UNITED PERFORMANCE METALS
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AN ONI COMPANY

Stainless 17-4 PH

Type 17-4 PH stainless steel is the most widely used of all of the precipitation-hardening stainless steels. Its valuable combination of properties gives designers opportunities to add reliability to their products while simplifying fabrication and often reducing costs. Type 17-4 PH is a martensitic precipitation-hardening stainless steel that provides an outstanding combination of high strength, good corrosion resistance, and good mechanical properties at temperatures up to 600°F (316°C). Its unique combination of properties make this alloy an effective solution to many design and production problems.

Specifications

ASME: SA564, SA693, SA705, Type 630
AMS: 5604, 5622, 5643, 5825
ASTM: A564, A693, A705, Type 360
UNS: S17400
W. Nr./EN: 1.4548

Chemical Composition, %

	Cr	Mn	Si	Ni	P	S	C	Cu	Cb+Ta
MIN	15	–	–	3	–	–	–	3	0.15
MAX	17.5	1	1	5	0.04	0.03	0.07	3.5	0.45

Resistance to Corrosion: Type 17-4 PH stainless steel has excellent resistance. It withstands corrosive attack better than any of the standard hardenable stainless steels and is comparable to type 304 in most media. This has been tested in a wide variety of corrosive conditions in the petrochemical, petroleum, paper, dairy, and food processing industries, and in applications such as boat shafting.

Features

- Excellent resistance to corrosion
- Provide toughness in both base metals and welds.
- Well suited to applications that require ease of fabrication and then the addition of strength/hardness for improved reliability

Applications

- Aerospace applications
- Chemical processing equipment
- Oil and petroleum refining equipment
- Food processing equipment
- General metalworking

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Physical Properties

Melting Range: 2560-2625°F (1404-1440°C)
Density: 0.2820 lb/in³

Linear Coefficient of Thermal Expansion

Temperature Range		Coefficients	
°C	°F	µm/m·°C	in/in/°F·106
21-93	70-200	10.8	6
21-204	70-400	10.8	6
21-316	70-600	11.2	6.2
21-427	70-800	11.2	6.3

Thermal Conductivity

Temperature Range			
°C	°F	W/m·K	Btu/(hr/ft²/in/°F)
149	300	17.9	124
260	500	19.5	135
460	860	22.5	156
482	900	22.6	157

Specific Heat

Temperature Range			
°C	°F	J/gg·K	Btu/lb/°F
0-100	32-212	460	0.11

Mechanical Properties

Type 17-4PH stainless steel has excellent mechanical properties. For applications requiring high strength and hardness as well as corrosion resistance, Type 17-4PH stainless is an outstanding choice, and it is more cost effective than many high nickel non-ferrous alloys.

Typical Mechanical Properties of Sheets and Strip – Cold Flattened (Annealed)

UTS (Tensile) Ksi(Mpa)	.02% Yield Strength Ksi(Mpa)	Elongation % in 2" (51mm)	Hardness Rockwell C
160 (1103)	145 (1000)	5	35