COLD WORK STEELS

Available Product Variants

Long Products* | Plates

*) Presented data refer exclusivly to long products. Please observe the detailed explanations at the end of the data sheet (pdf).

Product Description

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

Airmelted

Properties

- Dimensional stability : good

Applications

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

Chemical composition (wt. %)

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
BÖHLER K353	★★	★★★	★★	★★	★★
BÖHLER K100	★★	★★	★	★★★	★★
BÖHLER K105	★★	★★	★	★★	★★
BÖHLER K107	★★	★★	★	★★★	★★
BÖHLER K110	★★	★★★	★	★★★	★★
BÖHLER K190 MICROCLEAN	★★★★	★★★★★	★★★★	★★★★	★★★★
BÖHLER K294 MICROCLEAN	★★★★★	★★★★★	★★★	★★★★★	★★★★★
BÖHLER K340 ECOSTAR	★★★	★★★	★★	★★	★★
BÖHLER K340 ISODUR	★★★	★★★★	★★★	★★★	★★★★
BÖHLER K346	★★★	★★★	★★★	★★★★	★★
BÖHLER K360 ISODUR	★★★	★★★★	★★★	★★★★	★★★★
BÖHLER K390 MICROCLEAN	★★★★★	★★★★★	★★★★	★★★★★	★★★★★
BÖHLER K490 MICROCLEAN	★★★★	★★★★★	★★★★	★★★★	★★★★
BÖHLER K497 MICROCLEAN	★★★★★	★★★★★	★★★	★★★★★	★★★★★
BÖHLER K888 MATRIX	★★★★	★★★★★	★★★★★	★★	★★
BÖHLER K890 MICROCLEAN	★★★★	★★★★★	★★★★★	★★★	★★★

Delivery condition

Annealed

Hardness (HB)	max. 240

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 (18 to 36 °F/hr) down to approximately 600 °C (1112 °F) || Further cooling in air.

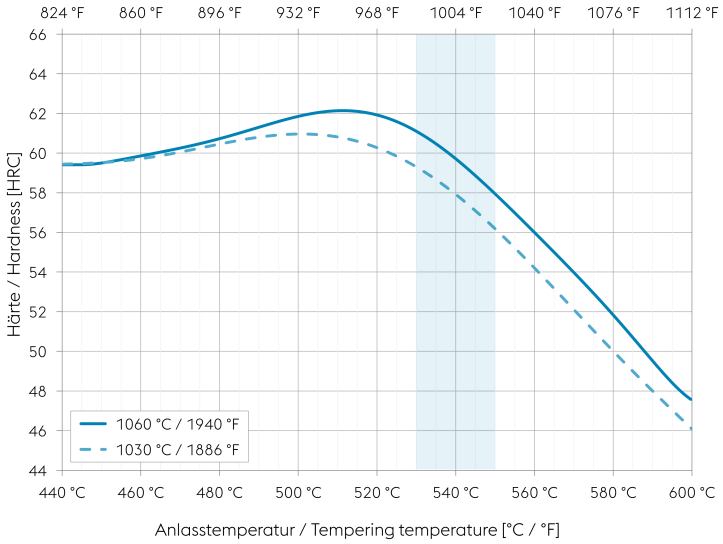
Stress relieving

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 caused by extensive machining or in complex shapes.

Hardening and Tempering

Temperature	1,030 to 1,060 °C | 1,886 to 1,940 °F	Quenching: Oil, salt bath, gas. || Holding time after temperature equalization: 15 to 30 minutes. || After hardening, tempering to the desired working hardness according to the tempering chart.

Tempering chart



Specimen size: square 20 mm (0,787 inch)

Slow heating to tempering temperature immediately after hardening.

Time in furnace 1 hour for each 20 mm (0,787 inch) of workpiece thickness but at least 2 hours.

Please refer to the tempering chart for guide values for the achievable hardness after tempering.

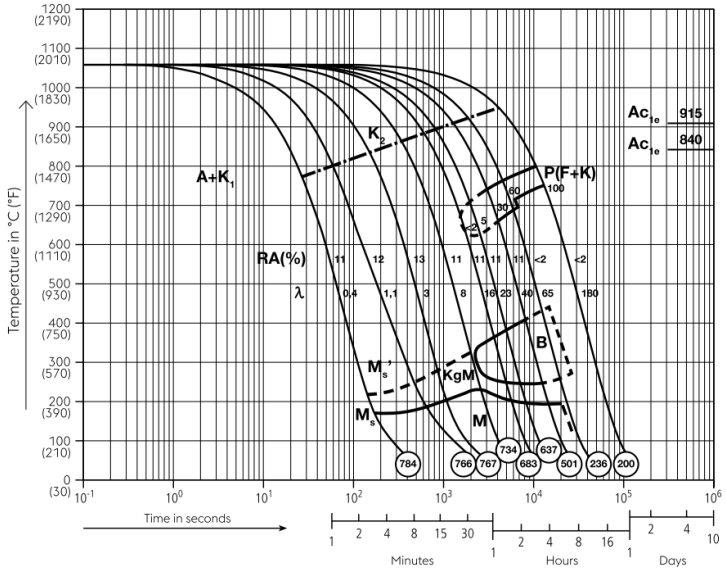
It is recommended to temper at least three times above the secondary hardness maximum.

Cooling in air to room temperature after each tempering step is recommended.

Tempering for stress relieving 30 to 50 °C (86 to 122 °F) below the highest tempering temperature.

Recommended tempering temperature range is indicated by the blue area in the chart.

Continuous cooling CCT curves



Austenitising temperature: 1060 °C (1940 °F)
Holding time: 30 minutes

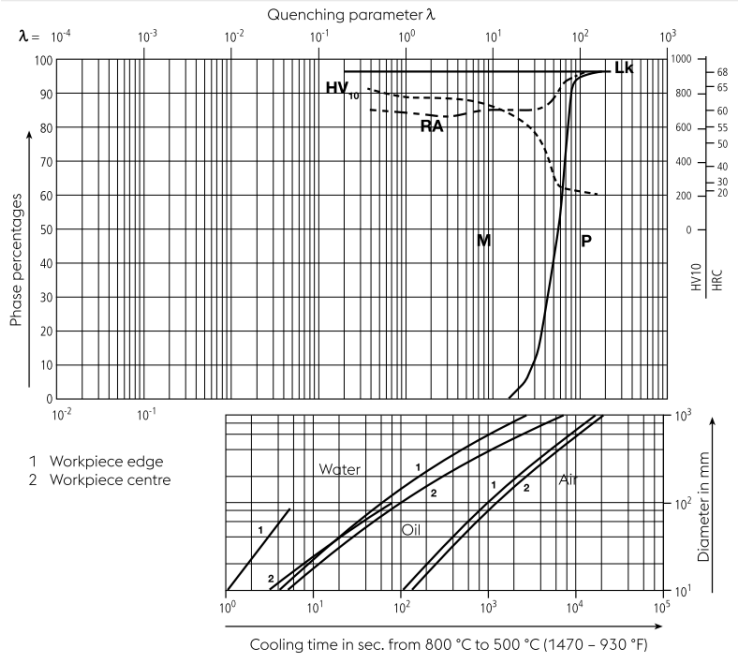
O Vickers hardness

2...100 phase percentages

0.3...180 cooling parameter λ, i.e. duration of cooling from 800 to 500 °C (1472 to 932 °F) in s x 10^{-2}

A... Austenite
K... Carbide
RA... Retained austenite
P... Perlite
B...Bainite
M... Martensite
Ms... Martensite starting temperature

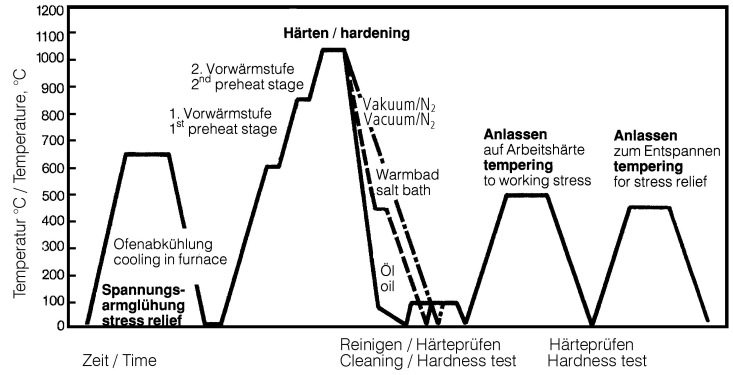
Quantitative phase diagram



O Vickers hardness
LK... Ledeburitic carbides
RA... Retained austenite
M... Martensite
P... Perlite

1... Edge or face
2... Core

Heat treatment sequence



Physical Properties

Temperature (°C | °F)	20 | 68
Density (kg/dm³ | lb/in³)	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.mm²/m | 10⁻⁴ Ohm.inch²/ft)	-
Modulus of elasticity (10³N/mm² | 10³ksi)	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^{-6} m/(m.K) | 10^{-6} 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.

voestalpine BÖHLER Edelstahl GmbH & Co KG
Mariazeller Straße 25
8605 Kapfenberg, AT
T. +43/50304/20-0
E. info@bohler-edelstahl.at
https://www.voestalpine.com/bohler-edelstahl/de/

voestalpine
ONE STEP AHEAD.