PLASTIC MOULD STEELS

HARDENABLE CORROSION RESISTANT STEEL

Application Segments

Plastic Mould

Available Product Variants

Long Products

Product Description

BÖHLER M380 ISOPLAST is a high-nitrogen alloyed, corrosion-resistant, martensitic plastic mold steel electro-slag remelted under pressure with excellent corrosion resistance, very good polishability and very high toughness combined with a high hardness of up to 60 HRC. In addition, BÖHLER M380 ISOPLAST is approved for contact with food and beverage.

Process Melting

Airmelted + PESR

Properties

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

Applications

- Injection Molding
- Standard Parts (Molds, Plates, Pins, Punches)
- Components for Displays
- Components for food processing and animal feed
- Pill punching dies
- Plastic Extrusion
- Medical
- Custom Hand Knives
- Consumer Goods - General
- Machine knife (for producers)
- Screws and Barrels
- Packaging industry
- Electronic industry
- Glasfibre reinforced plastics
- Industrial Knives

Technical data

Material designation	
1.4108	SEL
X30CrMoN15-1	EN

Chemical composition (wt. %)

C	Si	Mn	Cr	Mo	N
0.3	0.6	0.4	15	1	0.4

Delivery condition

Annealed

Hardness (HB)	max. 255 | 以下

Heat treatment

Stress relieving

Temperature	max. 650 °C	Soft annealed material: For stress relief annealing after mechanical processing, hold the material at temperature in a neutral atmosphere for 1-2 hours after complete heating, then slowly cool the furnace at 20°C [68 °F]/hour to 200°C [392 °F], then cool in air.
Temperature		Hardened and tempered material: The temperature for stress relief annealing should be approx. 50°C [122 °F] below the previously selected tempering temperature. Other procedure as for stress relief annealing of soft annealed material.

Hardening and Tempering

Temperature	1,020 to 1,030 °C	Tempering treatment: For hardening, hold the material at the specified temperature for 15-30 minutes after complete heating and quench quickly. Cool the material to approx. 30°C [86 °F]. Immediately afterwards, deep-freeze for 2 hours (at -80°C [- 112 °F] -> the lower the better) for residual austenite transformation. Tempering should also take place immediately.
Temperature	250 to 350 °C	Tempering treatment: For maximum corrosion resistance and toughness (with sub-zero cooling), temper the material once for 1 hour/20 mm material thickness, but for at least 2 hours. Achievable hardness - see tempering diagram.
Temperature	500 to 520 °C	Tempering treatment: For optimum toughness, hardness and wear resistance (with sub-zero cooling), temper the material twice for 1 hour/20 mm material thickness, but for at least 2 hours. After each heat treatment step, cool the material to approx. 30°C [86 °F]. Achievable hardness - see tempering diagram.

Physical Properties

Temperature (°C)	**20**
Density (kg/dm³)	7.72
Thermal conductivity (W/(m.K))	14
Specific heat (kJ/kg K)	0.43
Spec. electrical resistance (Ohm.mm²/m)	0.8
Modulus of elasticity (10³N/mm²)	223

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

Temperature (°C)	**100**	**200**	**300**	**400**	**500**
Thermal expansion (10⁻⁶ m/(m.K))	10.4	10.8	11.2	11.6	11.9

If other available product variants are listed in addition to long products, please note that these may differ in terms of melting process, technical data, delivery and surface condition as well as available product dimensions. For mandatory technical specifications, other requirements and dimensions, please contact our regional voestalpine BÖHLER sales companies. 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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