

COLD WORK STEELS

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 K600 corresponds to the material 1.2767 (45NiCrMo16). With its high nickel content, this material offers a very good combination of through hardenability and toughness. This results in a high resistance to impact and shock loads. BÖHLER K600 is used for a wide range of tools where high toughness is required. The material is used for forming and bending tools, cold shear blades for thick materials and for reinforcement rings. Due to its good polishability, BÖHLER K600 is also used for embossing tools, plastic molds and mold inserts for injection molding.

Process Melting

[Airmelted](#)

Properties

- > Toughness & Ductility : very high
- > Dimensional stability : good

Applications

- > Machine knife (for producers)
- > Cold Forming
- > Coining
- > Fine Blanking, Stamping, Blanking
- > Standard Parts (Molds, Plates, Pins, Punches)
- > General Components for Mechanical Engineering
- > Components for Recycling Industry

Technical data

Material designation		Standards	
1.2767	SEL	4957	EN ISO
45NiCrMo16	EN		
SKT6	JIS		

Chemical composition (wt. %)

C	Si	Mn	Cr	Mo	Ni
0.48	0.23	0.40	1.30	0.25	4.00

Material characteristics

	Compressive strength	Dimensional stability during heat treatment	Toughness	Wear resistance abrasive
BÖHLER K600	★	★★★	★★★★★	★
BÖHLER K305	★★★★★	★★★	★★	★★★★★
BÖHLER K306	★★★★★	★★★	★★★★★	★★★
BÖHLER K313	★★★★★	★★★	★★★	★★★
BÖHLER K320	★★★	★★★	★★★	★★★
BÖHLER K329	★★★	★★★	★★★★★	★★★★★
BÖHLER K601	★	★★★	★★★★★	★★
BÖHLER K605	★★	★★★	★★★★★	★

Delivery condition

Annealed

Hardness (HB)	max. 285
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Heat treatment

Annealing

Temperature	610 to 650 °C 1,130 to 1,202 °F	Slow controlled cooling in furnace at a rate of 50 to 68°F/hr (10 to 20°C/hr) down to approx. 1112°F (600°C), further cooling in air.
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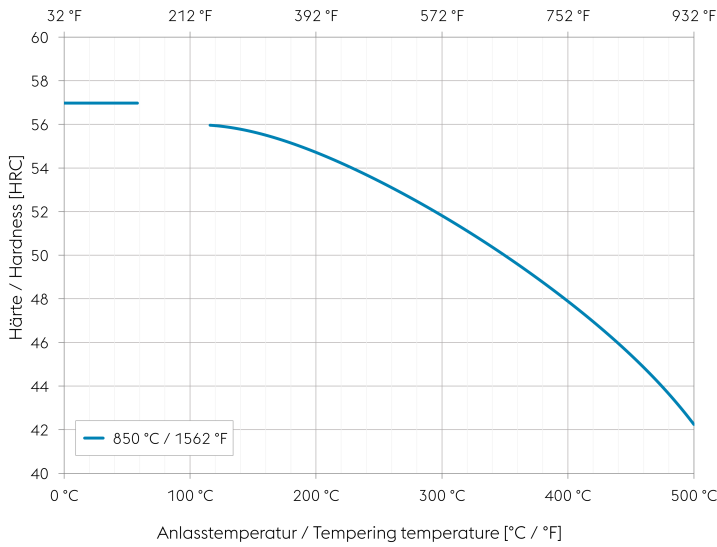
Stress relieving

Temperature	650 °C 1,202 °F	Slow cooling in furnace; intended to relieve stresses set up by extensive machining, or in complex shapes. After through heating, hold in neutral atmosphere for 1 to 2 hours.
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Hardening and Tempering

Temperature	840 to 870 °C 1,544 to 1,598 °F	Oil, salt bath 572 to 752°F (300 to 400°C), air. Holding time after temperature equalization: 15 to 30 minutes. After hardening, tempering to the desired working hardness, see tempering chart.
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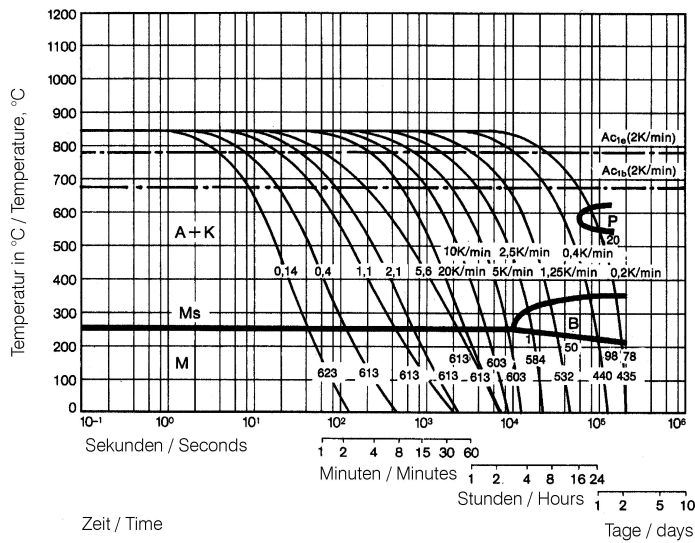
Tempering chart



Tempering:

Hardening temperature:
 850°C / 1562°F
 Specimen size: square 20 mm

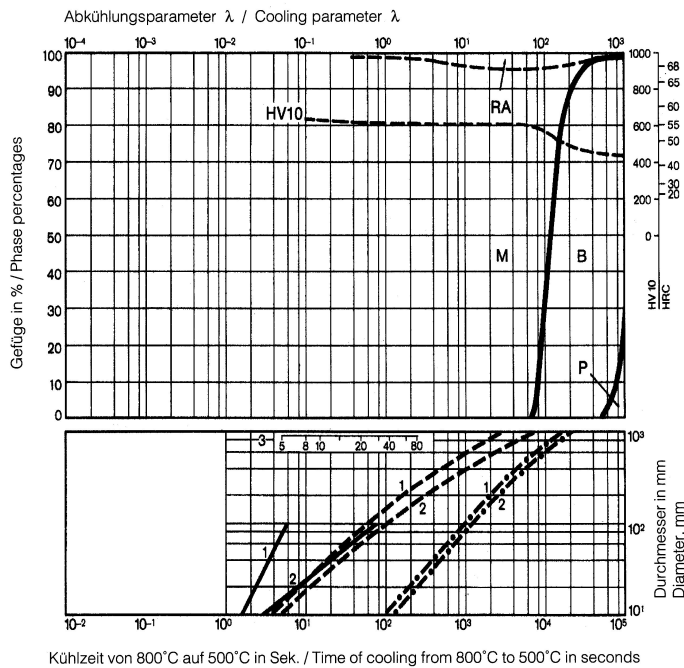
Continuous cooling CCT curves



Austenitising temperature: 840°C / 1544°F
 Holding time: 15 minutes

O Vickers hardness
 1...98 phase percentages
 0.14...5.6 cooling parameter, i.e. duration of cooling from 1472 to 932°F (800 to 500°C) in s x 10⁻²
 68...32,36°F/min (20...0.2K/min) cooling rate in °F/min (K/min) in the 1472 to 932°F (800 to 500°C) range

Quantitative phase diagram

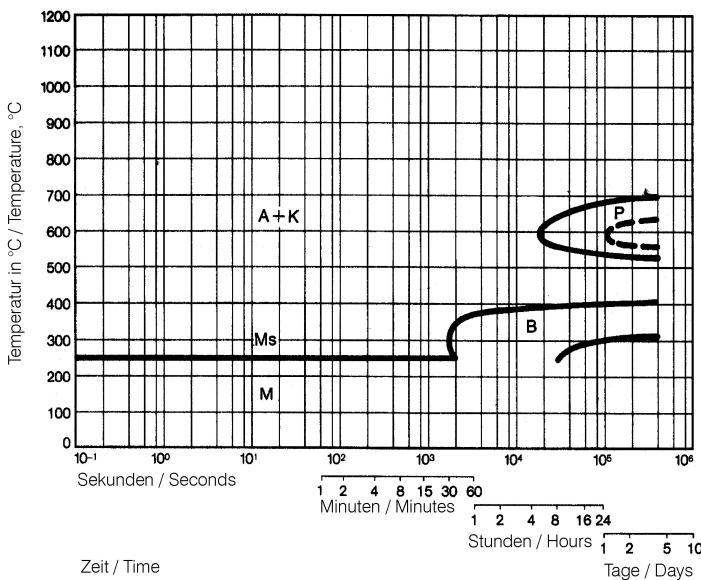


RA... Residual austenite
 A... Austenite
 B... Bainite
 P... Pearlite
 K... Carbide
 M... Martensite

— Water cooling
 - - - Oil cooling
 - • - Air cooling

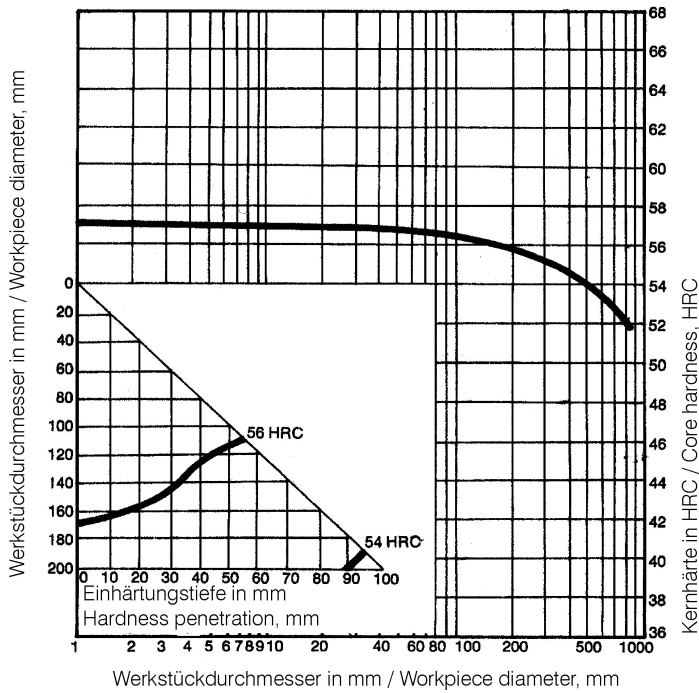
1... Edge or face
 2... Core
 3... Jominy test: distance from end

Isothermal TTT curves



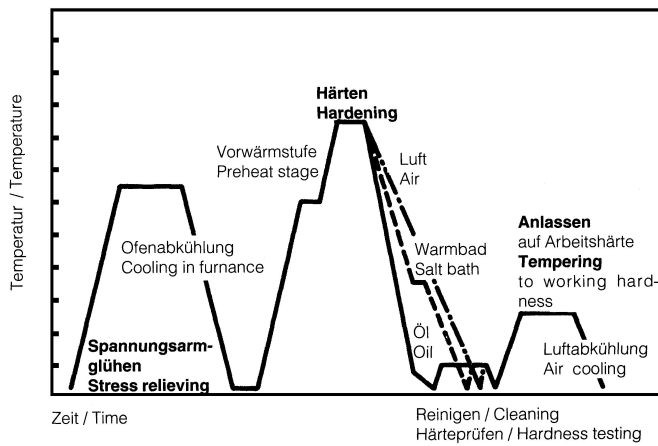
Austenitising temperature: 840°C / 1544°F
 Holding time: 15 minutes

Influence of work diameter on core hardness and hardness penetration



Quenched from: 850°C / 1562°F
Quenchant: Oil

Heat treatment sequence



Physical Properties

Temperature (°C °F)	20 68
Density (kg/dm ³ lb/in ³)	7.85 0.28
Thermal conductivity (W/(m.K) BTU/ft h °F)	28 16.18
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)	0.3 1.42
Modulus of elasticity (10 ³ N/mm ² 10 ³ ksi)	210 30.46

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)	11 6.1	12.5 6.9	13 7.2	13.5 7.5	14 7.8

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.

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