

### Wipro 3D – 17-4PH

17-4 PH stainless steel is a precipitation-hardening martensitic stainless steel known for its high strength, excellent corrosion resistance, and good mechanical properties at elevated temperatures.

#### Characteristics of the Alloy:

- High Strength
- Corrosion Resistance
- Weldability
- Fatigue and stress corrosion resistance

#### Applications


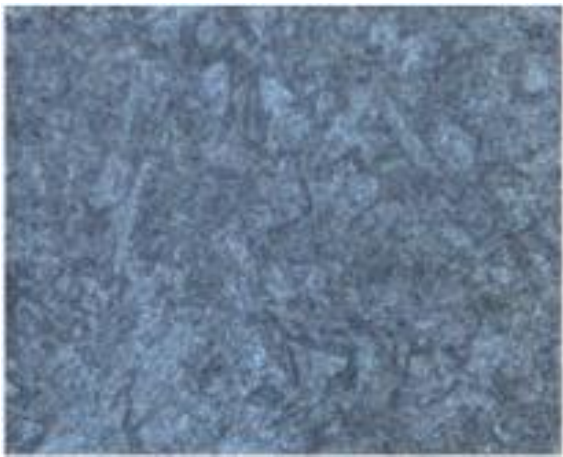
- Aerospace: Used in aircraft components, engine parts, and other critical applications.
- Chemical and Petrochemical: Used in pumps, valves, and other equipment in corrosive environments.
- Defence: Used in various military applications.
- Food processing: Used in equipment due to its corrosion resistance and cleanability.
- Nuclear Industry: Used in dry casks for storing spent nuclear fuel.
- Medical: Used in surgical instruments and implants.
- General Metalworking: Used in fasteners, couplings, and other components.

#### Chemical Composition

Chemical composition of raw material and built parts is compliant to table given below.

Chemical Composition (weight%)	
Element	Limitations
Cr	15-17.5
Ni	3-5
Cu	3-5
Si	1.0 max
Mn	1.0 max
C	0.07max
P	0.04max
S	0.03max
Nb+Ta	0.15-0.45

### Microstructure

	
<p>a). As polished/unetched surface showing less than 0.5% porosity</p>	<p>b). Heat treated etched surface showing Martensitic structure</p>

### Mechanical properties

Mechanical properties of built parts confirm to below.

Properties	HT condition
Tensile Strength (MPa)	>1000
Yield Strength (MPa)	>950
Elongation (%)	>15
Reduction in Area (%)	>50
Hardness (HRC)	>30 HRC

There are various heat treatment methods for improving strength and/or elongation, hence if the user provides exact requirements, it can be discussed to achieve these properties.

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