

Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.2080 mod.
Description	~X210Cr12
AISI/SAE	D3 mod.; T30403
Search for alternatives in the ABRAMS STEEL GUIDE [®]	www.steel-guide.eu/alternatives/D3mod

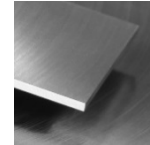
Specifications



Precision flat steel without machining allowance, DIN 59350 [PFS]
L: 500 mm



Precision flat steel with machining allowance [PFS/BA]
L: 500 mm
L: 1.000 mm



Hart-Präz[®] Hart]
L: 250 mm
L: 500 mm



Precision round steel with machining allowance [PRS/BA]
peeled / rough-turned
L: 500 mm
L: 1.000 mm

Chemical composition AISI/SAE D3 mod. (reference value %)

C	Si	Mn	P	S	Cr	W
1,9 - 2,2	0,1 - 0,6	0,2 - 0,6	0 - 0,03	0 - 0,03	11,0 - 13,0	≤ 0,8

Physical properties

Hardness (delivery condition)	max. 250 HB, annealed						
Tensile strength R_m (as received condition)	approx. 850 N/mm ²						
Working hardness	max. 62 HRC						
Thermal expansion coefficient $10^{-6}m/(m \cdot K)$	20 - 100°C	20 - 200°C	20 - 300°C	20 - 400°C	20 - 500°C	20 - 600°C	20 - 700°C
	10,8	11,7	12,2	12,6	12,8	13,1	13,3
Thermal conductivity $W/(m \cdot K)$	20°C	350°C	700°C				
	16,7	20,5	24,2				

Technical properties

Cold work steel with excellent wear resistance, due to its high chromium carbide content, and excellent cutting power (for laminations up to a thickness of 4 mm). Full hardenability, dimensional stability but medium toughness. The classic among the ledeburite 12 % chromium steels.

Applications

Blanking tools, stamping tools, embossing tools, scraping tools, trimming tools, woodworking tools, drawing tools, press tools, stone moulds, sintered tools, machine knives, hammer cores, ring rollers, thread rolling dies, plastic moulds.

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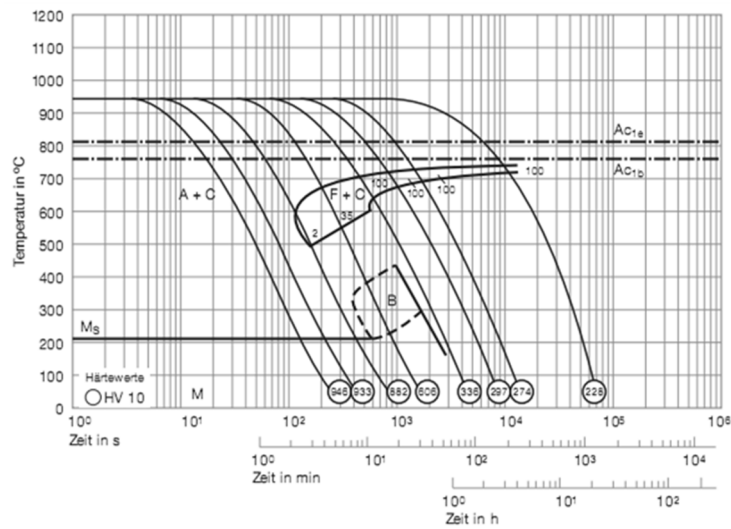
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Heat treatment

	Temperature	Cooling	Hardness			
Soft annealing	800 - 840°C	Furnace	max. 250 HB			
Stress relief annealing	approx. 650 - 700°C	Furnace				
	Temperature	Quenching in	Hardness after quenching			
Hardening	930 - 960°C	Oil	64 HRC			
	950 - 980°C	Air (up to 30 mm thickness)	64 HRC			
Tempering	100°C	200°C	300°C	400°C	500°C	600°C
	63 HRC	62 HRC	59 HRC	57 HRC	54 HRC	46 HRC

Continuous ZTU-diagram



Tempering diagram

