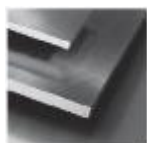


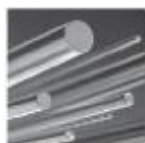
## Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.2990
Description	~X100CrMoV8-1-1
AISI/SAE	1.2990
Search for alternatives in the ABRAMS STEEL GUIDE®	<a href="http://www.steel-guide.eu/alternatives/1.2990">www.steel-guide.eu/alternatives/1.2990</a>

## Specifications



€co-Präz<sup>®</sup> [€co]  
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 1.2990 (reference value %)

C	Si	Cr	Mo	V
1,0 - 1,0	0,9 - 0,9	8,0 - 8,0	1,6 - 1,6	1,6 - 1,6

## Physical properties

Hardness (delivery condition)	max. 250 HB, annealed						
Tensile strength $R_m$ (as received condition)	approx. 850 N/mm <sup>2</sup>						
Working hardness	max. 63 HRC						
Thermal expansion coefficient $10^{-6} m/(m \cdot K)$	20 - 100°C	20 - 150°C	20 - 200°C	20 - 300°C	20 - 400°C	20 - 450°C	20 - 500°C
	11,4	11,6	11,7	12,0	12,3	12,4	12,6
Thermal conductivity $W/(m \cdot K)$	RT	100°C	150°C	200°C	300°C	400°C	500°C
	24,0	25,9	26,8	27,1	27,4	27,2	26,8

## Technical properties

An all-rounder amongst the cold work steels: high toughness, good pressure resistance, excellent compression strength, excellent wear and tempering resistance. It is secondary-hardened and has a good dimensional stability, good erosion quality and excellent nitridability.

## Applications

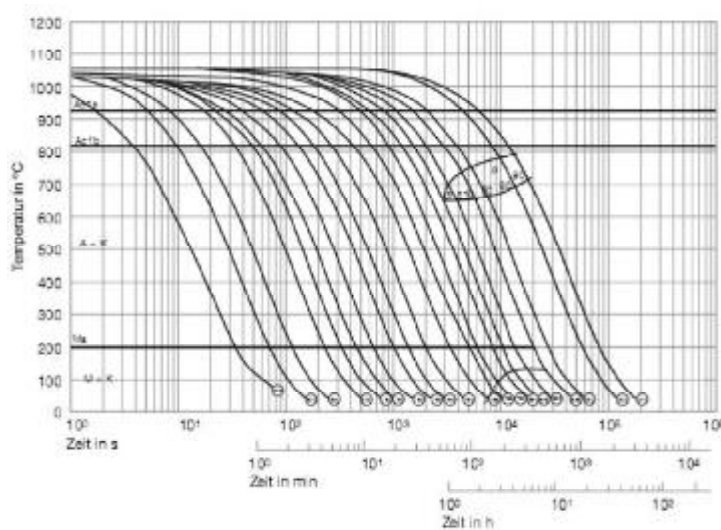
Blanking tools, stamping tools, precision cutting tools, dies, punches, thread rolling tools, cold pilger mandrels, plastic moulds, cold rollings, cold extrusion tools, cold forming tools, deep drawing dies, woodworking tools, embossing tools, bending tools, machine knives, circular shear knives, machine parts.



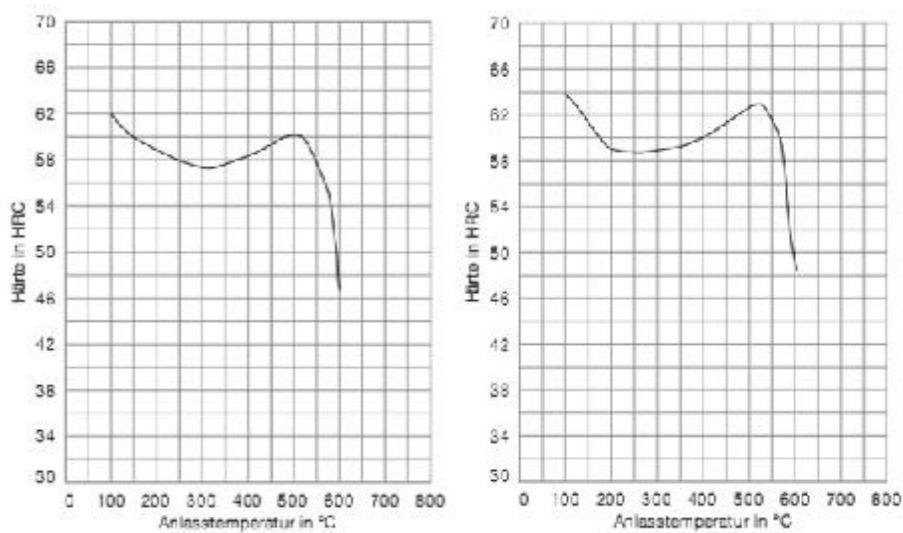
## Heat treatment

	Temperature	Cooling	Hardness						
<b>Soft annealing</b>	830 - 860°C	Furnace	max. 250 HB						
<b>Stress relief annealing</b>	approx. 650°C	Furnace							
	Temperature	Quenching in	Hardness after quenching						
<b>Hardening</b>	1030 - 1080°C	Air, oil, hot basin (500 - 550°C)	62 - 64 HRC						
	100°C	200°C	300°C	400°C	500°C	525°C	550°C	575°C	600°C
<b>Tempering</b>									
1030°C	62 HRC	59 HRC	57 HRC	58 HRC	60 HRC	60 HRC	59 HRC	55 HRC	46 HRC
1080°C	64 HRC	59 HRC	59 HRC	60 HRC	63 HRC	63 HRC	61 HRC	57 HRC	48 HRC

## Continuous ZTU-diagram



## Tempering diagram 1030°C and 1080°C



### ABRAMS PREMIUM STEEL

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