

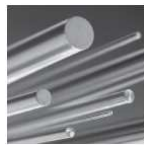
## Steel grade

Material No. / Werkstoff-Nr.	PREMIUM 1.2360 / 1.2360 mod.
Description	X48CrMoV8-1-1 / X48CrMoV8-1
BS	~Chipper / ~Chipper mod.
AISI/SAE	~Chipper / ~Chipper mod.
Search for alternatives in the ABRAMS STEEL GUIDE®	<a href="http://www.steel-guide.co.uk/alternatives/Chipper">www.steel-guide.co.uk/alternatives/Chipper</a>

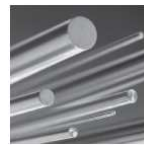
## Specifications



€co-Präz® [€co]  
L: 500 mm



Precision round steel [PRS/BA] / 1.2360  
peeled / rough-turned  
L: 500 mm  
L: 1,000 mm



Precision round steel  
with machining allowance [PRS/BA] / 1.2360 mod.  
peeled / rough-turned  
L: 500 mm  
L: 1,000 mm

## Chemical composition BS ~Chipper\* (reference value %)

C	Si	Mn	P	S	Cr	Mo	V
0.45 – 0.5	0.7 – 0.9	0.35 – 0.45	0 – 0.02	0 – 0.005	7.3 – 7.8	1.3 – 1.5	1.3 – 1.5

\* This specification will be delivered as Chipper-Knife-Steel (reduced content of vanadium - approx. 0,5 % V - in order to increase the toughness of your application).

## Physical properties

Hardness (delivery condition)	max. 250 HB, annealed		
Tensile strength R <sub>m</sub> (as received condition)	approx. 850 N/mm <sup>2</sup>		
Working hardness	max. 60 HRC		
Thermal expansion coefficient 10 <sup>-6</sup> m/(m • K)	20 - 200°C	20 - 400°C	
	11.6	11.3	
Thermal conductivity W/(m • K)	20°C	200°C	400°C
	26.1	27.1	28.6

## Technical properties

Very robust cold work steel which can be used for a wide range of applications. Has a good through-hardening ability and high toughness. High cutting power, high wear resistance as well as excellent tempering resistance.

## Applications

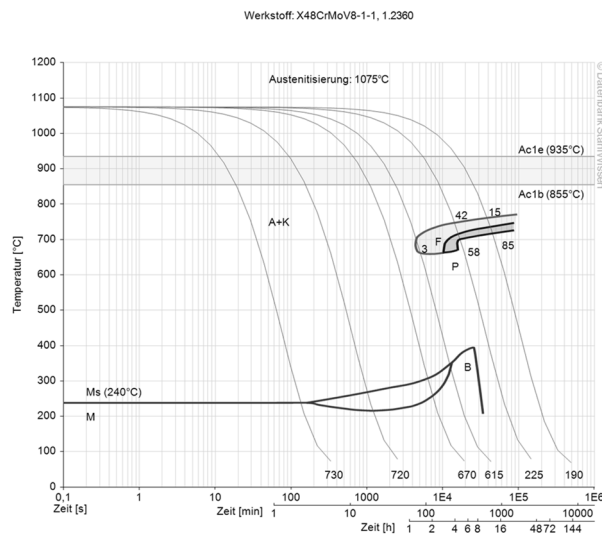
Blanking tools, stamping tools, embossing tools, forming dies, press dies, die inserts, extrusion dies, reinforcements, cold extrusion tools, tube tools, cutting tools, industrial knives, wood chipping knives, veneer knives.



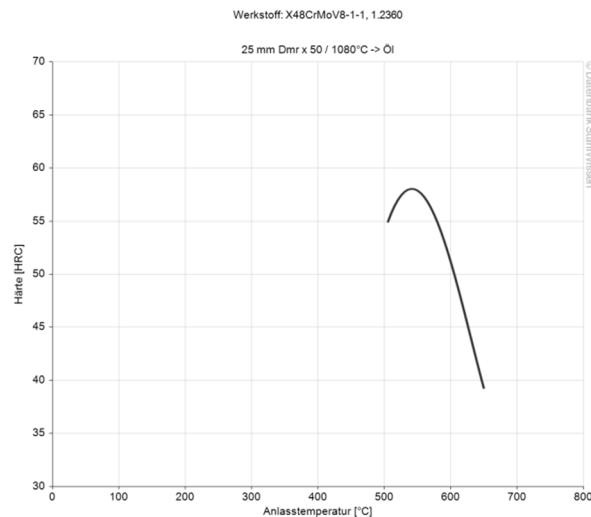
## Heat treatment

	Temperature	Cooling	Hardness				
Soft annealing	830 - 860°C	Furnace	max. 250 HB				
Stress relief annealing	approx. 650°C	Furnace					
	Temperature	Quenching in	Hardness after quenching				
Hardening	1030 - 1070°C	Air, oil, hot basin (550°C)	60 - 61 HRC				
	100°C	200°C	300°C	400°C	500°C	550°C	600°C
Tempering	61 HRC	60 HRC	58 HRC	58 HRC	60 HRC	57 HRC	53 HRC

## Continuous ZTU-diagram



## Tempering diagram



The data shown here is to be used only as an indication of the statistics, thus we accept no liability.  
Diagrams are taken from Datenbank StahlWissen - Dr. Sommer Werkstofftechnik  
Issued: 2012

