Special Stainless Steel

Alloy 660 | A-286

Description

Alloy 660 is an iron-base precipitation-hardening superalloy. It was originally developed to provide a cost-effective high-temperature fastener material, addressing the weakness of conventional austenitic stainless steels which lose strength rapidly above 500°C and expensive nickel-base superalloys for mass fastener production. Early stainless grades had limited creep resistance at 650~700°C while premium nickel alloys brought excessive material cost.

Grade: UNS S66286, Alloy 660, A-286, W.Nr.1.4980, X6NiCrTiMoVB25-15-2, SUH660

Chemical Composition (wt%)

	Ni	C	Si	S	Cr	Al	Ti	Mo	P	V	Mn	B
Min	24.0				13.5		1.90	1.0		0.10		0.001
Max	27.0	0.08	1.00	0.03	16.0	0.35	2.35	1.5	0.04	0.50	2	0.010

Disclaimer: Data is typical for reference only.

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Technical standards

Technical Standards	Product Form
ASTM A453	Bolting
AMS 5732	Bar, Wire, Forging,Tubing and Rings
AMS 5737	Bar, Wire, Forging,Tubing
AMS 5804	Welding Wire
AMS 5805	Welding Wire

Physical Properties

Room-Temperature Constant Parameters

Item	Typical Value
Density	7.94 g/cm³
Poisson's ratio	0.3
Magnetic property	Non-magnetic

Coefficient of thermal expansion

θ/°C	α/10⁻⁶ /°C
20–200	16.5
20–400	17
20–500	17.7
20–600	18.2

Modulus of Elasticity

θ/°C	E/GPa
25	199
200	192
425	178
540	168

Shear Modulus

θ/°C	G/GPa
25	77
200	74.2
425	68.8
540	64.5

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Mechanical Properties

Item	Class A	Class B	Class C	Class D (≤63.5mm)
Tensile Strength, min	895 MPa	895 MPa	895 MPa	895 MPa
0.2% Yield Strength, min	585 MPa	585 MPa	585 MPa	725 MPa
Elongation (50mm), min	15%	15%	15%	15%
Hardness	24–34 HRC	24–34 HRC	24–34 HRC	28–36 HRC
Typical Heat Treatment	900℃ solution + 720℃×16h single age	980℃ solution + 720℃×16h single age	980℃ solution + duplex age (775℃+650℃)	980℃ solution + age, high yield variant
Core Feature	Standard ductility, general fastener	Optimized creep / stress rupture	Duplex aging, improved stress rupture	Higher yield strength, for high-load bolt