

# PLASTIC MOULD STEELS

## PREHARDENED STEEL

### Application Segments

Plastic Mould

### Available Product Variants

Long Products\*

Plates

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

### Product Description

BÖHLER M238HH corresponds to BÖHLER M238 in High-Hard product variant. A variation in the heat treatment enables significantly higher wear resistance and edge-stability for improved tool life.

### Process Melting

Airmelted

### Properties

- > Toughness & Ductility : very high
- > Wear Resistance : high
- > English (United Kingdom) : good
- > Dimensional stability : good
- > Polishability : very high
- > No heat treatment necessary
- > Prehardened

### Applications

- > Injection Molding
- > General Components for Mechanical Engineering
- > Standard Parts (Molds, Plates, Pins, Punches)
- > Lamps/Lenses for Automotive
- > Tool Holders (milling, drilling, turning & chucks)
- > Hotrunner systems

### Technical data

Material designation		Standards	
1.2738	SEL	4957	EN ISO
40CrMnNiMo8-6-4	EN		

## Chemical composition (wt. %)

C	Si	Mn	Cr	Mo	Ni
0.38	0.3	1.5	2	0.2	1.1

## Delivery condition

### Hardened and Tempered

Hardness (HB)	355 to 395
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## Heat treatment

### Stress relieving

Temperature	max. 450 °C	Prehardened material: When stress-relieving the material after machining, keep material at temperature in a neutral atmosphere for at least 2 hours after complete through-heating, then slowly cool down in the oven at 20°C [68 °F] /hour to 200°C [392 °F], then cool in air.
Temperature		Newly hardened and tempered material: Carry out the stress relief heat treatment at approx. 50°C [122 °F] below the tempering temperature. After complete through-heating, hold at temperature for 1 to 2 hours in a neutral atmosphere, then slowly cool down in the furnace.

## Physical Properties

Temperature (°C)	20
Density (kg/dm <sup>3</sup> )	7.81
Thermal conductivity (W/(m.K))	35.2
Specific heat (kJ/kg K)	0.465
Spec. electrical resistance (Ohm.mm <sup>2</sup> /m)	-
Modulus of elasticity (10 <sup>3</sup> N/mm <sup>2</sup> )	212

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

Temperature (°C)	100	200	300	400	500
Thermal expansion (10 <sup>-6</sup> m/(m.K))	11.88	12.44	13	13.45	13.85

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.