

H21 2581 steel

Designation by Standards

Mat. No.	DIN	EN	AISI/SAE
1.2581	X30WCrV9-3	-	H21

Chemical Composition (in weight %)

C	Si	Mn	Cr	Mo	Ni	V	W	Others
0.30	0.25	0.30	3.5	-	-	0.45	9.00	-

Description

This alloy is one of the hot work, tungsten containing tool steels. The tungsten content is beneficial for hot strength at red heat, although toughness is somewhat reduced.

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. This grade is not used for water cooled tools.

Physical properties (average values) at ambient temperature

Modulus of elasticity [$10^3 \times \text{N/mm}^2$]: 190-210

Density [g/cm^3]: 7.80

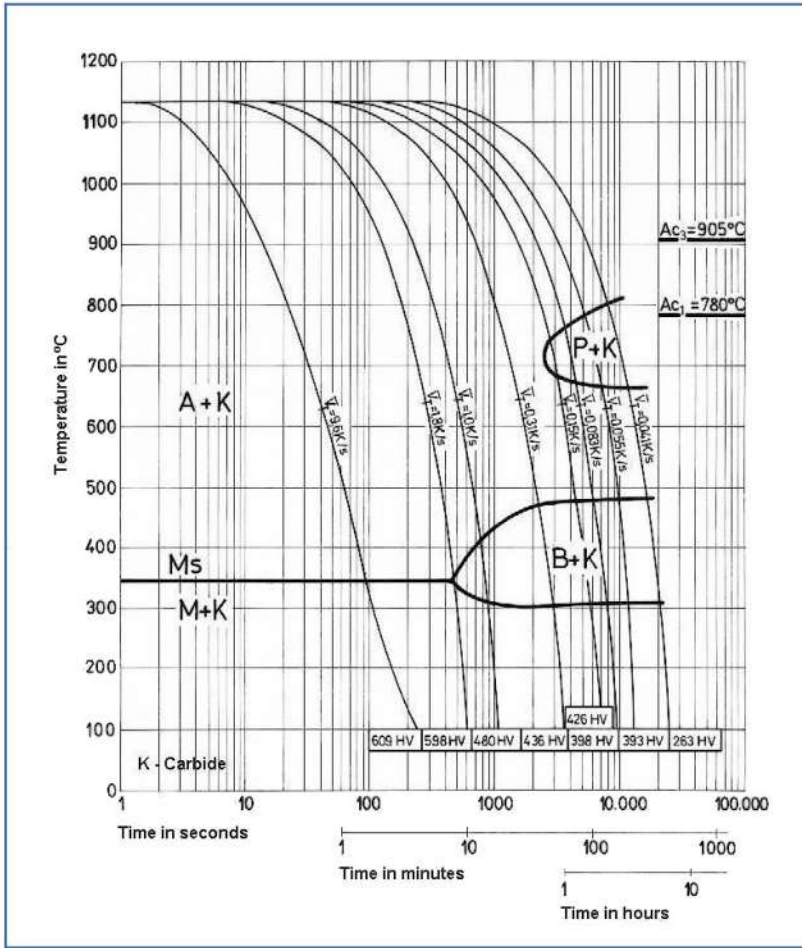
Thermal conductivity [W/m.K]: 27.0

Electric resistivity [$\text{Ohm mm}^2/\text{m}$]: 0.52

Specific heat capacity [J/g.K]: 0.46

Coefficient of Linear Thermal Expansion $10^{-6} \text{ }^\circ\text{C}^{-1}$

20-100°C	20-200°C	20-300°C	20-400°C	20-500°C	20-600°C	20-700°C
11.5	12.0	12.2	12.5	12.9	13.0	13.5



Soft Annealing

Heat to 780-810°C, cool slowly. This will produce a maximum Brinell hardness of 240.

Stress Relieving

Stress relieving to remove machining stresses should be carried out by heating to 650°C, holding for one hour at heat, followed by air cooling. This operation is performed to reduce distortion during heat treatment.

Hardening

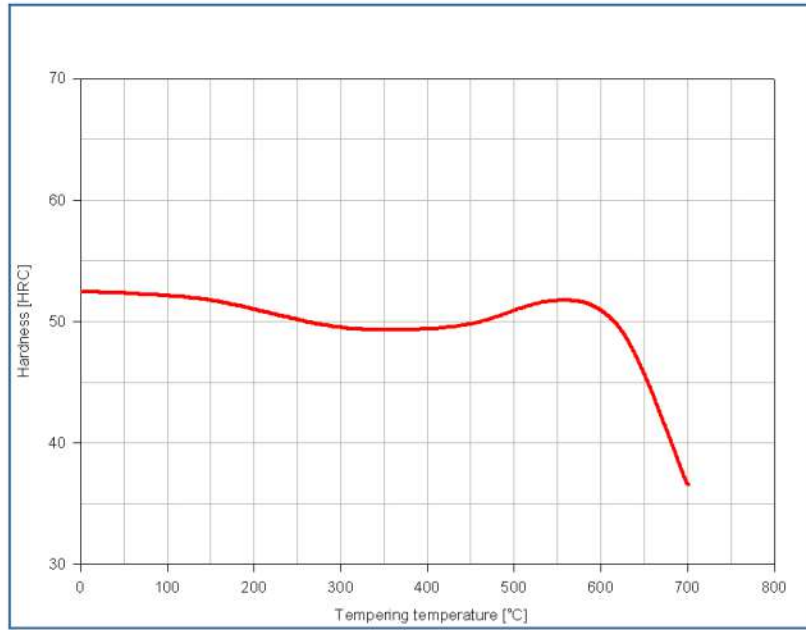
Harden from a temperature of 1080-1160°C followed by air, oil or warm bath quenching. Hardness after quenching is 47-53 HRC.

Tempering

Tempering temperature: See the table bellow.

Tempering Temperature (°C) vs. Hardness (HRC)

400°C	500°C	550°C	600°C	650°C	700°C
49	49	51	50	46	36



Forging

Hot forming temperature: 1150-926°C.

Machinability

The tungsten content makes H21 somewhat difficult to machine. As compared to the W group of water hardening low alloy steels rated at 100% for machinability the H21 would rate 55%.

Corrosion Resistance

This is a steel alloy and does not have corrosion resistance. It will rust unless given protective treatment.

Welding

This alloy may be welded. Consult the supplier for details.