ACEROS PARA TRABAJO EN FRÍO

Formatos disponibles

Productos largos* | Chapas

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

Descripción

Acero para herramientas de estampación en frío, herramientas para acuñar monedas, cuchillería, herramientas de fresado, cuchillas de corte en frío para material de calibre pesado y moldes de plástico.

Método de obtención

Convencional

Propiedades

- Dureza y Ductilidad : alto
- Estabilidad dimensional : buena

Aplicaciones

- Cuchillas de máquinas (fabricantes)
- Corte fino / Troquelado / Estampado
- Componentes para la industria del reciclaje
- Conformado en frío
- Componentes estándar (moldes, placas, expulsores, punzones)
- Acuñado
- Componentes generales de ingeniería mecánica

Datos técnicos

Designación	
~1.2721	SEL
~50NiCr13	EN

Composición Química

C	Si	Mn	Cr	Mo	Ni
0,55	0,30	0,40	1,00	0,25	3,00

Características

	Resistencia a la compresión	Estabilidad dimensional durante el tratamiento térmico	Tenacidad	Resistencia al desgaste abrasivo
BÖHLER K605	★★	★★★	★★★★	★
BÖHLER K305	★★★★★	★★★	★★	★★★★★
BÖHLER K306	★★★★	★★★	★★★★	★★★
BÖHLER K313	★★★★	★★★	★★★	★★★
BÖHLER K320	★★★	★★★	★★★	★★★
BÖHLER K329	★★★	★★★	★★★★	★★★★
BÖHLER K600	★	★★★	★★★★★	★
BÖHLER K601	★	★★★	★★★★	★★

Estado de suministro

recocido

Dureza (HB)	máx. 250

Tratamiento térmico

Recocido

Temperatura	610 a 650 °C	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.

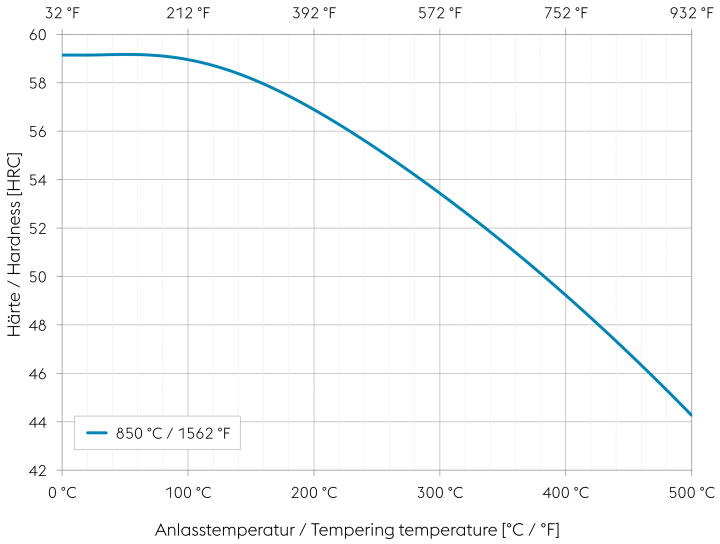
Alivio de tensiones

Temperatura	650 °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	840 a 870 °C	Quenching: Oil, air. || 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.

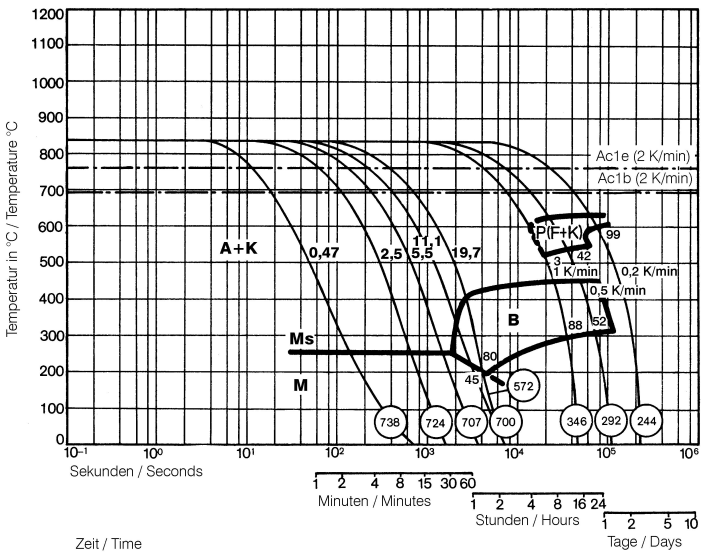
Time in furnace 1 hour for each 20 mm (0,787 inch) of workpiece thickness but at least 2 hours.

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

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

Cooling in air after each tempering step is recommended.

Continuous cooling CCT curves



Austenitising temperature: 840 °C (1544 °F)
Holding time: 20 minutes

O Vickers hardness

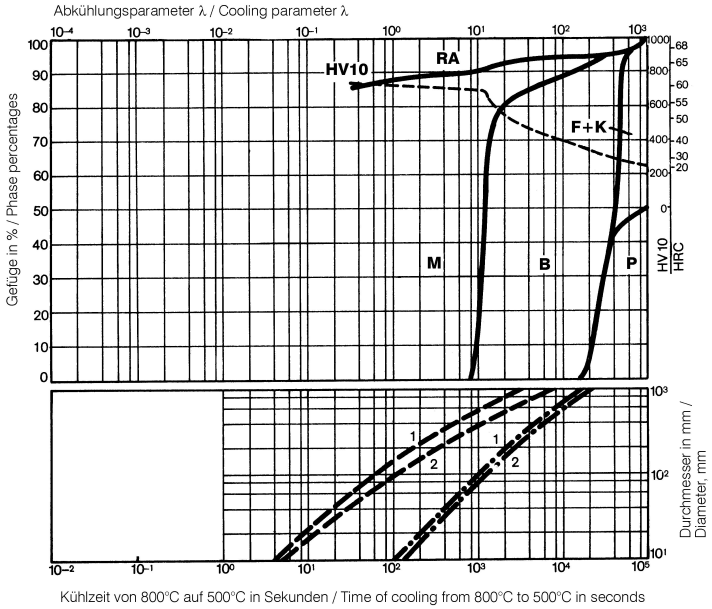
3...99 phase percentages

0.47...19.7 cooling parameter λ, i.e. duration of cooling from 800 to 500 °C (1472 to 932 °F) in s x 10^{-2}

1...0.2 K/min ... cooling rate in the range of 800 to 500 °C (1472 to 932 °F)

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

Quantitative phase diagram

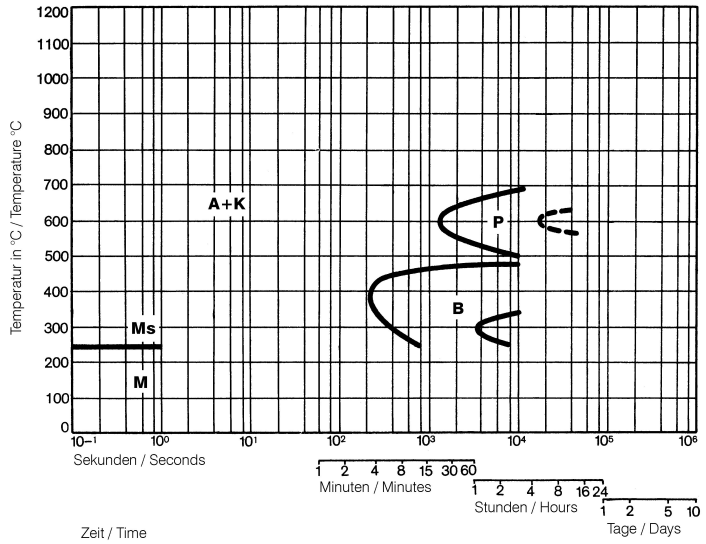


HV10... Vickers Hardness
RA... Residual austenite
F... Ferrite
K... Carbide
M... Martensite
B... Bainite
P... Perlite

- - - Oil cooling
- • - Air cooling

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

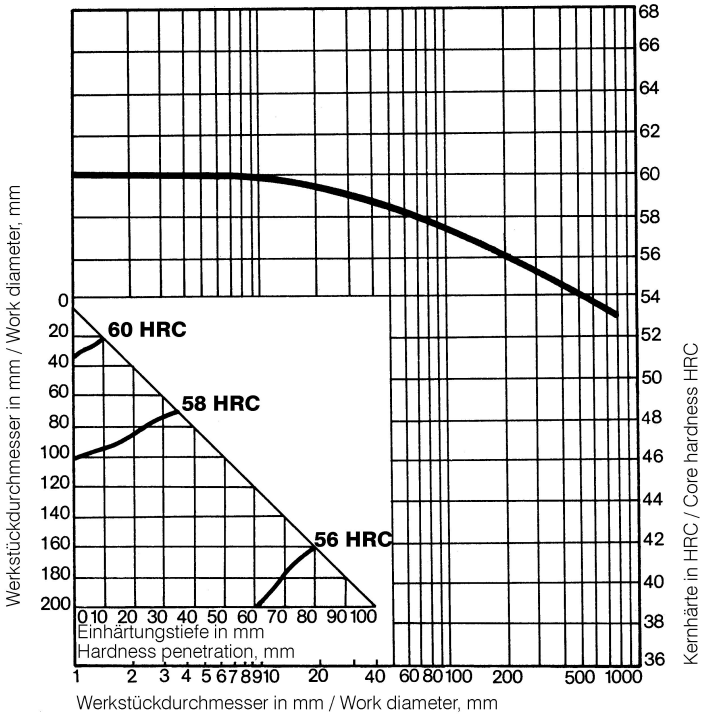
Isothermal TTT curves



Austenitising temperature: 840 °C / 1544 °F
Holding time: 20 minutes

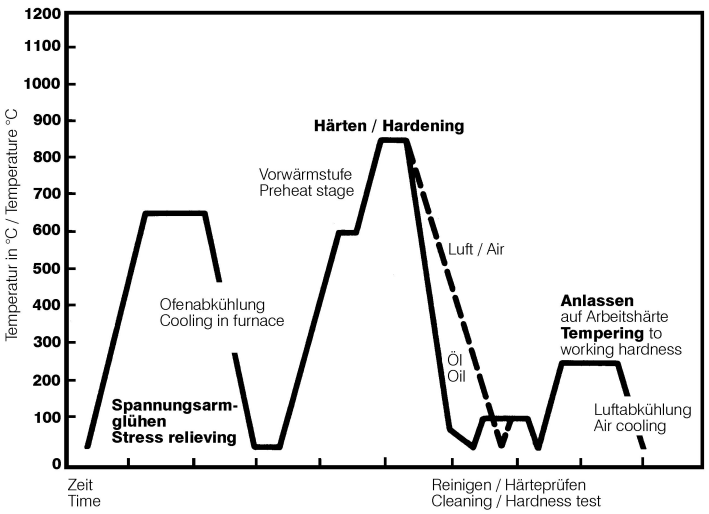
A... Austenite
K... Carbide
P... Perlite
B... Bainite
M... Martensite
Ms... Martensite starting temperature

Influence of work diameter on core hardness and hardness penetration



Quenched from: 850 °C / 1562 °F
Quenchant: Oil

Heat treatment sequence



Propiedades físicas

Temperatura (°C)	20
Densidad (kg/dm^3)	7,85
Conductividad térmica (W/(m.K))	28
Calor específico (kJ/kg K)	0,46
Resistencia eléctrica específica (Ohm.mm^2/m)	0,3
Módulo de elasticidad (10^{3}N/mm^2)	210

Expansión térmica

Temperatura (°C)	100	200	300	400	500
Expansión térmica (10^{-6} m/(m.K))	11	12,5	13	13,5	14

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.