BÖHLER

BÖHLER K490 MICROCLEAN®

ACEROS PARA TRABAJO EN FRÍO

Formatos disponibles

Productos largos* | Chapas | Forja de matriz abierta

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

Descripción

BÖHLER K490 MICROCLEAN es un acero pulvimetalúrgico para herramientas de trabajo en frío que combina un alto nivel de resistencia al desgaste y tenacidad. ¡Aumente la vida útil de su utillaje y mejore su productividad!

Método de obtención

Pulvimetalurgia

Propiedades

- Dureza y Ductilidad : alto
- Resistencia al desgaste : alto
- Resistencia a la compresión : alto
- Estabilidad dimensional : muy alta

Aplicaciones

- Cuchillas de máquinas (fabricantes)
- Acuñado
- Tornillos y cilindros
- Rodillos
- Glasfibre reinforced plastics
- Laminación
- Corte fino / Troquelado / Estampado
- Componentes de desgaste
- Componentes para la industria del reciclaje
- Thread rolling (ES)
- Conformado en frío
- Compactación de polvo
- Componentes generales de ingeniería mecánica
- Pill punching dies

Composición Química

C	Cr	Mo	V	W	Nb
1,40	6,40	1,50	3,70	3,50	+

Características

	Resistencia a la compresión	Estabilidad dimensional durante el tratamiento térmico	Tenacidad	Resistencia al desgaste abrasivo	Resistencia al desgaste adhesivo
BÖHLER K490 MICROCLEAN®	★★★★	★★★★★	★★★★	★★★★	★★★★
BÖHLER K100	★★	★★	★	★★★	★★
BÖHLER K105	★★	★★	★	★★	★★
BÖHLER K107	★★	★★	★	★★★	★★
BÖHLER K110	★★	★★★	★	★★★	★★
BÖHLER K190 MICROCLEAN®	★★★★	★★★★★	★★★★	★★★★	★★★★
BÖHLER K294 MICROCLEAN®	★★★★★	★★★★★	★★★	★★★★★	★★★★★
BÖHLER K340 ECOSTAR®	★★★	★★★	★★	★★	★★
BÖHLER K340 ISODUR®	★★★	★★★★	★★★	★★★	★★★★
BÖHLER K346	★★★	★★★	★★★	★★★★	★★
BÖHLER K353	★★	★★★	★★	★★	★★
BÖHLER K360 ISODUR®	★★★	★★★★	★★★	★★★★	★★★★
BÖHLER K390 MICROCLEAN®	★★★★★	★★★★★	★★★★	★★★★★	★★★★★
BÖHLER K497 MICROCLEAN®	★★★★★	★★★★★	★★★	★★★★★	★★★★★
BÖHLER K888 MATRIX	★★★★	★★★★★	★★★★★	★★	★★
BÖHLER K890 MICROCLEAN®	★★★★	★★★★★	★★★★★	★★★	★★★

Estado de suministro

recocido

Dureza (HB)	máx. 280

Tratamiento térmico

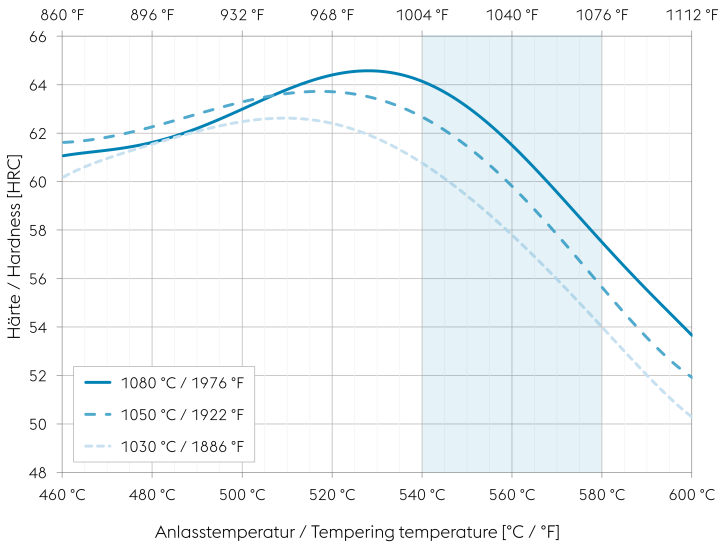
Alivio de tensiones

Temperatura	650 a 700 °C	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.

Temple y revenido

Temperatura	1.030 a 1.080 °C	Quenching: Oil, gas (N_2). || Holding time after temperature equalization: 20 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.

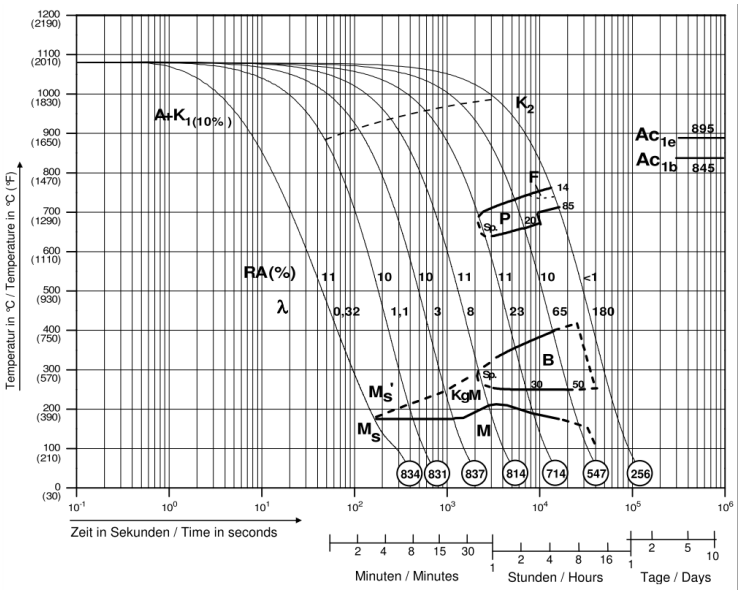
It is recommended to temper at least three times above the secondary hardness maximum.

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: 1080 °C (1976 °F)
Holding time: 30 minutes

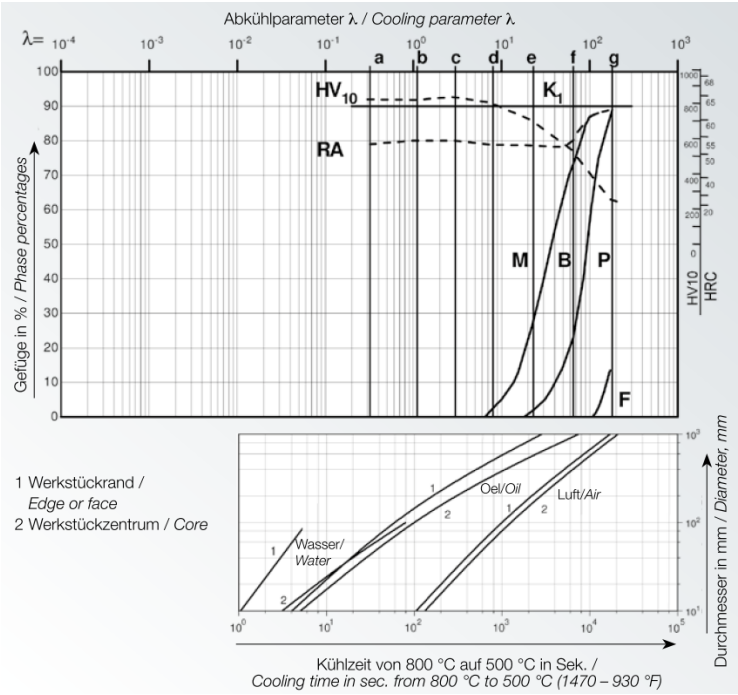
O Vickers hardness

14...85 phase percentages

0.32...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
P... Perlite
F... Ferrite
B...Bainite
M... Martensite
KgM... Grain boundary martensite
Ms... Martensite starting temperature

Quantitative phase diagram



HV10... Vickers Hardness
K... Carbide
RA... Residual austenite
M... Martensite
B... Bainite
P... Perlite
F... Ferrite

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

Propiedades físicas

Temperatura (°C)	20
Densidad (kg/dm³)	7,79
Conductividad térmica (W/(m.K))	19,6
Calor específico (kJ/kg K)	0,45
Resistencia eléctrica específica (Ohm.mm²/m)	0,55
Módulo de elasticidad (10³N/mm²)	223

Expansión térmica

Temperatura (°C)	100	200	300	400	500	600	700
Expansión térmica (10^{-6} m/(m.K))	10,6	11,1	11,6	11,9	12,3	12,6	12,8

Long Products: For additional specifications and technical requirements, please contact our regional voestalpine BÖHLER sales companies.

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