

PLASTIC MOULD STEELS

HARDENABLE CORROSION RESISTANT STEEL

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

Advanced martensitic stainless chromium steel for plastic molds. By electroslag remelting and optimization of the chemical composition, BÖHLER M310 ISOPLAST offers many advantages.

Process Melting

- Airmelted + Remelted

Properties

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

Applications

- > Comps. for Food processing and Animal Feed
- > Plastic Extrusion
- > Consumer Goods - General
- > Medical
- > Components for Displays
- > Hotrunner systems
- > Food processing Industry
- > Standard Parts (Molds, Plates, Pins, Punches)
- > General Components for Mechanical Engineering
- > Packaging
- > Electronic Industry
- > Glasfibre reinforced plastics
- > Injection Molding
- > Blow Molding
- > Lamps/Lenses for Automotive
- > Camera lenses
- > Screws and Barrels

Technical data

Material designation		Standards	
~1.2083	SEL	4957	EN ISO
~SUS420J2	JIS	A681	ASTM
X40Cr13	EN	AFNOR Z40C14	Others
X40Cr14			
~420	AISI		

Chemical composition (wt. %)

C	Si	Mn	Cr	V
0.38	0.7	0.45	14.3	0.2

Delivery condition

Soft annealed

Hardness (HB)	max. 225
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Heat treatment

Hardening and Tempering

Temperature	1,025 to 1,050 °C 1,877 to 1,922 °F	For hardening hold at temperature for 15 to 30 min. An optional sub-zero treatment at -80°C/-112°F can be applied after hardening. For highest corrosion resistance, temper once for a minimum of 2h at 250-350°C/482-662°F. For balanced toughness and hardness, temper twice for a minimum of 2h at 490-520°C/914-968°F (without sub-zero treatment) or 480-510°C/896-950°F (with sub-zero treatment). After each heat treatment step, material should be cooled down to approx. 30°C!
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Stress relieving

Temperature	50°C / 90°F below last tempering temperature.
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Physical Properties

Temperature (°C °F)	20 68
Density (kg/dm ³ lb/in ³)	7.68 0.28
Thermal conductivity (W/(m.K) BTU/ft h °F)	19.5 11.27
Specific heat (kJ/kg K BTU/lb °F)	0.46 0.1099
Spec. electrical resistance (Ohm.mm ² /m 10 ⁻⁴ Ohm.inch ² /ft)	0.65 3.07
Modulus of elasticity (10 ³ N/mm ² 10 ³ ksi)	217 31.47

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

Temperature (°C °F)	100 212	200 392	300 572	400 752	500 932
Thermal expansion (10 ⁻⁶ m/(m.K) 10 ⁻⁶ inch/inch.°F)	10.63 5.9	10.94 6.1	11.29 6.3	11.66 6.5	12 6.7

Long Products: For additional specifications and technical requirements, please contact our regional voestalpine BÖHLER sales companies.

Sheet & Plates: Product Variant may differ in terms of melting process, technical data, delivery, and surface condition as well as available product dimensions. Please contact voestalpine BÖHLER Bleche GmbH & Co KG.

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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ONE STEP AHEAD.