11,7	12,2	12,4	12,7	13	12,9

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.

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ONE STEP AHEAD.