



XM-12 / 1.4545 / 15-5 PH

15-5PH is a variant of the older 17-4PH chromium-nickel-copper precipitation hardening stainless steel. Both alloys exhibit high strength and moderate corrosion resistance. High strength is maintained to approximately 600 degrees F. The 15-5 alloy was designed to have greater toughness than 17-4. This improved toughness is achieved by reduced delta ferrite content and control of inclusion size and shape. The fabrication characteristics of 15 – 5 PH are similar to those of other precipitation hardening grades; they can be age hardened by a single step, low temperature treatment.

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Material Data Sheet

UNS S15500

AMS5658

AMS5659

ASTM 564

DFARS Compliant

AMS5862

AMS5562

Main fields of application of 1.4545

- valve parts,
- fittings and fasteners,
- shafts,
- gears,
- chemical process equipment,
- paper mill equipment,
- aircraft components,
- nuclear reactor components.

Chemical composition of 1.4545

Cr	14,0 - 15,5	Si	1,0
Ni	3,5-5,5	Mn	1,0
Cu	2,5-4,5	P	0,04
C	max 0,07	S	0,03
Nb + Ta	0,15 - 0,45		

Heat treatment

The key to the properties of precipitation hardening stainless steels lies in heat treatment.

Heat treatments are used to strengthen 15-5 alloys. There are eight standard conditions for 15-5 stainless steel after treatment - H 900, H 925, H 1025, H 1075, H 1100, H 1150, H 1150+1150 and H 1150-M. Heat treating 15-5 PH follows the following steps:

1. Conditioning using austenite.
2. Air cooling, which turns the austenite into martensite.
3. Precipitation hardening until the desired condition is reached.

15-5 PH can be further heat-treated when in precipitation-hardened condition to provide improved resistance to stress corrosion cracking for high temperature applications. Fabrication is recommended after the metal has been heat treated to minimize distortion and stress

Mechanical Properties

Condition	UTS	Yield Strength	Elongation	Reduction of area	Hardness Brinell	Hardness Rockwell
H900	190.000	170.000	6	15	388	C40
H1025	155.000	125.000	8	27	331	C35
H1075	145.000	125.000	9	28	311	C32
H1150	135.000	105.000	11	30	277	C28
H1150m	115.000	75.000	14	35	255	

Delivery program

Hempel Special Metals are able to supply this grade in many of the conditions in the following forms :

Sheets / Plates 6.35mm < 101.6mm

Bars from 10mm < 200mm Dia

Material Outlet by Hempel

ECONOXX.com offers buyers a new and uncomplicated procurement channel, which also includes small quantities and materials in special alloys at favourable conditions.

Contact us



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