The 15-5 alloy was designed to have greater toughness than 17-4 PH. The 15-5 alloy is martensitic in structure in the annealed condition and is further strengthened by a relatively low temperature heat treatment which precipitates a copper containing phase in the alloy. 15-5 is also referred to as XM-12 in some specifications.

Specifications

UNS: S15500 **ASTM:** A 564, A 693, A 705 **AMS:** 5659, 5862J Type 2, STD 2154 **ASME:** SA-564, SA-693, SA-705
OTHER: BAC 5439 Rev H Class A Type 1, BMS 7-240G Type 1, BSS7055 Rev A

Chemical Composition, %

	Ni	Cr	Mn	Cu	Si	Cb+Ta	C	P	S	Fe
MIN	3.5	14.0	–	2.5	–	0.15	–	–	–	–
MAX	5.5	15.5	1.0	4.5	1.0	0.45	0.07	0.04	0.03	balance

Features

- Precipitation Hardening
- High Strength
- Moderate corrosion resistance to 600°F

Applications

- Aerospace applications
- Chemical and petrochemical applications
- Pulp and paper
- Food processing

Physical Properties

Density: 0.280 lb/in^3 **Poisson's Ratio:** 0.272 **Electrical Resistivity:** 589 Ohm-circ mil/ft

Temperature, °F	70	200	800
Coefficient of Thermal Expansion* in/in°F x 10^{-6}	–	–	6.3
Thermal Conductivity Btu • ft/ft^2 • hr • °F	–	10.6	–
Modulus of Elasticity Dynamic, psi x 10^6	28.5	–	–

** 70°F to indicated temperature.*

Mechanical Properties

Minimum Specified Properties, ASTM A 564

Condition	H 900	H 1075	H 1150	A
0.2% Offset Yield Strength, ksi	170	125	105	–
Ultimate Tensile Strength, ksi	190	145	135	–
Elongation, % in 2" minimum	10	13	16	–
Reduction of Area, %	35	45	50	–
Hardness, Brinell	388	311	277	363 (MAX)

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