

ACEROS PARA TRABAJO EN FRÍO

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Descripción

BÖHLER K100 - El estándar de los aceros ledeburíticos con 12 % de Cromo para aplicaciones donde se requiera alta resistencia al desgaste.

Para herramientas de conformación de materiales muy abrasivos en la industria de la cerámica, fabricación de ladrillos, etc.

Propiedades

- Es el estándar para los aceros ledeburíticos con 12 % de cromo.
- Escasos cambios dimensionales
- Alta resistencia al desgaste

Aplicaciones

- > Cuchillas de máquinas (para los productores)
- > Corte fino / Troquelado / Estampación
- > Rodillos
- > Laminación
- > Componentes estándar (moldes, placas, clavos, punzones)
- > Componentes de desgaste
- > Conformado en frío
- > Componentes para la industria del reciclaje
- > Componentes generales de ingeniería mecánica

Designación	
1.2080	SEL
~T30403	UNS
X210Cr12	EN
~D3	AISI
~SKD1	JIS

Estándares	
4957	EN ISO

Composición Química

C	Si	Mn	Cr
2,00	0,25	0,35	11,50

Características

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

Estado de suministro
recocido

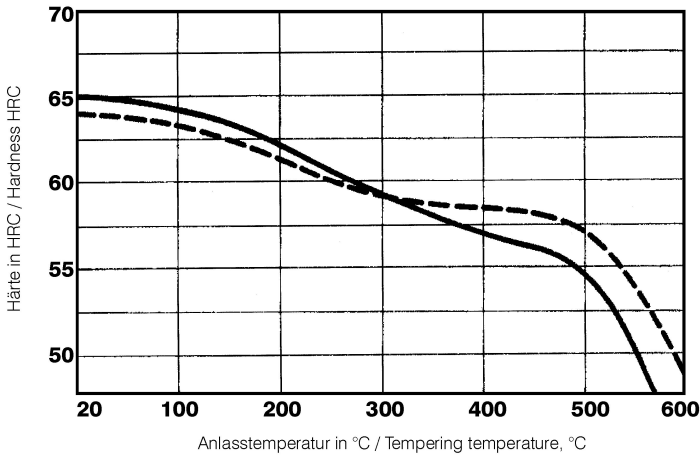
Dureza | máx. 248 HB

Air Quenched

Tratamiento térmico

Recocido		
Temperatura (°C)	800 to 850	Slow controlled cooling in furnace at a rate of 50 to 68°F (10 to 20°C/hr) down to approx. (600°C), further cooling in air.
Aliviar el estrés		
Temperatura (°C)	650	Slow cooling in furnace; intended to relieve stresses set up by extensive machining, or in complex shapes. After through heating, hold in neutral atmosphere for 1-2 hours.
Temple y revenido		
Temperatura (°C)	940 to 970	Oil, salt bath 428 to 482°F or 932 to 1022°F (220 to 250°C or 500 to 550°C), compressed or still air if thickness does not exceed 0,98 inch (25 mm) and if hardening temperature is on the upper side of the range, gas Holding time after temperature equalization: 15 to 30 minutes. After hardening, tempering to the desired working hardness, see tempering chart.

Tempering chart



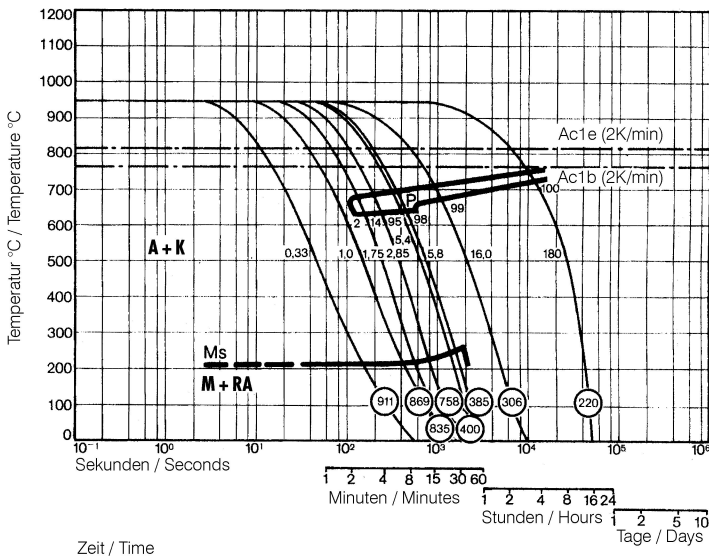
Tempering:

Hardening temperature:
 ——— 1742°F (950°C)
 - - - - - 1832°F (1000°C)
 Specimen size: square 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.

For certain cases we recommend to reduce tempering temperature and increase holding time.

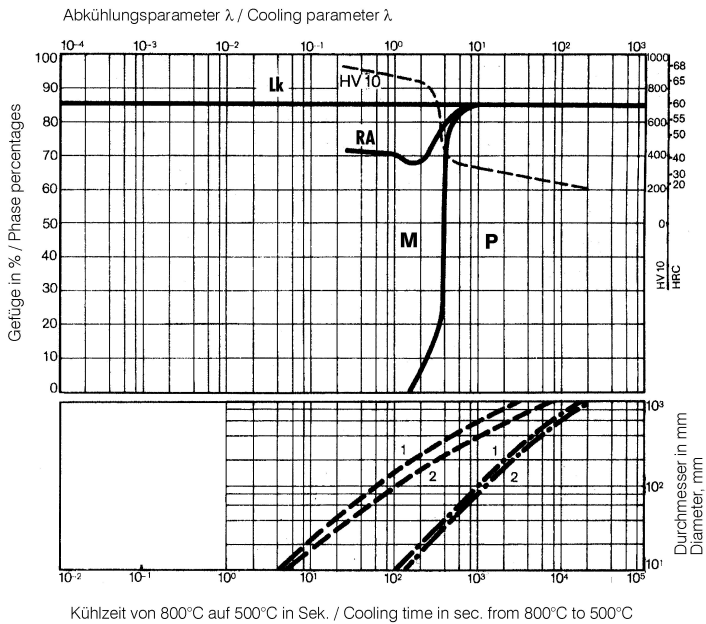
Continuous cooling CCT curves



Austenitising temperature: 1742°F (950°C)
Holding time: 30 minutes

O Vickers hardness
2...100 phase percentages
0.33...180 cooling parameter, i.e. duration of cooling from 1472 to 932°F (800 to 500°C) in $s \times 10^{-2}$
35,6°F/min (2K/min)... cooling rate in K/min in the 1472 to 932°F (800 to 500°C) range

Quantitative phase diagram

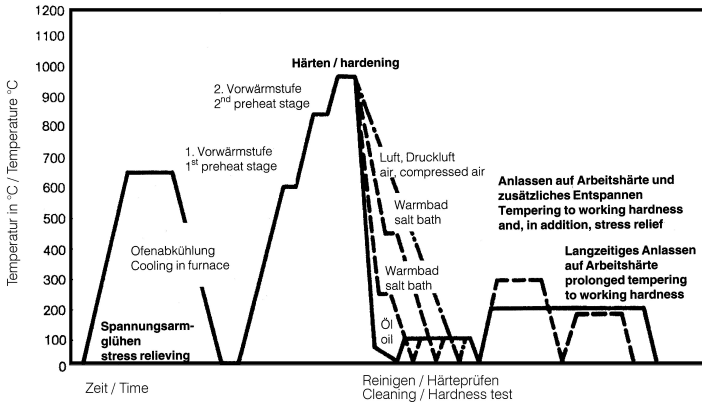


Lk... Ledeburite carbide
RA... Residual austenite
A... Austenite
M... Martensite
P... Pearlite
K... Carbide

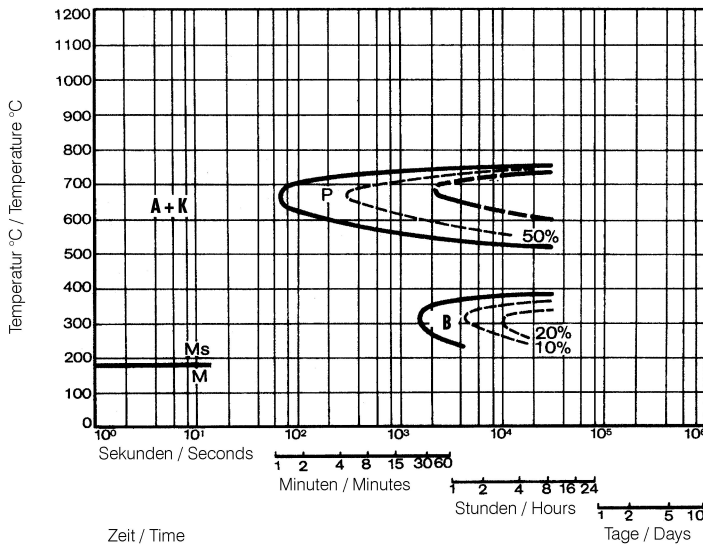
- - - - Oil cooling
- · - Air cooling

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

Heat treatment sequence

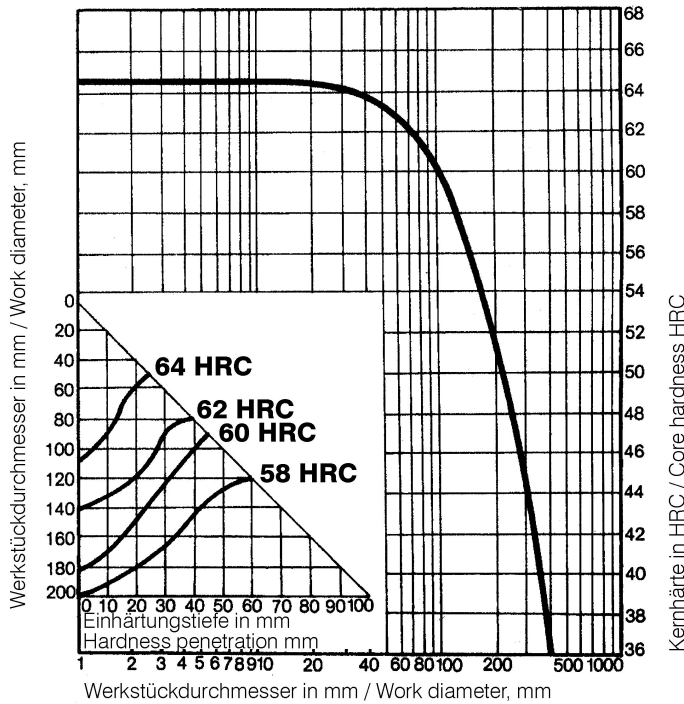


Isothermal TTT curves



Austenitising temperature: 1742°F (950°C)
Holding time: 30 minutes

Influence of work diameter on core hardness and hardness penetration



Hardening temperature: 1742°F (950°C)
Quenchant: Oil

Physical Properties

Temperatura (°C)	20
Densidad (kg/dm ³)	7,7
Conductividad térmica (W/(m.K))	20
Calor específico (J/(kg.K))	460
Resistencia eléctrica específica (Ohm.mm ² /m)	0,65
Módulo de elasticidad (10 ³ N/mm ²)	210

Expansión térmica

Temperatura (°C)	100	200	300	400	500	600
Expansión térmica (10 ⁻⁶ m/(m.K))	10,5	11	11	11,5	12	12

Para más información vea www.acerosbohler.com

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ONE STEP AHEAD.