

17/4PH

Grade

Martensitic, precipitation hardening stainless steel

Type

A high strength chromium, nickel, copper stainless steel with similar corrosion resistance to Type 304.

Overview

Type 630 is generally comparable to Type 304 in corrosion resistance and is used in applications where the combination of moderate corrosion resistance and unusually high strength is required. The grade has high strength (including good mechanical properties up to 600°F.

Single age variants of Type 630 are available as reported in ASTM A564, H900, H1025, H1075 & H1150.

Composition	
Element	Weight%
Carbon	0.07 max
Silicon	1 max
Manganese	1 max
Phosphorus	0.04 max
Sulphur	0.03 max
Chromium	15 - 17.5
Nickel	3 - 5
Manganese	1 max
Niobium + Tantalum	0.15 - 0.45
Copper	3 - 5

Notes: DH1150 condition

Application

17/4 PH was used more extensively in oil and gas until 2003 when it was reclassified by NACE. It is now restricted to use for special components and

only restricted well environments. It is however used in a variety of other applications.

Mechanical Properties

Solution treated and double aged.

Property	Values
0.2% Yield Strength	105 KSI min (724 MPA min)
Ultimate Tensile Strength	125 KSI min (862 MPA min)
Elongation	18
Reduction of area	50% min
Charpy Impact Toughness	40 min J at -29°C
Hardness	33 HRC max

Notes: In addition to limiting the hardness, NACE MRO175 restricts the age hardening cycles that can be applied to the alloy to two of the several available within ASTM A564 Gr630, namely H1150M and DH1150

The material can be satisfactorily welded. However care must be taken to use the appropriate filler material as the thermal cycle associated with welding can substantially alter the condition of Gr 630.