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AN ONI COMPANY

15-5PH Stainless Steel

AMS 5862 / UNS S15500

15-5 stainless steel is a martensitic, precipitation-hardening material with chromium, nickel and copper. It is often a first choice in the aerospace industry for fasteners and structural components. Its unique structure provides increased toughness and better corrosion resistance than its predecessor, 17-4 PH. Both inclusion control and a minimized amount of delta ferrite as compared to 17-4 stainless steel contribute to the greater toughness of 15-5. The alloy is further strengthened by a low temperature heat treatment which precipitates a copper containing phase in the alloy. 15-5 PH is able to meet the stringent mechanical properties required in the aerospace and nuclear industries. It is also widely used in food processing, paper, and general metalworking industries.

Nominal Composition %

- C — Carbon - 0.07% maximum
- Cr — Chromium < 14 - 15.5%
- Cu — Copper - 2.5 - 4.5%
- Fe — Iron - Balance
- Si — Silicon - 1.00% maximum
- S — Sulfur - 0.03% maximum
- Ni — Nickel - 3.5 - 5.5%
- Mn — Manganese - 1.0% maximum
- P — Phosphorous – 0.04% maximum
- Nb Ta — Niobium plus tantalum - 0.15 - 0.45%

Percent by weight, maximum unless a range is listed.

Standard Inventory Specifications

- AMS: 5862
- UNS S15500
- ASTM A 639
- DFARS Compliant

Forms Stocked

- Bar

Thickness Stocked

- 0.500” - 6.500” thick

Applications

- Aerospace applications
- Fasteners
- Oil & Gas applications
- Power generation
- Valves, gears and pumps
- Food processing

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Features

- High strength and hardness
- Better corrosion resistance than 17-4

Physical Properties

Condition	A	H900	H1075	H1150
Density g/cm^3	7.75	7.81	7.83	7.86
Density lb/in^3	0.280	0.28	0.28	0.28
Thermal Conductivity 70-212°	10.6	10.3		
Thermal Conductivity 70-932°	13.1	13.1		
Electrical Resistivity	98	77	80	86

Mechanical Properties

Condition	Ultimate Tensile Strength	Yield Strength	Elongation	Reduction of Area	Hardness Brinelle	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
H1150-M	115,000	75,000	14	35	255	