Buderus | Edelstahl

# Buderus Corrosion-Resistant Plastic Mould Steel 2316 ISO-B MOD

| | C | Si | Mn | P | S | Cr | Ni | Mo |
|---|---|---|---|---|---|---|---|---|
| Typical analysis | 0.28 | 0.30 | 0.95 | 0.030 | 0.003 | 14.2 | ~ 0.50 | 1.10 |
| Chemical composition as per SEL | 0.33–0.45 | ≤ 1.00 | ≤ 1.50 | ≤ 0.030 | ≤ 0.030 | 15.5–17.5 | ≤ 1.00 | 0.80–1.30 |

Figures in % by mass

| | |
|---|---|
| Register of European Steels (SEL) | ~ X 38 CrMo 16 |
| DIN EN ISO 4957 | ~ X 38 CrMo 16 |
| AFNOR | Z 35 CD 17 |
| AISI | ~ 422 |

## Characteristics

Modified stainless Steel for High-Perfomance tooling.

## Applications

Injection moulds, mould inserts, slit dies, profile dies, extrusion tools, drop forging tools and coaxial housings for processing PVC amino plastics and additives; blow moulds.

**Important note:** When processing amino-plastics and PVC alloys, excessively high temperatures (> 160 °C) can cause formation of highly aggressive cleavage products such as hydrochloric acid HCl, which can corrode the surface of the mould. No mould steel is resistant to that.
The production temperature should therefore not exceed 160 °C.

## Delivered condition

Quenched and tempered to 265–310 HB (≙ approx. 900–1050 MPa)*

## Physical properties (reference values)

| | | | |
|---|---|---|---|
| Thermal expansion coefficient ($10^{-6}$/K) | 20–100 °C<br>10.0 | 20–250 °C<br>12.0 | 20–500 °C<br>13.2 |
| Thermal conductivity (W/mK) | 20 °C<br>23.0 | 250 °C<br>24.0 | 500 °C<br>25.0 |
| Young's modulus (GPa) | 20 °C<br>215 | 250 °C<br>203 | 500 °C<br>180 |


* Surface hardness in Brinell, converted to DIN EN ISO 18265, Table A.1

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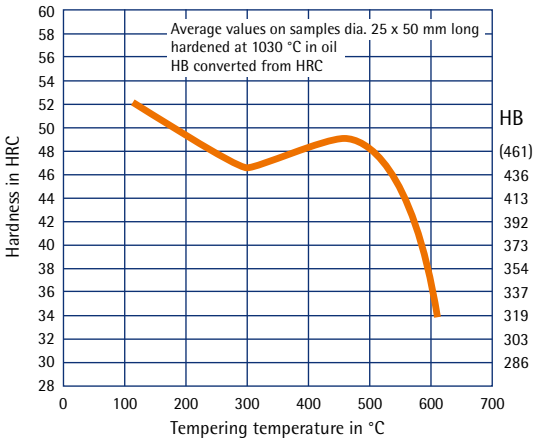
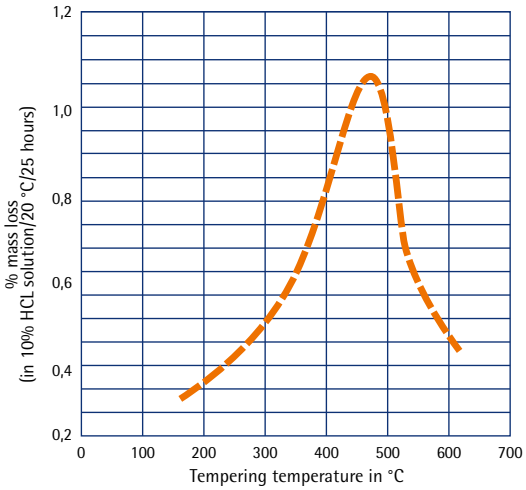
| Heat treatment | | |
|---|---|---|
| Stress relieving | Temperature:<br>Duration:<br>Cooling: | Approx. 590 °C in the quenched and tempered state<br>1 hour per 50 mm wall thickness<br>Furnace |
| Soft annealing | Temperature:<br>Duration:<br>Cooling: | 820 °C<br>1 hour per 25 mm wall thickness<br>Furnace |
| Hardening | Temperature:<br>Duration: | 1030 °C<br>1 minute per mm wall thickness |
| Quenching hardness | Max. 52 HRC | in oil or vacuum |
| Tempering | Temperature:<br>Duration:<br>Cooling: | See tempering curve<br>1 hour per 25 mm wall thickness<br>Air |
| Working hardness | ~ 265–310 HB | |

## Tempering curve




## Effect of the tempering temperature on corrosion resistance




## TTT curve (continuous)