

Material Data Sheet - TiAl6V4

Material Description

Airbus APWorks' Ti6Al4V has a chemical composition corresponding to ISO 5832-3, ASTM F1472, and ASTM B348 standards. Also known as the 'workhorse' of the titanium industry it accounts for more than 50% of total titanium usage. This very popular light weight titanium alloy has excellent mechanical properties and corrosion resistance, combined with low specific weight and biocompatibility. These unique material properties make it ideal for many high performance engineering applications, for example in aerospace, motor racing, and also for the production of biomedical implants. The layer wise building method gives the parts a certain anisotropy, which can be reduced or removed by using appropriate heat treatment methods.

General Properties

Properties	Values
Density (g/cm ³)	4.41
Typical tolerance (µm)	± 50
Smallest wall thickness (mm)	1.0
Surface roughness, as built (µm) *	Ra 10 / Rz 80 *

Mechanical Properties

Properties	Values
Young's Modulus (GPa)	105
Yield Strength (MPa)	860
Ultimate Tensile Strength (MPa)	930
Elongation at Break (%)	10
Hardness (HRC5)	300

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.