

## Steel grade

Material No.	PREMIUM 2990 mod.
AISI	2990 mod.
Search for alternatives in the ABRAMS STEEL GUIDE	<a href="http://www.abrams-steelguide.com/alternatives/2990mod">www.abrams-steelguide.com/alternatives/2990mod</a>

## Shapes



**Smart Flat Stock [Smart]  
Standardized Precision Blanks**  
L: 12"  
L: 24"



**Smart Flat Stock Metric [SmartM]  
Standardized Precision Blanks**  
L: 300 mm  
L: 600 mm

## Chemical composition AISI 2990 mod. (+additives) (reference value %)

C	Cr	Mo	V
1.0 - 1.0	8.0 - 8.0	1.8 - 2.7	0.15 - 0.5

## Physical properties

Hardness (delivery condition)	max. 250 HB, annealed						
Tensile strength $R_m$ (as received condition)	approx. 123.2 KSI						
Working hardness	max. 63 HRC						
Thermal expansion coefficient $10^{-6}m/(m \cdot K)$	68 - 212°F	68 - 302°F	68 - 392°F	68 - 572°F	68 - 752°F	68 - 842°F	68 - 932°F
	11.4	11.6	11.7	12.0	12.3	12.4	12.6
Thermal conductivity $W/(m \cdot K)$	RT	212°F	302°F	392°F	572°F	752°F	932°F
	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

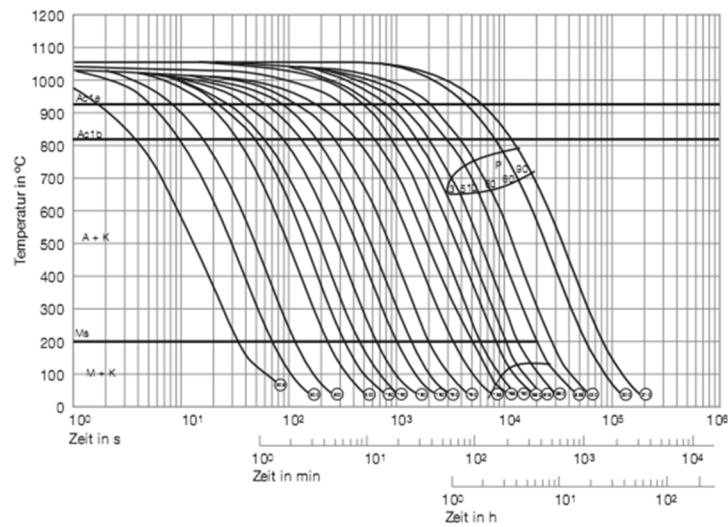
Blanking tools, stamping tools, precision cutting tools, dies, punches, thread rolling tools, cold pilger mandrels, plastic molds, cold rollings, cold extrusion tools, cold forming tools, deep drawing dies, woodworking tools, embossing tools, bending tools, machine knives, circular shear knives, machine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



## Heat treatment

	Temperature	Cooling	Hardness						
<b>Soft annealing</b>	1562 - 1580°F	Furnace	max. 250 HB						
<b>Stress relief annealing</b>	Temperature	Cooling							
	approx. 1202°F	Furnace							
<b>Hardening</b>	Temperature	Quenching in	Hardness after quenching						
	1886 - 1976°C	Air, oil, hot basin (932-1022°F)	62 - 64 HRC						
<b>Tempering</b>	212°F	392°F	572°F	752°F	932°F	977°F	1022°F	1067°F	1112°F
1886°F	62 HRC	59 HRC	57 HRC	58 HRC	60 HRC	60 HRC	59 HRC	55 HRC	46 HRC
1976°F	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

