

NÁSTROJOVÉ OCELI PRO PRÁCI ZA STUDENA

Rozměrový sortiment k dispozici

 Tyčová ocel*

 Plech

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

Popis produktu

BÖHLER K455 corresponds approximately to the material 1.2550 (~60WCrV7, ~S1) in terms of the alloy concept. This classic matrix steel is characterized by high toughness, good machinability, and polishability. BÖHLER K455 offers the advantage of simple heat treatment with low hardening temperatures and single tempering. BÖHLER K455 is widely used in the field of punching and cutting tools as well as in the field of embossing tools.

Trasa tavení

 Airmelted

Vlastnosti

- > Houževnatost a tažnost : velmi vysoká
- > Pevnost v tlaku : vysoká
- > Rozměrová stálost : dobré

Použití

- > Tváření za studena
- > Normálie (formy, plechy, kolíky, střížníky)
- > Lisování prášků za studena

Technické údaje

Označení materiálu	
~1.2550	SEL
~60WCrV7	EN
~60WCrV8	
~S1	AISI

Chemické složení

C	Si	Mn	Cr	V	W
0,63	0,60	0,30	1,10	0,18	2,00

Materiálové vlastnosti

	Tlaková zatížitelnost	Rozměrová stabilita při tepelném zpracování	Houževnatost	Odolnost proti opotřebení abrazivní
BÖHLER K455	★★★	★	★★★★★	★
BÖHLER K245	★★	★	★★★★★	★
BÖHLER K460	★★★★	★	★★★★	★★
BÖHLER K720	★★	★	★★★★	★

Stav dodání

Žiháno

Tvrdość (HB)	max. 225
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Tepelné zpracování

Annealing

Teplota	710 na 750 °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.
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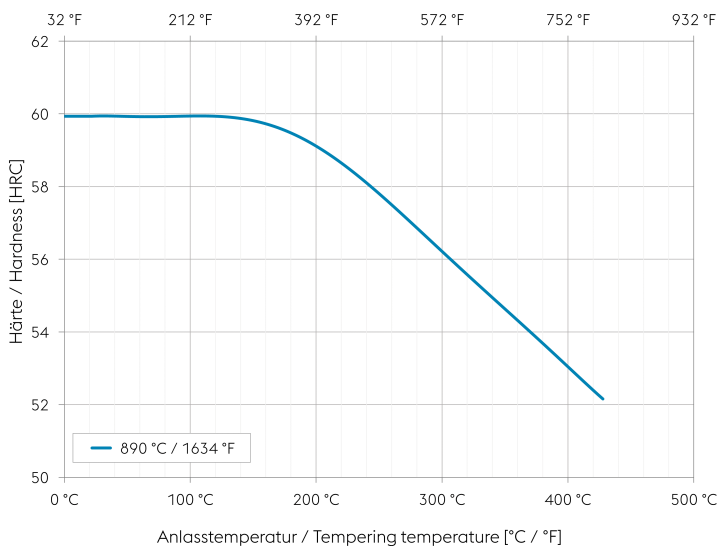
Žihání na odstranění vnitřního pnutí

Teplota	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.
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Kalení a popouštění

Teplota	870 na 900 °C	Quenching in Oil Holding time after temperature equalization: 15 to 30 minutes. After hardening, tempering to the desired working hardness according to the tempering chart.
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Tempering chart



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

Slow heating to tempering temperature immediately after hardening.

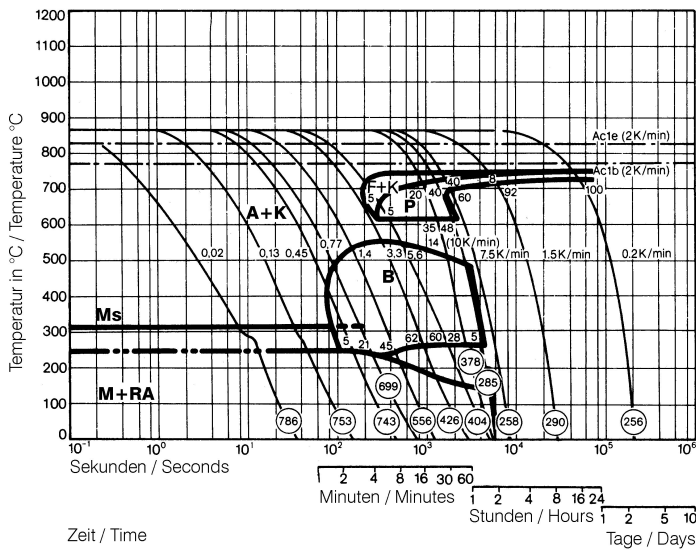
Time in furnace 1 hour for each 20 mm (0,787 inch) of workpiece thickness but at least 2 hours.

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: 880 °C (1616 °F)
Holding time: 15 minutes

O Vickers hardness

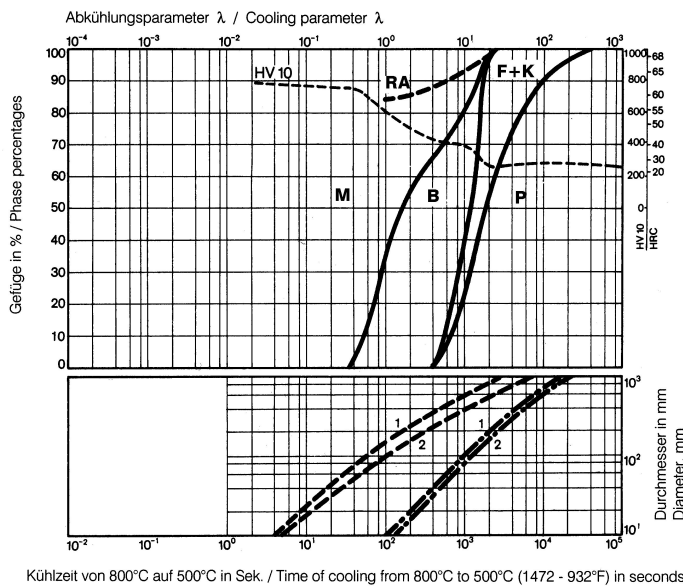
2...100 phase percentages

0.02...14 cooling parameter λ, i.e. duration of cooling from 800 to 500 °C (1472 to 932 °F) in s x 10⁻²

0.2...10 K/min... cooling rate in the range of 800 to 500 °C (1472 to 932 °F)

- A... Austenite
- K... Carbide
- P... Pearlite
- B... Bainite
- M... Martensite
- RA... Retained austenite
- Ms... Martensite starting temperature

Quantitative phase diagram



HV10... Vickers Hardness

RA... Retained austenite

F... Ferrite

K... Carbide

M... Martensite

B... Bainite

P... Pearlite

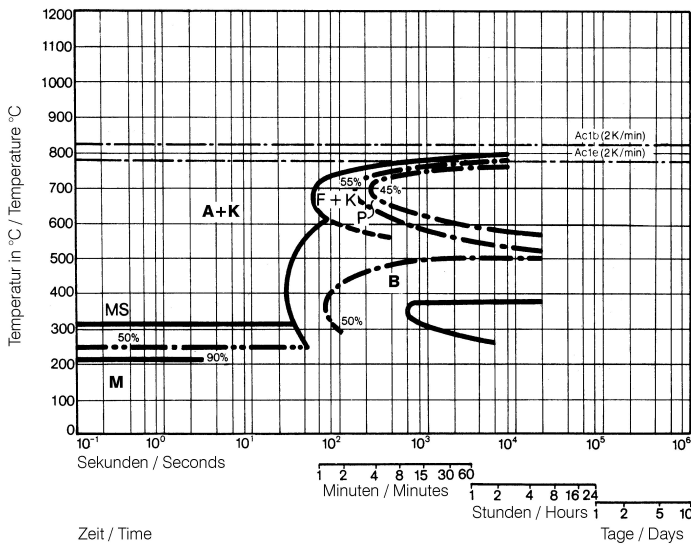
--- Oil cooling

- · - Air cooling

1... Edge or face

2... Core

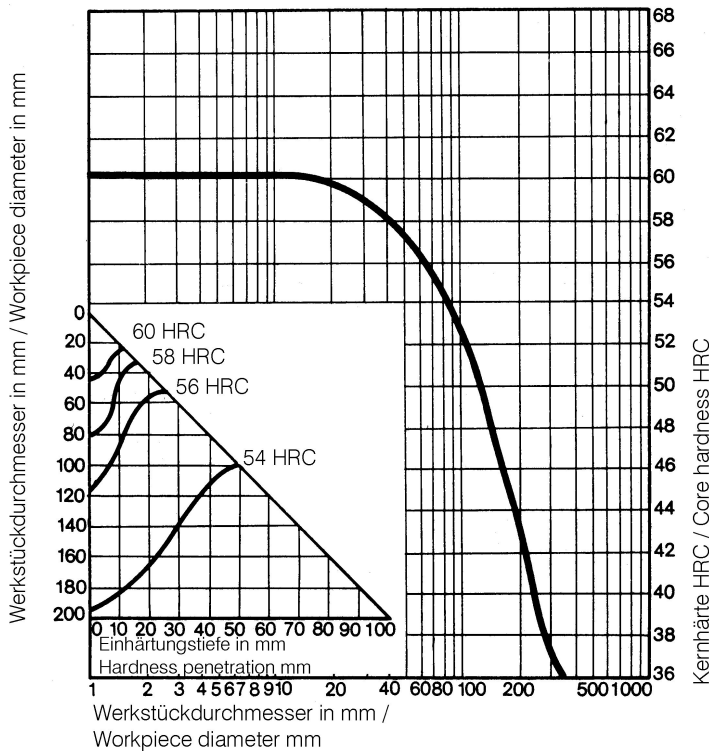
Isothermal TTT curves



Austenitising temperature: 880 °C / 1616 °F
Holding time: 15 minutes

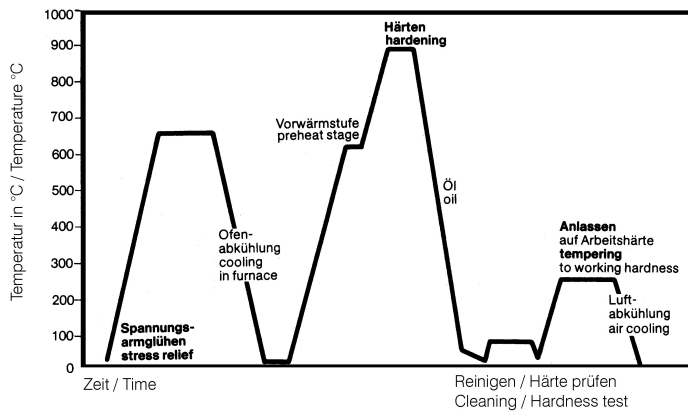
- A... Austenite
- K... Carbide
- P... Pearlite
- B... Bainite
- M... Martensite
- Ms... Martensite starting temperature

Influence of work diameter on core hardness and hardness penetration



Quenched from: 890 °C / 1634 °F
Quenchant: Oil

Heat treatment sequence



Fyzikální vlastnosti

Teplota (°C)	20
Hustota (kg/dm ³)	8
Tepelná vodivost (W/(m.K))	25
Měrná tepelná kapacita (kJ/kg K)	0,46
Měrný elektrický odpor (Ohm.mm ² /m)	0,3
Modul pružnosti (10 ³ N/mm ²)	210

Tepelná roztažnost

Teplota (°C)	100	200	300	400	500
Tepelná roztažnost (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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