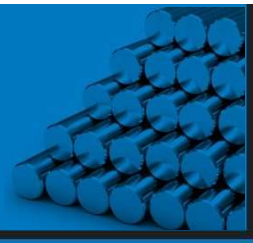
Alloy 286 Data



Quick Facts

- Precipitation hardenable iron based super alloy
- High strength and corrosion resistant up to 704°C
- Excellent fabrication characteristics
- Often referred to as Grade 660 or Incoloy ® A286

Alloy A286 is a precipitation hardenable iron-based super alloy with additions of molybdenum and titanium nickel-chromium. Nickel and chromium additions provide excellent corrosion and oxidation resistance up to 704°C for long term service, up to 816°C for short term service (which is similar to that of 310 stainless) and up to 982°C for intermittent service.

Alloy A286 can also be used in low temperature applications that require a ductile, non-magnetic, high strength material at temperatures above room temperature and down to minus 196°C.

The chromium, nickel and molybdenum contents are similar to those of some austenitic stainless steels, making its aqueous corrosion resistance comparable to that of 316L austenitic stainless steel.

Alloy A286 has excellent fabrication characteristics comparable to austenitic stainless steels and is readily fabricated by standard procedures.

Typical Applications

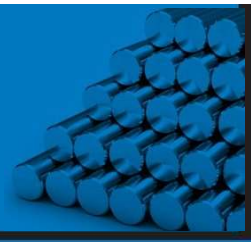
The high strength and excellent fabrication characteristics of alloy A286 make it suitable for aircraft components and industrial gas turbines such as turbine wheels, shafts and blades. It is also used extensively in petro-chemical and offshore oil and gas for non-magnetic cryogenic equipment, fastener applications and stud bolts.

Stock Range

We stock a comprehensive range of sizes between 12.7mm and 450mm diameter round bar in grade 660 Type 2 and Class 660B and 660D.

We can also supply flat bar, rings, blocks and slabs.

Primarily manufactured in: Europe, Japan, USA



Industry Standards

- ASTM A453/A453M - 16 Gr 660 Classes B & D
- ASTM A638/A638M – 10 Gr 660 Type 2
- NACE MR0175/ISO15156
- Werkstoff Nr 1.4980
- UNS S66286
- AMS 5732 (Currently Rev J)

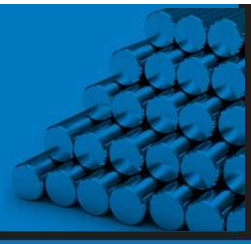
Material may also be supplied to Customer specification, subject to enquiry

Chemical Analysis

	C	Mn	Si	P	S	Cr	Ni	Mo	Ti	AI	V	B	Fe	-
Min	-	-	-	-	-	13.5	24.0	1.0	1.90	-	0.10	0.001	Bal	%
Max	0.08	2.00	1.00	0.040	0.030	16.0	27.0	1.50	2.35	0.35	0.50	0.010	-	%

Heat treatment Condition

Alloy 286 is supplied in the hot worked, solution annealed and single aged condition. In some cases, it may have a second aging treatment to meet properties.



Mechanical Properties

Typical properties for 660 Type 2 and Class 660B

Tensile (PSI (MPA))	Yield (0.2% offset), (PSI (MPA) Min)	Elongation in 2" or 4D min%	Reduction of Area	Rockwell Hardness HRC	Charpy Impacts at -196C Joules min average
130,000 (895)	85,000 (725)	15	18	24 - 35	40

Physical Properties

Typical properties at room temperature:

Melting Range	1370°C - 1430°C (2500°F- 2600°F)
Room Temp Density	7.94 g/cm ^{3} (0.287 lb/in ^{3})
Young's Modulus	201 GPa (29.1 x 10^3KSI)
Thermal Conductivity	12.7 W/m-K (88 Btu-in./ft^{2}hr.- °F)
Specific Heat	419J/Kg-K (0.100 Btu/lb-°F)
Magnetic Permeability @ 200 oersted (15.9kA/m)	1.0011

All material we supply has full traceability with inspection certification in accordance with BS EN 10402 3.1. We can supply material with intent of BS EN 10402 3.2 inspection certification on request.

We have onsite PCN and SNT Level II inspectors who can test material to your requirements.

All information included in this sheet is intended as a guide only and is correct to the best of our knowledge.