

# 15-5 PH Stainless Steel

## 15-5 PH STAINLESS STEEL DATASHEET

15-5PH stainless steel (also known by a trade name "XM-12") is an age-hardening Martensitic stainless steel with approximately 15% Chromium and 5% Nickel. 15-5PH stainless steel is a Martensitic stainless similar to that of 17-4. However, unlike 17-4PH, 15-5PH stainless steel is typically produced with an additional refining process (remelt). 15-5PH stainless steel can be supplied in ESR (Electroslag Remelt), or VAR (Vacuum Arc Remelt). This refining process is done to remove impurities and increase homogeneity. 15-5PH stainless steel has excellent corrosion resistance paired with high strength, and can be heat treated to further increase these properties. Compared to 17-4PH, 15-5PH stainless steel has better ductility and formability, while also having improved transverse strength.

Common industry/applications for 15-5PH stainless steel include: Aerospace, Food Processing, Chemical processing, Oil and Gas, Pumps and Valves, and Fasteners.

Product forms include round bar, plate & strip, and forgings.

### Standards

- **UNS S15500**

### Physical Properties

- **Density: 0.282LB/in<sup>3</sup> (7.78g/cm<sup>3</sup>)**
- **Melting Point: 2560–2625°F (1404–1440°C)**
- **Modulus of Elasticity: 28.5x10<sup>6</sup>psi (196 GPa)**

### Characteristics

- **Good corrosion resistance in all conditions.**
- **Good ductility and formability.**
- **Improved traverse strengths.**



### Chemical Composition

	C	Mn	S	P	Si	Cr	Ni	Cu	Mo
MIN	-	-	-	-	-	14.00	3.00	2.50	-
MAX	0.07	1.00	0.03	0.04	1.00	15.5	5.50	4.50	-

\* Niobium (aka Columbiun) + Tantalum (Nb+Ta) = 0.15-0.45

### Mechanical Properties

Condition	Tensile (min) KSI (Mpa)	Yield (min) KSI (Mpa)	Elongation (min) %	Reduction of Area (min) % **	Hardness * HRC (BHN)	Charpy Impact (Min) Ft-Lbs **
Annealed	-	-	-	-	38 (363) Max.	-
H900	190 (1310)	170 (1170)	10/6	35/15	40 (388) Min.	-
H925	170 (1170)	155 (1070)	10/7	38/20	38 (375) Min.	5/- (6.8/-)
H1025	155 (1070)	145 (1000)	12/8	45/27	35 (331) Min.	15/10 (20/14)
H1075	145 (1000)	125 (860)	13/9	45/28	32 (311) Min.	20/15 (27/20)
H1100	140 (965)	115 (795)	14/10	45/29	31 (302) Min.	25/15 (34/20)-
H1150	135 (930)	105 (725)	16/11	50/30	28 (277) Min.	30/20 (41/27)-
H1150M	115 (795)	75 (520)	18/14	55/35	24 (255) Min.	55/35 (75/47)

\* Charpy values not required as standard.

\*\* Values for material up to 12,000 inch diameter inclusive: Longitudinal/Transverse.

The "H" conditions denote the Aging temperature (excluding H1150M which has a 2-step aging process).

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19201 CIRCLE LAKE DR  
PINEHURST, TX 77362  
Call for a quote (281) 821-7111

