BÖHLER

BÖHLER M398
MICROCLEAN®

PLASTIC MOULD STEELS

HARDENABLE CORROSION RESISTANT STEEL

Product Description

BÖHLER M398 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 highly wear-resistant tools.

Process Melting

Powder metallurgy

Properties

- Toughness & Ductility: good
- Wear Resistance: very high
- Machinability: good
- Dimensional stability: very high
- Polishability: very high
- Corrosion resistance: good
- Micro-cleanliness: very high

Applications

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

Chemical composition (wt. %)

C	Si	Mn	Cr	Mo	V	W
2.7	0.5	0.5	20	1	7.2	0.7

Material characteristics

	Corrosion resistance	Machinability in as supplied condition	Polishability	Toughness	Wear resistance
BÖHLER M398 MICROCLEAN®	★★	★	★★★	★★	★★★★★
BÖHLER M310 ISOPLAST®	★★★★	★★★★	★★	★★	★★
BÖHLER M333 ISOPLAST®	★★★★★	★★★★	★★★★★	★★★★★	★★
BÖHLER M340 ISOPLAST®	★★★	★★★	★★	★★	★★★
BÖHLER M368 MICROCLEAN®	★★★★	★★★	★★★★	★★★	★★★
BÖHLER M390 MICROCLEAN®	★★	★	★★★	★★	★★★★

Delivery condition

Soft annealed

Hardness (HB)	max. 330

Heat treatment

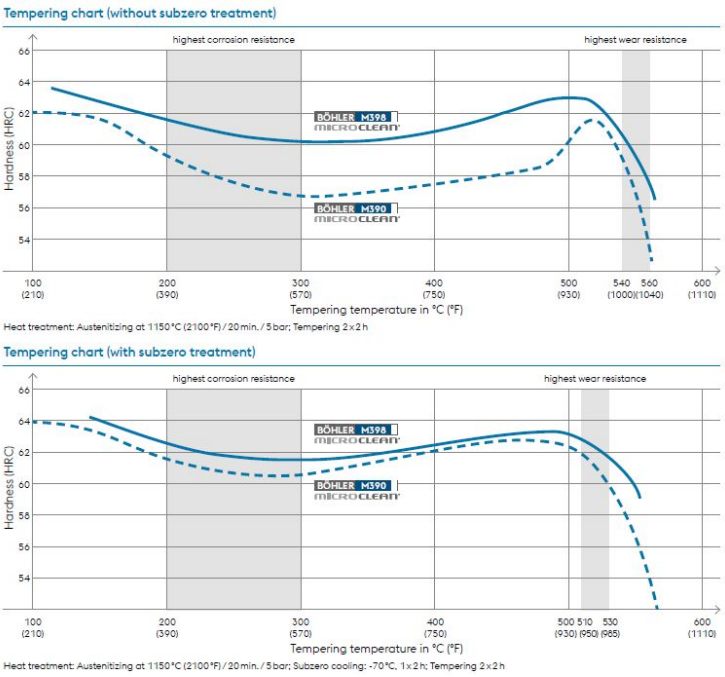
Stress relieving

Temperature	650 °C | 1202 °F	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	1120 to 1180 °C | 2048 to 2156 °F	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.

Tempering Chart



Heat treatment: Austenitizing at 1150 °C (2100 °F) / 20 min. / 5 bar; Tempering 2 x 2 h

Heat treatment: Austenitizing at 1150 °C (2100 °F) / 20 min. / 5 bar; Subzero cooling: -70 °C, 1 x 2 h; Tempering 2 x 2 h

Physical Properties

Temperature (°C | °F)	20 | 68
Density (kg/dm^3 | lb/in^3)	7.46 | 0.27
Thermal conductivity (W/(m.K) | BTU (IT) ft/hr/ft^2/F)	15.2 | 8.78
Specific heat (J/(kg.K) | BTU (IT) lb/F)	490 | 117.03
Spec. electrical resistance (Ohm.mm^2/m | 10^{-4} Ohm.inch^2/ft)	-
Modulus of elasticity (10^{3}N/mm^2 | 10^{3}ksi)	231 | 33.5

Thermal Expansions between 20°C | 68°F and ...

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))	10.4 | 5.8	10.6 | 5.9	10.9 | 6.1	11.2 | 6.2	11.5 | 6.4

For more information see https://www.voestalpine.com/bohler-edelstahl/de/