BÖHLER

BÖHLER K294 MICROCLEAN®

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 K294 MICROCLEAN is a cold work tool steel manufactured using powder metallurgy and belongs to the group of 10% vanadium steels. The high content of vanadium carbides makes this steel highly resistant to wear. The toughness is at the same level as conventional 12% chromium steels. BÖHLER K294 MICROCLEAN is used in situations where wear resistance is the decisive factor and toughness is of secondary importance.

Process Melting

Powder metallurgy

Properties

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

Applications

- Machine knife (for producers)
- Screws and Barrels
- Cold Forming
- General Components for Mechanical Engineering
- Fine Blanking, Stamping, Blanking

Technical data

Material designation	
1.2395	SEL
T30111	UNS
PM A11	AISI

Chemical composition (wt. %)

C	Si	Mn	Cr	Mo	V
2.45	0.90	0.50	5.20	1.30	9.70

Material characteristics

	Compressive strength	Dimensional stability during heat treatment	Toughness	Wear resistance abrasive	Wear resistance adhesive
BÖHLER K294 MICROCLEAN®	★★★★★	★★★★★	★★★	★★★★★	★★★★★
BÖHLER K100	★★	★★	★	★★★	★★
BÖHLER K105	★★	★★	★	★★	★★
BÖHLER K107	★★	★★	★	★★★	★★
BÖHLER K110	★★	★★★	★	★★★	★★
BÖHLER K190 MICROCLEAN®	★★★★	★★★★★	★★★★	★★★★	★★★★
BÖHLER K340 ECOSTAR®	★★★	★★★	★★	★★	★★
BÖHLER K340 ISODUR®	★★★	★★★★	★★★	★★★	★★★★
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. 277

Heat treatment

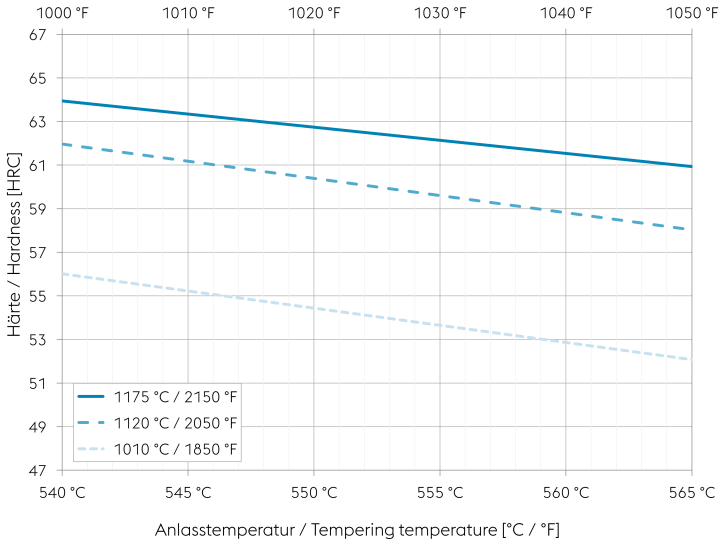
Annealing

Temperature	570 to 870 °C | 1,058 to 1,598 °F	Protect steel from scaling and/or decarburization. Heat through to 1600°F (870°C). Control cool at 30°F (15°C) maximum per hour to 1000°F (540°C), then furnace or ait cool to room temperature.

Stress relieving

Temperature	595 to 700 °C | 1,103 to 1,292 °F	If required after Rough machining to minimize distortion during final heat treatment, heat to 1100-1300°F (595-700°C) and hold for 2 hrs followed by furnace. Cool slowly to 930°F (500°C), then air cool.

Tempering chart



Tempering:

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

Slow heating to tempering temperature immediately after hardening.

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

Slow cooling to room temperature after each tempering step is recommended.

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

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

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

Physical Properties

Temperature (°C | °F)	**20 | 68**
Density (kg/dm^3 | lb/in^3)	7.42 | 0.27
Thermal conductivity (W/(m.K) | BTU/ft h °F)	20.39 | 11.78
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)	-
Modulus of elasticity (10^{3}N/mm^2 | 10^{3}ksi)	221 | 32.05

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

Temperature (°C | °F)	**93 | 199.4**	**260 | 500**	**427 | 800.6**	**593 | 1,099.4**
Thermal expansion (10^{-6} m/(m.K) | 10^{-6} inch/inch.°F)	10.7 | 5.9	11.1 | 6.2	11.8 | 6.6	12.3 | 6.8

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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voestalpine
ONE STEP AHEAD.