

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 .

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

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