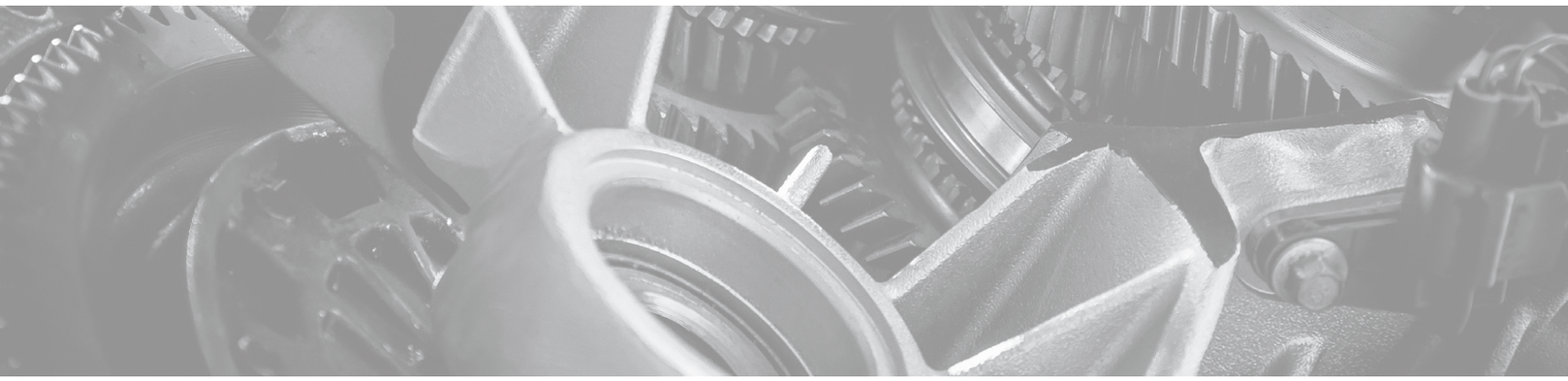
3T additive manufacturing

DATA SHEET

Nickel IN625



Material description

IN625 is a nickel base superalloy which is widely used in the AM industry. This a medium strength superalloy with great resistance to corrosion, thanks to chromium, and good performance at high temperature. These attributes make it possible for it to be used in exhaust systems, oil and gas valves and other extreme conditions.

Physical properties[1]

Density (based on 8.19 g/cm³ theoretical density)	> 99.75%
Pore size	< 100 µm
Porosity rate	< 0.25%
Hardness	min. 200 HV

Mechanical properties

	As Built	Stress Relieved[2]
Tensile strength Horizontal (XY) Vertical (Z)	 860 MPa ± 25 MPa 860 MPa ± 25 MPa	 920 MPa ± 60 MPa 920 MPa ± 60 MPa
Proof strength (Rp 0.2%) Horizontal (XY) Vertical (Z)	 570 MPa ± 30 MPa 570 MPa ± 30 MPa	 600 MPa ± 40 MPa 600 MPa ± 40 MPa
Modulus of elasticity Horizontal (XY) Vertical (Z)	 170 ± 20 GPa 170 ± 20 GPa	 170 ± 20 GPa 170 ± 20 GPa
Elongation at break Horizontal (XY) Vertical (Z)	 32 ± 5%	 34 ± 5%

[1] All data gathered using ASTM E8M flat un-machined specimens that were wire EDM to profile with cross section of 2mmx6mm at the gauge section.
[2] AMS5662 Heat treatment in vacuum furnace at 870°C for 1 hour. Please contact us for bespoke heat treatment to achieve different mechanical properties.

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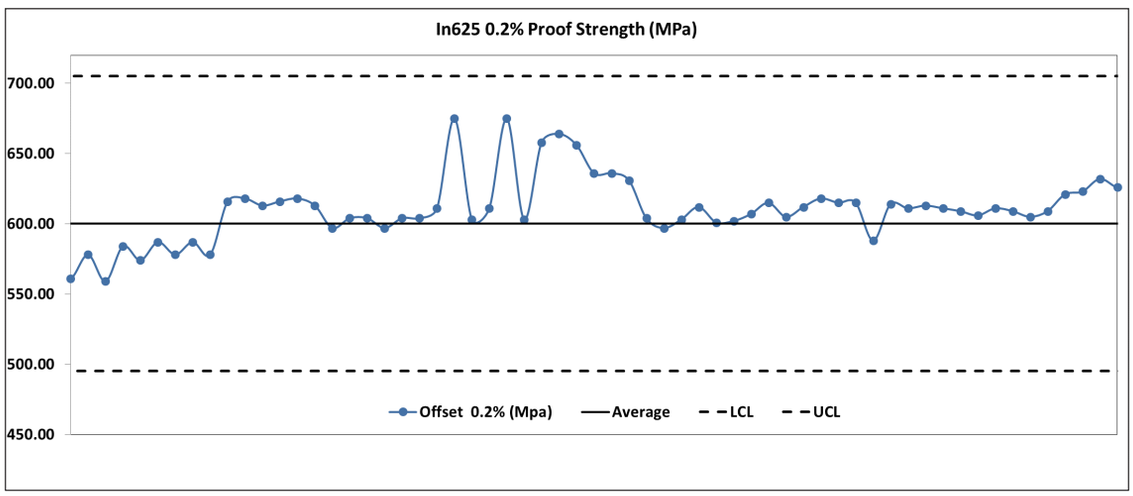
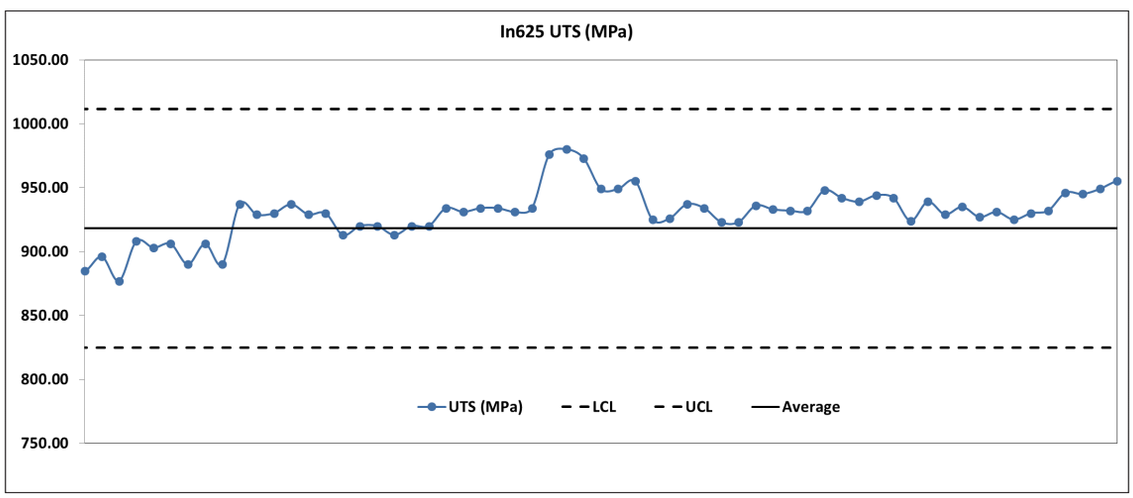
Chemical properties

Material composition wt%	Ni	Balance	Al	0.40 max	C	0.10 max
	Cr	20.00-23.00	Fe	5.00 max	Cu	0.50 max
	Co	1.00 max	Ti	0.40 max	Mn	0.50 max
	Mo	8.00-10.00	Nb+Ta	3.15-4.15	P	0.015 max
	S	0.015 max	Si	0.50 max		

Statistical Process Control Charts[3]





Material Properties	Applications	Finishes	Industries
• Corrosion Resistant • Good Strength • High Temperature Performance	• Prototyping • Engineering • Turbomachinery	• Machined • Spark-eroded • Welded • Micro shot-peened • Polished • Coated	• Automotive • Aerospace • Oil & Gas

[3] Data generated in a production environment through calibration builds, production builds and testing of powders during the goods in procedure. Specimen geometry is ASTM E8M un-machined flat with cross section of 2mmx6mm at the gauge section.