

# PLASTIC MOULD STEELS

## PREHARDENED CORROSION RESISTANT 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 M303 EXTRA is a corrosion-resistant, martensitic chromium steel with very good toughness, corrosion resistance, good wear resistance and improved machinability and polishability. Compared to 1.2316, BÖHLER M303 EXTRA has better homogeneity and is approved for food and beverage contact.

### Process Melting

Airmelted

### Properties

- > Toughness & Ductility : very high
- > Wear Resistance : high
- > Machinability : very high
- > Dimensional stability : good
- > Corrosion resistance : very high
- > Polishability : very high
- > No heat treatment necessary
- > Prehardened

### Applications

- > Components for Displays
- > Electronic industry
- > Injection Molding
- > Screws and Barrels
- > Blow Molding
- > General Components for Mechanical Engineering
- > Packaging industry
- > Hotrunner systems
- > Components for food processing and animal feed
- > Lamps/Lenses for Automotive
- > Plastic Extrusion

### Technical data

| Material designation |     | Standards |        |
|----------------------|-----|-----------|--------|
| ~1.2316              | SEL | 4957      | EN ISO |
| X38CrMo16            | EN  |           |        |

## Chemical composition (wt. %)

| C    | Si  | Mn   | Cr   | Mo | Ni   | N |
|------|-----|------|------|----|------|---|
| 0.27 | 0.3 | 0.65 | 14.5 | 1  | 0.85 | + |

## Delivery condition

### Hardened and Tempered

|               |            |
|---------------|------------|
| Hardness (HB) | 290 to 330 |
|---------------|------------|

## Heat treatment

### Stress relieving

|             |             |  |
|-------------|-------------|--|
| Temperature | max. 550 °C | Prehardened material: When stress-relieving the material after processing, keep the material at temperature in a neutral atmosphere for at least 2 hours after complete heating, then slowly cool 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 tempering treatment at approx. 50°C [122 °F] below the tempering temperature. After complete heating, hold at temperature for 1 to 2 hours in a neutral atmosphere, then slowly cool down the furnace. |

## Physical Properties

| Temperature (°C)   | 20    |
|--|-------|
| Density (kg/dm <sup>3</sup> )                              | 7.72  |
| Thermal conductivity (W/(m.K))                             | 22.8  |
| 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> ) | 218   |

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

| Temperature (°C)                             | 100  | 200  | 300  | 400  | 500  | 600  |
|--|------|------|------|------|------|------|
| Thermal expansion (10 <sup>-6</sup> m/(m.K)) | 10.5 | 10.8 | 11.1 | 11.4 | 11.7 | 12.1 |

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.