

Stainless Steel 316L



Material description

316L is a very widely used stainless steel type due to its higher strength compared to 304. Furthermore, its stable nature allows it to be used in oil and gas, medical applications as well as in an extreme cryogenic environment.

Physical properties¹

Density (based on 8.19 g/cm ³ theoretical density)	> 99.75%
Pore size	< 100 μm
Porosity rate	< 0.25%
Hardness	min. 140 HV10

Mechanical properties

	As Built	Stress Relieved ²
Tensile strength Horizontal (XY) Vertical (Z)	950 MPa ± 50 MPa 950 MPa ± 50 MPa	620 MPa ± 38 MPa 620 MPa ± 38 MPa
Proof strength (Rp 0.2%) Horizontal (XY) Vertical (Z)	630 MPa ± 40 MPa 630 MPa ± 40 MPa	410 MPa ± 30 MPa 410 MPa ± 30 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)	25 ± 3% 25 ± 3%	39 ± 5% 39 ± 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 Heat treated in vacuum at 870°C for 1 hour. Please contact us for bespoke heat treatment to achieve different mechanical properties.



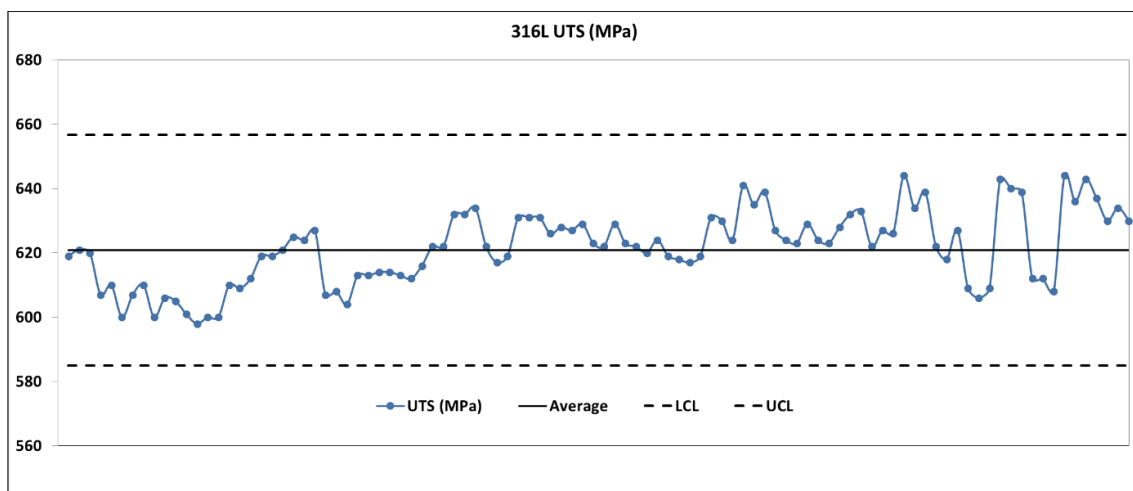
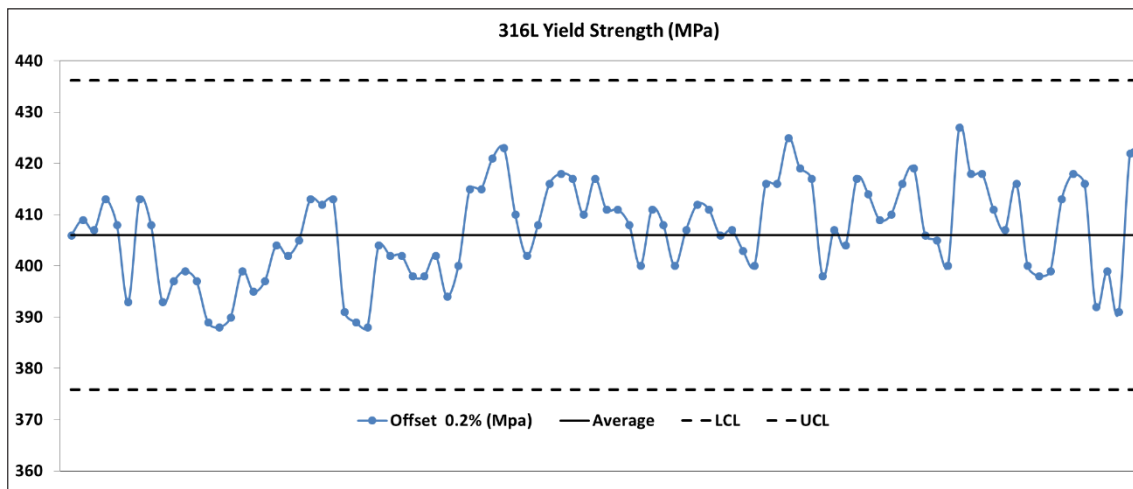
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Chemical properties

Material composition wt%	Ni	13.00-15.00	C	0.02 max	S	0.01 max
	Cr	17.00-19.00	Cu	0.50 max	Si	0.75 max
	Mo	2.25-3.00	Mn	2.00 max	N	0.10 max
	Fe	balance	P	0.025 max		

Statistical Process Control Charts³



Material Properties	Applications	Finishes	Industries
<ul style="list-style-type: none"> Corrosion Resistant Sterilisable Weldable 	<ul style="list-style-type: none"> Prototyping Engineering Turbomachinery 	<ul style="list-style-type: none"> Machined Spark-eroded Welded Micro shot-peened Polished Coated 	<ul style="list-style-type: none"> Automotive Aerospace Medical Oil and 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 flat with cross section of 2mmx6mm at the gauge section.