

HARDENABLE CORROSION RESISTANT STEELS

Available Product Shapes

- Long Products
- Plates

Product Description

BÖHLER M390 MICROCLEAN is a martensitic chromium steel produced with powder metallurgy. Due to its alloying concept this steel offers extremely high wear resistance and high corrosion resistance – the perfect combination for best application properties.

Properties

- Good toughness & ductility
- Very high wear resistance
- Good machinability
- Very good dimensional stability
- Very good polishability
- Good corrosion resistance
- Very high micro-cleanliness







Applications

- > Comps. for Food processing and Animal Feed
- > Injection Molding
- > Screws and Barrels
- > Shearing / Machine Knives
- > Custom Hand Knives
- > Electronic Industry
- > Food processing Industry
- > Medical
- > Packaging
- > Plastic Extrusion
- > Powder Pressing
- > Pill punching dies

Chemical composition (wt. %)

C	Si	Mn	Cr	Mo	V	W
1.9	0.7	0.3	20	1	4	0.6

Material characteristics

	Corrosion resistance	Machinability in as supplied condition	Polishability	Toughness	Wear resistance
	★★	★	★★★★	★★	★★★★★
	★★★★★	★★★★★	★★	★★	★★
	★★★★★	★★★★★	★★★★★	★★★★★	★★
	★★★	★★★	★★	★★	★★★
	★★★★★	★★★	★★★★★	★★★	★★★
	★★	★	★★★★	★★	★★★★★

Delivery condition

Soft annealed	
Hardness	max. 280 HB

Heat treatment

Stress relieving		
Temperature (°C °F)	650 1202	After through-heating, soak for 4 hours in a neutral atmosphere. Furnace cooling down to 300 °C (570 °F), followed by air. After hardening and tempering, stress relieving has to be performed 50°C (90°F) below last tempering temperature.

Hardening and Tempering

Temperature (°C °F)	1100 2012 to 1180 2156	After through-heating, hold for: 20 – 30 minutes for a hardening temperature of 1100 – 1150 °C (2010 – 2100 °F) 5 – 10 minutes for a hardening temperature of 1180 °C (2155 °F) Quenching media: oil, N ₂ .
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Physical Properties

Temperature (°C °F)	20 68
Density (kg/dm ³ lb/in ³)	7.54 0.27
Thermal conductivity (W/(m.K) BTU (IT) ft/hr/ft ² /F)	16.5 9.53
Specific heat (J/(kg.K) BTU (IT) lb/F)	480 114.65
Spec. electrical resistance (Ohm.mm ² /m 10 ⁻⁴ Ohm.inch ² /ft)	-
Modulus of elasticity (10 ³ N/mm ² 10 ³ ksi)	227 32.92

Thermal Expansions

Temperature (°C °F)	100 212	200 392	300 572	400 752	500 932
Thermal expansion (10 ⁻⁶ m/(m.K) 10 ⁻⁶ inch/(inch.F))	10.38 5.767	10.67 5.928	10.96 6.089	11.24 6.244	11.56 6.422

For more information see www.voestalpine.com/boehler-edelstahl

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.