

# COLD WORK STEELS

## Available Product Variants

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 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

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BÖHLER K353 belongs to the group of conventionally produced 8% chromium steels. It is used in situations where chipper steels like 1.2360 are insufficient in terms of wear resistance and tool steels like 1.2379 (D2) do not have sufficient toughness. BÖHLER K353 is especially suitable for industrial knives for the woodworking industry. It is also used for stamping and cutting tools.

## Process Melting

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 Airmelted

## Properties

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> Dimensional stability : good

## Applications

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- > Machine knife (for producers)
- > Press Hardening / Hot Stamping
- > Cold Forming
- > Hotrunner systems
- > Fine Blanking, Stamping, Blanking

## Chemical composition (wt. %)

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C	Si	Mn	Cr	Mo	V	Al
0.82	0.70	0.40	8.00	1.60	0.60	+

**Material characteristics**

	Compressive strength	Dimensional stability during heat treatment	Toughness	Wear resistance abrasive	Wear resistance adhesive
<b>BÖHLER K353</b>	★★	★★★	★★	★★	★★
<b>BÖHLER K100</b>	★★	★★	★	★★★	★★
<b>BÖHLER K105</b>	★★	★★	★	★★	★★
<b>BÖHLER K107</b>	★★	★★	★	★★★	★★
<b>BÖHLER K110</b>	★★	★★★	★	★★★	★★
<b>BÖHLER K190</b> <b>MICROCLEAN®</b>	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
<b>BÖHLER K294</b> <b>MICROCLEAN®</b>	★★★★★	★★★★★	★★★	★★★★★	★★★★★
<b>BÖHLER K340</b> <b>ECOSTAR®</b>	★★★	★★★	★★	★★	★★
<b>BÖHLER K340</b> <b>ISODUR®</b>	★★★	★★★★	★★★	★★★	★★★★
<b>BÖHLER K346</b>	★★★	★★★	★★★	★★★★	★★
<b>BÖHLER K360</b> <b>ISODUR®</b>	★★★	★★★★	★★★	★★★★	★★★★
<b>BÖHLER K390</b> <b>MICROCLEAN®</b>	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
<b>BÖHLER K490</b> <b>MICROCLEAN®</b>	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
<b>BÖHLER K497</b> <b>MICROCLEAN®</b>	★★★★★	★★★★★	★★★	★★★★★	★★★★★
<b>BÖHLER K888</b> <b>MATRIX</b>	★★★★★	★★★★★	★★★★★	★★	★★
<b>BÖHLER K890</b> <b>MICROCLEAN®</b>	★★★★★	★★★★★	★★★★★	★★★	★★★

**Delivery condition**

**Annealed**

Hardness (HB)	max. 240
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**Heat treatment**

**Annealing**

Temperature	800 to 850 °C   1,472 to 1,562 °F	Slow controlled cooling in furnace at a rate of 10 to 20 °C/hr (50 - 68 °F) down to approx. 600 °C (1100 °F), further cooling in air.
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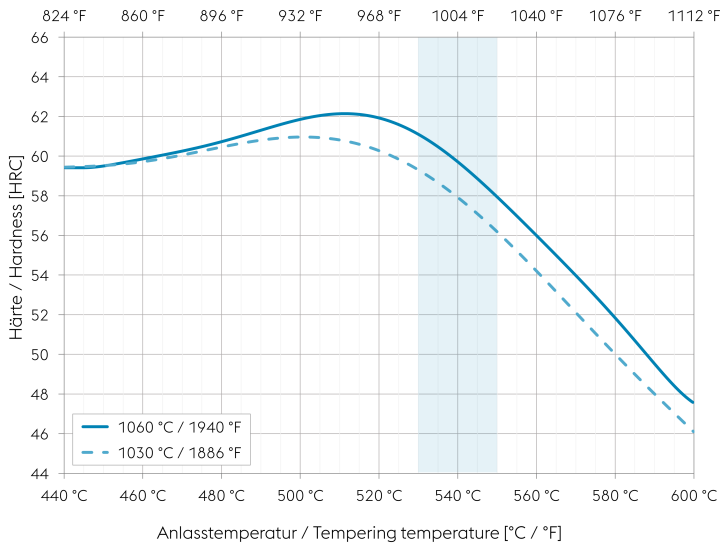
**Stress relieving**

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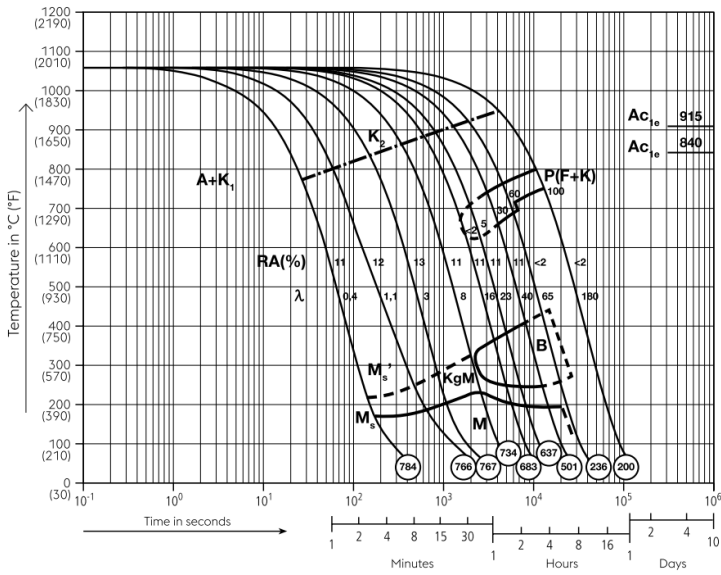
**Hardening and Tempering**

Temperature	1,030 to 1,060 °C   1,886 to 1,940 °F	Oil, salt bath, vacuum After through-heating, hold for 15 to 30 minutes. After hardening, tempering to the desired working hardness, see tempering chart.
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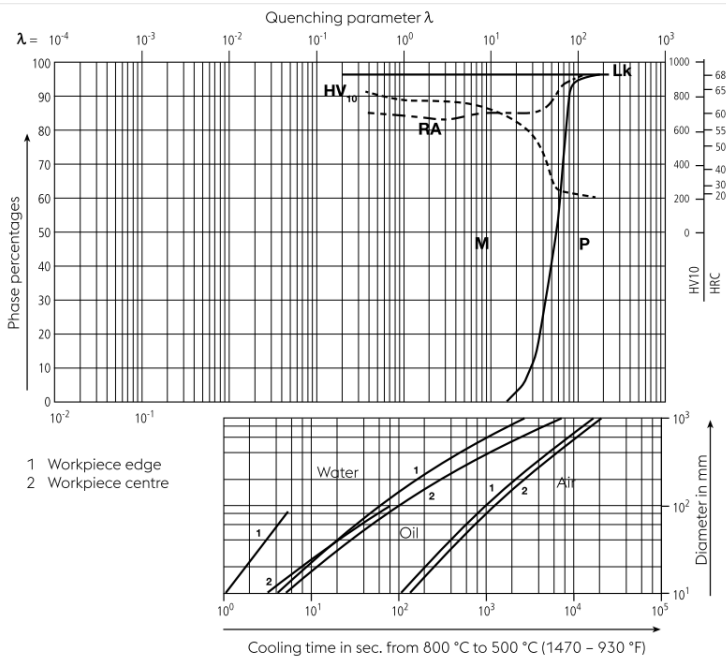
**Tempering chart**



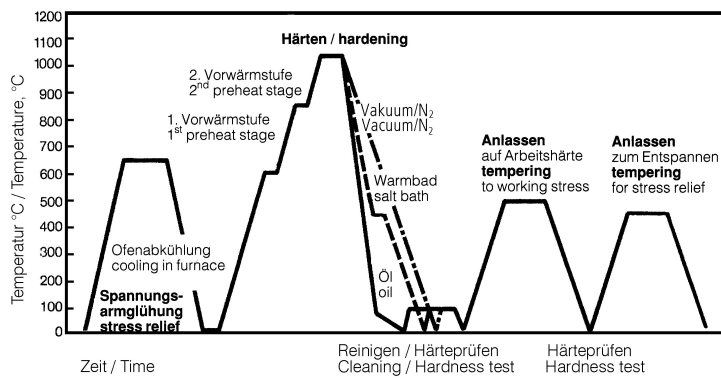
**Continuous cooling CCT curves**



**Quantitative phase diagram**



**Heat treatment sequence**



**Physical Properties**

Temperature (°C   °F)	20   68
Density (kg/dm <sup>3</sup>   lb/in <sup>3</sup> )	7.7   0.28
Thermal conductivity (W/(m.K)   BTU/ft h °F)	21.9   12.65
Specific heat (kJ/kg K   BTU/lb °F)	0.47   0.1123
Spec. electrical resistance (Ohm.mm <sup>2</sup> /m   10 <sup>-4</sup> Ohm.inch <sup>2</sup> /ft)	-
Modulus of elasticity (10 <sup>3</sup> N/mm <sup>2</sup>   10 <sup>3</sup> ksi)	212   30.75

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

Temperature (°C   °F)	100   212	200   392	300   572	400   752	500   932
Thermal expansion (10 <sup>-6</sup> m/(m.K)   10 <sup>-6</sup> inch/inch.°F)	11   6.1	11.3   6.3	11.6   6.4	12   6.7	12.4   6.9

**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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