

# COLD WORK TOOL STEELS

## Application Segments

Cold Work

## 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 K700 corresponds to the material 1.3401 (X120Mn12) and belongs to the group of austenitic hard manganese steels. Unlike most tool steels, BÖHLER K700 is not used in the hardened and tempered condition. Due to the forces occurring in service, the resulting work hardening of the surface results in a high resistance to abrasive wear. BÖHLER K700 is weldable. However, the heat input must be kept as low as possible to avoid embrittlement of the material. The material is used in abrasive blasting and mining applications such as crusher jaws, beater bars, grate bars, linings, excavator teeth and chain rollers.

## Process Melting

Airmelted

## Properties

- > Toughness & Ductility : high
- > Compressive strength : good
- > Dimensional stability : good
- > Edge Stability : good

## Applications

- > Standard Parts (Moulds, Plates, Pins, Punches)
- > Mineral Processing
- > Wear parts
- > Pumping
- > General Components for Mechanical Engineering
- > Wear Applications

## Technical data

Material designation	
1.3401	SEL
X120Mn12	EN
~SCMNH2	JIS
~SCMNH3	

## Chemical composition (wt. %)

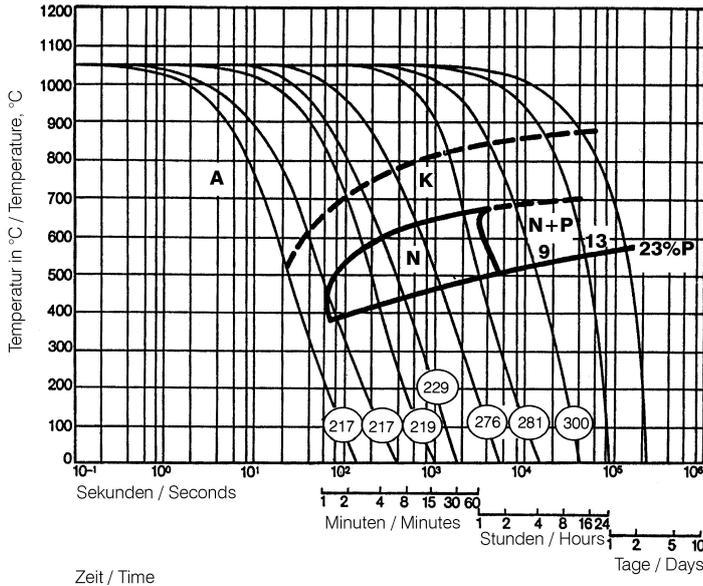
C	Si	Mn
1.23	0.40	12.50

Delivery condition

Air Quenched

Hardness (HB)	max. 200   Approx. hardness value; quenched from 1832 - 1922 °F (1000 - 1050 °C) / water
Ultimate tensile strength (UTS) (MPa)	780 to 1130

Continuous cooling CCT curves



Austenitising temperature: 1050 °C (1922 °F)  
Holding time: 15 minutes

○ Vickers hardness

9...23 phase percentages

A... Austenite  
K... Grain boundary martensite  
N... Acicular carbide  
P... Pearlite

Physical Properties

Temperature (°C)	20
Density (kg/dm <sup>3</sup> )	7.9
Thermal conductivity (W/(m.K))	13
Specific heat (kJ/kg K)	0.5
Spec. electrical resistance (Ohm.mm <sup>2</sup> /m)	0.68
Modulus of elasticity (10 <sup>3</sup> N/mm <sup>2</sup> )	190

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

Temperature (°C)	100	200	300	400	500
Thermal expansion (10 <sup>-6</sup> m/(m.K))	18.2	19.4	20.8	21.7	20.8

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.

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