

Stainless Steel 18Ni300 Datasheet



Overview

Stainless Steel 18Ni300, compatible with selective laser melting (SLM), is a high-performance alloy that offers exceptional mechanical properties. Composed primarily of around 18% nickel, along with cobalt, molybdenum, and titanium, it is specifically designed for applications requiring outstanding strength, toughness, and resistance to harsh environments.

As-printed Part's Tolerance: $\pm 300\mu\text{m}$ or 0.3%

Maximum Printing Size: 420*420*450mm

Properties

Dense Properties	Metric	Method
Density	8.1 g/cm ³	ASTM B923
Relative Density	99.5%	ASTM B923
Mechanical Properties	Metric	Method
Tensile Strength	1100MPa	ASTM E8
Yield Strength	1050MPa	ASTM E8
Elongation at Break	10%	ASTM E8
Modulus of Elasticity	160GPa	ASTM E8
Hardness	35 HRC	ASTM E18
Other Properties	Metric	Method
Corrosion	PASS	ASTM E2769

Pros

SLM 3D printed 18Ni300 maraging steel has exceptional mechanical qualities, including enhanced hardness, strength, and wear resistance. It is highly recommended for demanding applications such as injection molds, aerospace components, and tooling.

Cons

This material may experience issues like high porosity, surface roughness, and diminished corrosion resistance due to the presence of irregular pores and defects. Products made from powdered metal materials often exhibit grainy or pitted surfaces.

Applications

Engine Hanger Hinge Brackets

Heat Exchangers

Landing Gears

Surgical Instruments and Orthopedic Implants

Bearings

Turbines

Jigs and Fixtures

Enclosures and Housings

Load Cells and Screws