TOOL STEELS

HARDENABLE CORROSION RESISTANT STEEL

Application Segments

Plastic Mould

Available Product Variants

Long Products

Product Description

BÖHLER N690 is a corrosion-resistant, martensitic chromium steel with a high carbon content and the addition of cobalt, molybdenum and vanadium. BÖHLER N690 is also approved for food and beverage contact.

Properties

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

Applications

- Components for food processing and animal feed
- Hotrunner systems
- Glasfibre reinforced plastics
- Screws and Barrels
- Cutting
- Pumping
- Mechanical Engineering
- Standard Parts (Moulds, Plates, Pins, Punches)
- Injection Moulding
- Pill punching dies
- Machine knife (for producers)
- Grinding
- Mineral Processing
- Typical cutting instruments and knives
- Electronic industry
- Plastic Extrusion
- Industrial Knives
- Wear Applications
- Drilling

Technical data

Material designation	
1.4528	SEL
X105CrCoMo18-2	EN

Chemical composition (wt. %)

C	Si	Mn	Cr	Mo	V	Co
1.08	0.4	0.4	17.3	1.1	0.1	1.5

Delivery condition

Annealed

Hardness (HB)	max. 285

Heat treatment

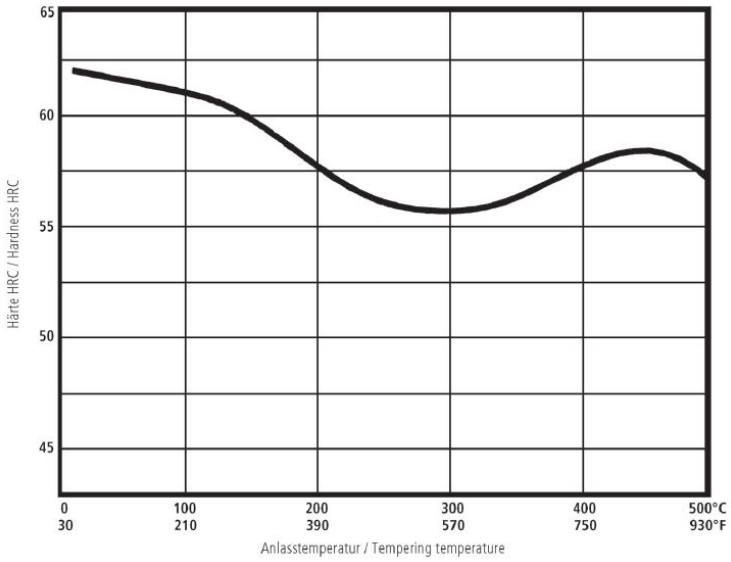
Stress relieving

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	1,030 to 1,080 °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]. Tempering should take place immediately.
Temperature	100 to 200 °C	Tempering treatment to the desired working hardness after hardening - see tempering diagram. Heat the material slowly and temper once for 1 hour/20mm material thickness, but at least 2 hours. After the heat treatment step, the material must be cooled to approx. 30°C [86 °F].

Tempering chart



Hardening temperature: 1030°C / 1886°F

Tempering: 2x2h

Sample cross-section: Square 20mm

Hardness up to 59-61 HRC

Physical Properties

Temperature (°C)	**20**
Density (kg/dm³)	7.7
Thermal conductivity (W/(m.K))	15
Specific heat (kJ/kg K)	0.43
Spec. electrical resistance (Ohm.mm²/m)	0.8
Modulus of elasticity (10³N/mm²)	223

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

Temperature (°C)	100	200	300	400	500
Thermal expansion (10^{-6} m/(m.K))	10.4	10.8	11.2	11.6	11.9

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ONE STEP AHEAD.