Duplex Stainless Steel

Alloy 15-5PH

Description

15-5PH is improved martensitic precipitation hardening stainless steel. It was originally developed to eliminate residual delta ferrite found in 17-4PH, removing mechanical property anisotropy for critical loaded components where transverse toughness is essential.

Grade: UNS S15500, XM-12

Chemical Composition (wt%)

C	Cr	Cu	Nb+Ta	Mn	Si	P	S	Ni
≤0.07	14.00–15.50	2.50–4.50	0.15–0.45	≤1.00	≤1.00	≤0.040	≤0.030	3.50-5.50

Disclaimer: Data is typical for reference only.

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Technical standards

Technical Standards	Product Form
ASTM A564 / A564M	Bars and Shapes
ASTM A693	Plate, Sheet and Strip
AMS 5862	Plate, Sheet and Strip

Physical Properties

Room-Temperature Constant Parameters

Item	Typical Value
Density	7.80 g/cm³
Poisson's ratio	0.3
Magnetic property	Magnetic
PREN	15

Coefficient of thermal expansion

θ/°C	α/10⁻⁶ /°C
20–200	10.8
20–400	11.2
20–500	11.5
20–600	11.8

Modulus of Elasticity

θ/°C	E/GPa
25	196
200	188
425	178
540	170

Shear Modulus

θ/°C	G/GPa
25	75.4
200	72.3
425	68.5
540	65.4

Mechanical Properties (Precipitation Hardened, Room Temperature)

Item	H900 (482℃)	H1025 (552℃)	H1150 (621℃)
Tensile Strength, min	1310 MPa	1069 MPa	931 MPa
0.2% Yield Strength, min	1170 MPa	1000 MPa	724 MPa
Elongation (50mm), min	10%	12%	16%
Hardness	40–47 HRC	35–38 HRC	28–33 HRC

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