

California Metal & Supply Inc.

ISO9001 & AS9100 Certified Company, Founded 1984
Titanium, Inconel, Nickel, Aluminum, A286, Stainless

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DATA SHEET: 13-8 Stainless Steel

Alloy 13-8 PH stainless steel is a precipitation, age hardenable stainless steel. Stainless Steel 13-8's principal features are toughness, good resistance to general and stress corrosion cracking, and high strength that is developed by a single low temperature heat treatment.

Applications: SS 13-8 has been used in aircraft components such as landing gear and structural sections, valves, shafts, and components in the petrochemical and nuclear industries.

Specifications for Alloy 13-8 PH Stainless Steel

Bar	AMS 5629 Type 1, ASTM A 564 Grade XM13, ASME SA564 Grade XM13, DMS 2100, HMS 6 1105, HMS 6 1105 Exc Sonic, Sonic Per MIL STD 2154 Class A, STM-05-602, STO 160 LBO 013
Plate	AMS 5864, ASTM A 564, ASME SA693
Wire	ASTM A 564, ASME SA564
Sheet	ASTM A693, ASME SA693
Strip	ASTM A693, ASME SA693
Forgings	ASTM A 705, ASME SA705
Rings	AMS 5629
Extrusions	AMS 5629

Typical Mechanical Properties for Alloy 13-8 PH Stainless Steel (Room Temperature)

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Condition	Yield Strength (0.2%) ksi	Ultimate Tensile strength ksi	Elongation % in 2"	% Reduction of Area	Rockwell C Hardness
H 950	210	225	12	40	47
H 1000	205	215	13	50	45
H 1050	180	190	15	55	43
H 1100	150	160	18	60	35
H 1150	105	145	20	63	33
H 1150 M	85	130	22	70	32

Alloy 13-8 Supplied in Solution Treated Condition.

Machinability for Alloy 13-8 PH Stainless Steel

This is a tough machining stainless steel. Although it can be machined in all conditions, best results can be obtained in condition H1150M. Compared to type 304 stainless, speeds should be roughly 25 % lower for optimum tool life and finish.

Forming for 13-8 PH Stainless Steel

This alloy can be formed using conventional techniques with the degree of formability being limited only by its high initial yield strength.

Welding for 13-8 PH Stainless Steel

Best welded in the solution annealed condition, using 13-8 MO filler material. Both resistance and inert gas shielded methods are acceptable.

Heat Treatment for Alloy 13-8 PH Stainless Steel

CONDITION A--Soak at 1700 F (927 C) and cool below 60 F (16 C) for 1 hour. CONDITION RH 950- Treat Condition A material at -100 F(-73C) for 2 hours, air warm to room temperature (within 24 hours of solution treatment). Then heat cold treated material to 950 F(510 C) for 4 hours and air cool. CONDITION H950, H1000, H1050, H1100, H1150- Soak solution treated material for 4 hours at specified temperature, air cool, CONDITION H1150M- Soak solution treated material at 1400 F (760 C) for 2 hours, air cool, then re-heat to 1150 F (620 C) for 4 hours and air cool.

Forging for Alloy 13-8 PH Stainless Steel

Soak at 2150 F(1177 C) for 1 hour prior to forging. Do not work below 1750 F(954 C). All forgings should be solution treated prior to final hardening. Air cool to room temperature after forging.

Hot Working for Alloy 13-8 PH Stainless Steel

13-8 can be satisfactorily hot worked. Hot worked material must be solution annealed prior to hardening for reliable results.

Cold Working for Alloy 13-8 PH Stainless Steel

Despite its high initial yield strength, this alloy can be satisfactorily cold worked.