PLASTIC MOULD STEELS

HARDENABLE CORROSION RESISTANT STEEL

Application Segments

Plastic Mould

Available Product Variants

Long Products* | Plates

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

Product Description

BÖHLER M340 ISOPLAST corresponds to a corrosion-resistant, martensitic chromium steel with improved wear resistance. This is ideal for the application area of glass fiber reinforced plastics. In addition, the BÖHLER M340 ISOPLAST is approved for food and beverage contact.

Process Melting

Airmelted + Remelted

Properties

- Toughness & Ductility : good
- Wear Resistance : high
- English (United Kingdom) : good
- Dimensional stability : very high
- Polishability : good
- Corrosion resistance : high
- Micro-cleanliness : high

Applications

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

Chemical composition (wt. %)

C	Si	Mn	Cr	Mo	V	N
0.54	0.45	0.4	17.3	1.1	0.1	+

Material characteristics

	Corrosion resistance	Machinability in as supplied condition	Polishability	Toughness	Wear resistance
BÖHLER M340 ISOPLAST	★★★	★★★	★★	★★	★★★
BÖHLER M310 ISOPLAST	★★★★	★★★★	★★	★★	★★
BÖHLER M333 ISOPLAST	★★★★★	★★★★	★★★★★	★★★★★	★★
BÖHLER M368 MICROCLEAN	★★★★	★★★	★★★★	★★★	★★★
BÖHLER M390 MICROCLEAN	★★	★	★★★	★★	★★★★★
BÖHLER M398 MICROCLEAN	★★	★	★★	★★	★★★★★
BÖHLER M380 ISOPLAST	★★★★★	★★★★	★★★★★	★★★★	★★★

Delivery condition

Soft annealed

Hardness (HB)	max. 260

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	980 to 1,000 °C	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, the material can be deep-frozen for 2 hours (at -80°C [- 112 °F]) for residual austenite transformation. Tempering should also be carried out immediately.
Temperature	250 to 350 °C	Tempering treatment: For maximum corrosion resistance, temper the material once for 1 hour/ 20 mm material thickness, but for at least 2 hours. Achievable hardness - see tempering diagram.
Temperature	505 to 520 °C	Tempering treatment: For optimum toughness and hardness values (without sub-zero cooling), temper the material 3 times for 1 hour/20 mm material thickness, but at least 2 hours. After each heat treatment step, cool the material to approx. 30°C [86 °F]. Achievable hardness - see tempering diagram.
Temperature	490 to 505 °C	Tempering treatment: For optimum toughness and hardness values (with sub-zero cooling), temper the material 3 times for 1 hour/20 mm material thickness, but 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/dm^3)	7.7
Thermal conductivity (W/(m.K))	18.2
Specific heat (kJ/kg K)	0.46
Spec. electrical resistance (Ohm.mm^2/m)	-
Modulus of elasticity (10^{3}N/mm^2)	219

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

Temperature (°C)	**100**	**200**	**300**	**400**	**500**
Thermal expansion (10^{-6} m/(m.K))	10.9	10.8	11.2	11.6	11.9

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ONE STEP AHEAD.