

Material Information



17-4PH Stainless Steel

Introduction

17-4PH Stainless Steel is a multi-purpose metal materials used in many industries. It has high strength and high hardness, making it ideal for all kinds of general metal applications. It is also good for specialized industries such as tooling, aerospace, petrochemical, etc. It can be 3D printed and heat treated into various functional end products and prototypes.

Advantages

High strength and hardness, good corrosion resistant, excellent mechanical properties at elevated temperatures, good thermal properties.

Disadvantages

More expensive. Relatively heavier compared to other metal 3D printing materials.

Tolerance

±250µm or 0.25%

Recommendation

17-4PH Stainless Steel, is widely used for prototypes, spare parts, and functional parts. We see innovators adapting it in different industries, especially for specialized applications such as turbine blades, pump, and valve.

| Material Specifications | | |
|-------------------------|------------|----------|
| Hardness | ASTM E18 | 38 HRC |
| Relative density | ASTM B923 | 96.4% |
| Tensile strength | ASTM E8 | 1230 MPa |
| Tensile modulus | ASTM E8 | 170 GPa |
| Elongation at Break | ASTM E8 | 13% |
| Yield strength | ASTM E8 | 1050 MPa |
| Corrosion | ASTM F1089 | PASS |

Attention

Products printed with powdered metal material come with grainy/pitted surface. All metal products supplied by 3DSPRO will be sandblasted for better result. If you have a specific requirement on surface finishing, you may need to add 3D Plus services such as polishing to reach a smooth surface. 3DSPRO offers anodizing and electroplating for coloring as well.

Applications

3DSPRO find people using 17-4PH Stainless Steel to make functional parts and prototypes in the following industries & applications.

Aerospace:

Turbine blades, wrenches & sockets, motor shafts, gear, valve system, etc.

General industrial machineries:

Fasteners, couplings, rocket hold-downs, wear rings, balls, rollers, load cells and screws, helicopter deck platforms, conveyor belt, etc.

Energy and petrochemical:

Pump shafts, hydraulic actuators, foils, oil platform, downhole equipment, pressure vessels, etc.