

Material Data Sheet - Nickel alloy IN625

Material Description

Airbus APWorks' Inconel (Nickel alloy IN625) is a heat and corrosion resistant nickel alloy.

Parts built from Airbus APWorks' Nickel alloy IN625 have a chemical composition corresponding to UNS N06625, AMS 5666F, AMS 5599G, W.Nr 2.4856, DIN NiCr22Mo9Nb. This type of alloy is characterised by having material properties of high tensile, creep, and rupture strength. Components conventionally cast or wrought in this type of nickel alloy show typically excellent fatigue and thermal fatigue properties combined with good oxidation resistance.

Parts built from Airbus APWorks' Nickel alloy IN625 can be heat treated and material properties can be varied within a specified range. Parts can be machined, spark eroded, welded, micro shot peened, polished, and coated in built and heat treated conditions. The layer wise building method gives the parts a certain anisotropy.

General Properties

Properties	Values
Density (g/cm ³)	8.4
Typical tolerance (mm)	± 0.1
Smallest wall thickness (mm)	1.0
Surface roughness, as built (µm) *	Ra 5 / Rz 35 *

Mechanical Properties

Properties	Values
Young's Modulus (GPa)	160
Yield Strength (MPa)	414
Ultimate Tensile Strength (MPa)	827
Elongation at Break (%)	30
Hardness (HRC)	30

Values stated in the datasheet refer to the minimum properties that are reached using Additive Layer Manufacturing in the least strong direction of the material.

The values of the mechanical properties are generated from tests conducted at room temperature, according to DIN EN 2002-001 standards, from specimens that have been heat treated and machined.

* The surface roughness values depend on the measurement method used and the orientation of the surface. The values quoted here give an indication of what can be achieved for certain surfaces.