

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 K340 ISODUR belongs to the group of 8% chromium steels. This tool steel is produced using the electro-slag remelting (ESR) process developed by BÖHLER. This re-melting technology ensures the lowest micro and macro segregation as well as excellent purity and uniformity of the material. Compared to conventional 12% chromium steels, BÖHLER K340 ISODUR offers significantly better toughness, hardening response and higher resistance to adhesive wear. This material is therefore used in virtually all cold work applications in situations where tool steels like 1.2379 are insufficient in terms of adhesive wear resistance and toughness. K340 ISODUR also features better machinability and reduces the risk of stress cracking during electrical discharge machining.

Process Melting

- Airmelted + Remelted

Properties

- > Toughness & Ductility : good
- > Wear Resistance : high
- > Compressive strength : good
- > Dimensional stability : good
- > Grindability : very high

Applications

- > Machine knife (for producers)
- > Rolling
- > Cold Forming
- > Coining
- > Fine Blanking, Stamping, Blanking
- > Powder Pressing
- > Screws and Barrels
- > Components for Recycling Industry
- > Comps. for Equip. Below Ground (Boring, Shafts, etc.)
- > Rolls
- > Wear parts
- > General Components for Mechanical Engineering
- > Thread rolling
- > Pill punching dies
- > Glasfibre reinforced plastics

Chemical composition (wt. %)

C	Si	Mn	Cr	Mo	V	Al	Nb
1.10	0.90	0.40	8.30	2.10	0.50	+	+

Material characteristics

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

Delivery condition

Annealed

Hardness (HB)	max. 235
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Heat treatment

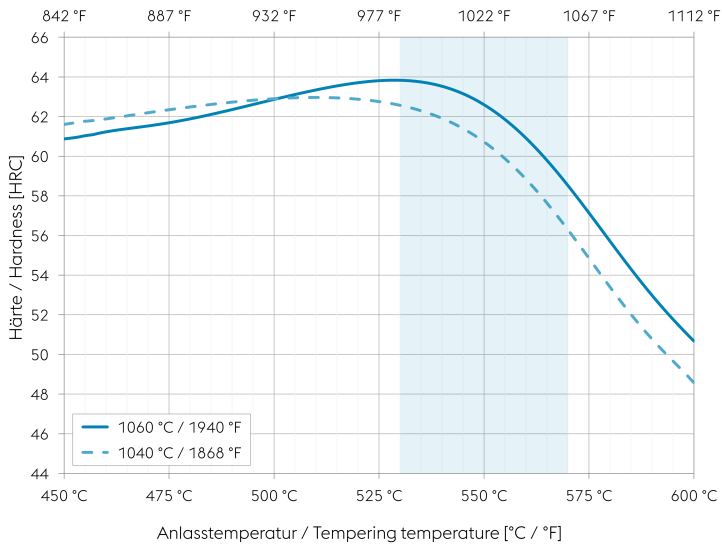
Stress relieving

Temperature	650 °C 1,202 °F	After through-heating, hold in neutral atmosphere for 1 - 2 hours. Slow cooling in furnace.
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Hardening and Tempering

Temperature	1,040 to 1,060 °C 1,904 to 1,940 °F	Oil, salt bath, compressed air, air, 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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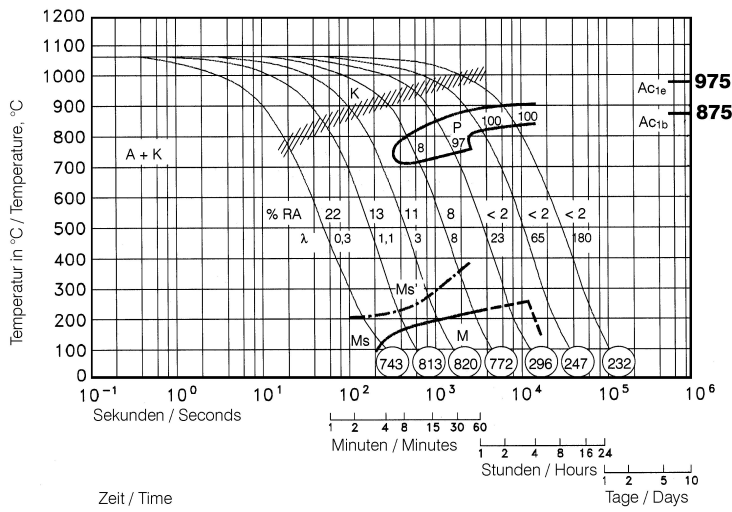
Tempering chart



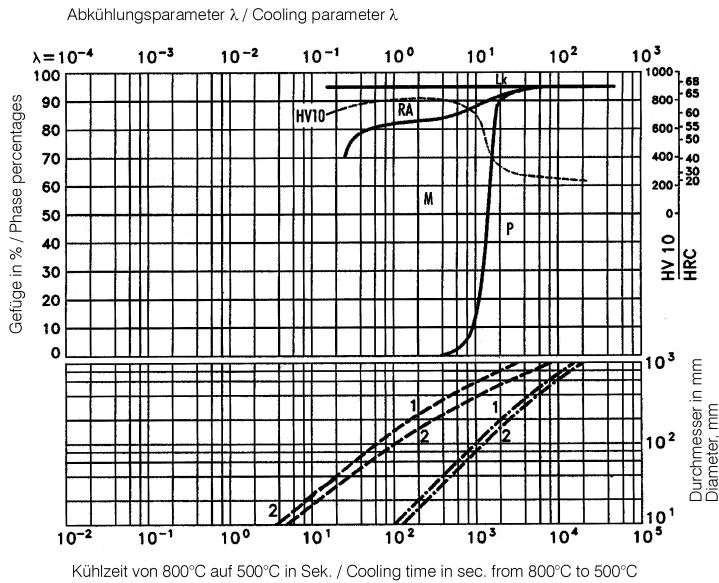
Tempering:

Hardening temperature:
 — 1040°C/1904°F
 - - - 1060°C/1940°F
 Specimen size: square 20 mm

CCT chart for continuous cooling



Quantitative phase diagram



LK... Ledeburitic carbides
RA... Retained austenite
M... Martensite
P... Perlite

Physical Properties

Temperature (°C °F)	20 68
Density (kg/dm ³ lb/in ³)	7.68 0.28
Thermal conductivity (W/(m.K) BTU/ft h °F)	17.8 10.28
Specific heat (kJ/kg K BTU/lb °F)	0.49 0.117
Spec. electrical resistance (Ohm.mm ² /m 10 ⁻⁴ Ohm.inch ² /ft)	0.64 3.02
Modulus of elasticity (10 ³ N/mm ² 10 ³ ksi)	206 29.88

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

Temperature (°C °F)	100 212	200 392	300 572	400 752	500 932	600 1,112	700 1,292
Thermal expansion (10 ⁻⁶ m/(m.K) 10 ⁻⁶ inch/inch.°F)	11.2 6.2	11.8 6.6	12.3 6.8	12.7 7.1	12.9 7.2	13.1 7.3	13.1 7.3

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.

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.

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.