

DIN - Material - No.

1.2581

Code

X30WCrV93

Comparable standards

AISI: H21

Chemical composition

(Typical analysis %)

C	Si	Mn	Cr	V	W
0.30	0.25	0.30	2.85	0.40	9.00

Steel properties

Tungsten containing hot work tool steel beneficial for hot strength at red heat, although toughness is somewhat reduced.

Physical properties

Thermal conductivity W/(m.K) $\frac{20^{\circ}\text{C}}{27}$

Density g/cm³ $\frac{20^{\circ}\text{C}}{7.80}$

Coefficient of linear thermal expansion

$10^{-6} \text{ }^{\circ}\text{C}^{-1}$	20-100	20-200	20-300	20-400	20-500	20-600	20-700 $^{\circ}\text{C}$
	11.5	12.0	12.2	12.5	12.9	13.0	13.5

Applications

Used for hot working dies and tooling such as die casting, extrusion and hot forming of parts. Pressure die casting tools, moulds for Cu and Cu-alloys. Containers for Metal tube & rod extrusion. This grade is not used for water cooled tools.

Stress Relieving

Holding at approx 650 $^{\circ}\text{C}$ for one hour.

Heat treatment

Soft annealing $^{\circ}\text{C}$		Cooling		Hardness HB	
780 - 810		slowly		240	
Heat up	Preheating 1. step	Preheating 2. step	Hardening from	Tempering	As tempered hardness HRC
$^{\circ}\text{C}$	$^{\circ}\text{C}$	$^{\circ}\text{C}$	$^{\circ}\text{C}$	in oil, air or warm bath	$^{\circ}\text{C}$
400 - 600	850 - 900	1130 - 1160	1080 - 1130	2 x 1 h 600 - 650	47 - 53
Tempering		$^{\circ}\text{C}$	400 500 550 600 650 700		
		HRC	49 49 51 50 46 36		

Time - Temperature - Transformation - Diagram
Tempering Diagram
