

AS-542

Material no. **1.4542** **1.548**
DIN: **X5CrNiCuNb16-4** **X5CrNiCuNb17-4-4**

Comparison of standards: 17-4PH AISI 630 UNS S17400

Chemical composition: (Approximate values in %)

C	Si	Mn	Cu	Cr	Ni	Nb	N
0,04	0,30	0,60	3,30	15,30	4,40	0,25	0,0250

Description and applications:

AS-542 is a martensitic precipitation-hardened steel, with a high strength and hardness, connected with a very good corrosion resistance. The machinability is good and the different mechanical properties can be applied with heat treatments at comparably low temperatures.

Application: Aerospace industry, general- and electric engineering, high-pressure parts,...

Application at elevated temperatures: Qualified up to 350 °C

Short-term up to max. 50 °C below age hardening temperature.

Application at low temperatures: H900 (480 °C): not qualified if toughness is required.

H925 (500 °C): down to -18 °C

down to -196 °C if impact values are not important.

H1150 (620 °C): down to -79 °C

H1150M (760+620 °C): down to -196 °C

Age hardening temperatures below 550 °C should be avoided for parts with impact requirements.

Heat treatment:

Hot forming	1150 – 900 °C	Luftab Air cooling
Solution annealing	1030 – 1060 °C	Air- or oil cooling < 32 °C
Condition H900	480 °C / 1h / air	
Condition H925	500 °C / 4h / air	
Condition H1025	550 °C / 4h / air	
Condition H1075	580 °C / 4h / air	
Condition H1100	600 °C / 4h / air	
Condition H1150	620 °C / 4h / air	
Condition H1150-M	760 °C / 2h / Luft + 620 °C / 4h / air	
Condition H1150-D	620 °C / 4h / Luft + 620 °C / 4h / air	
Microstructure: solution annealed	Martensite + Austenite + Ferrite	
Microstructure: hardened	Martensite + Austenite + Ferrite + intermetallic phase	

Welding: Electric arc-welding and TIG are applicable. Weld with low heat input and if possible only in the solution annealed condition. Pre-heating at 100-200 °C is only recommended at a thickness over 25mm.

Heat-treatment after welding: solution anneal, precipitate harden or both.

Physical properties:	Density at 20 °C:	7,80 kg/dm ³
	Thermal conductivity at 20 °C:	16,0 W/(m.K)
	Magnetizability:	available