Ualloy625 (Alloy 625)

Inconel 625 refers to alloy 625, UNS N06625, belongs to Ni-Cr base solution strengthened nickel base alloy. It maintains stable mechanical property from crystallization to 980°C（1796°F）.

Cr helps alloy 625 resistant to oxidation and thermal corrosion.

Mo helps to refine austenite grains so as to deliver higher yield strength to alloy625 itself.

Nb helps to improve the creep property.

Different Callings of Alloy 625

ASTM	UNS	W-Nr.	JIS	KS	UK	France	
Inconel 625	N06625	2.4856	NCF625	NCF625	NA21	NC22DNb	0Cr20Ni65Mo10Nb4 NiCr22Mo9Nb

Nickel Alloy 625 Chemical Composition

	Ni	Fe	Mn	C	Si	S	Cr	Al	Ti	Nb+Ta	Mo	P	Co
Min	58						20			3.15	8.0		if determined
Max		5.0	0.5	0.1	0.5	0.015	23	0.4	0.4	4.15	10	0.015	1.0

Nickel Alloy 625-API 6A Mechanical Properties

Garde	Tensile Strength Min.	0.2% Offset Yield strength Min.	Elongation in 2 in (50mm) or 4D min. %	Min ROA % reduction od area	Hardness

Web: Ualloy.com
Tel: 86-0571-63255636
Fax: 86-0571-63256181
E: sales@ualloy.com

Information presentation property of Ualloy

API 6A 60k	110000Psi (758Mpa)	60000Psi (414Mpa)	18	35	187-321 HBW 19-35 HRC

Alloy 625-API 6A Impact

MAXIMUM TEST TEMP. °F (°C)	LONGITUDINAL AVERAGE ENERGY FT-LBS (J)	LONGITUDINAL SINGLE MINIMUM FT-LBS (J)	TRANSVERSE AVERAGE ENERGY FT-LBS (J)
-20 (-26)	20 (27)	14 (19)	10 (14)
-50 (-46)	20 (27)	14 (19)	10 (14)
-75 (-60)	20 (27)	14 (19)	10 (14)

Note: Subsize QTC	SPECIMEN SIZE	ADJUSTMENT FACTOR
The acceptance criteria for sub-size specimens is equal to the acceptance criteria for a standard size specimen multiplied by the adjustment factor .	10 mm x 7.5 mm	0.833
	10 mm x 5.0 mm	0.667
	10 mm x 2.5 mm	0.333

Alloy 625 Heat Treatment

Standard	Solution
API 6A Heat Treated in a Batch Furnace	Anneal at 1600-1900° F(871 -1038°C) for ten minutes minimum to six hours maximum at temperature; Quench. Quenching Medium: Oil, water, water based polymers or air may be used.

Web: Ualloy.com
Tel: 86-0571-63255636
Fax: 86-0571-63256181
E: sales@ualloy.com

Information presentation property of Ualloy

API 6A Heat Treated in a Continuous Furnace	Anneal at 1600-1900°F(871 -1038°C) for five minutes minimum to six hours maximum at temperature; Quench. Quenching Medium: Oil, water, water based polymers or air may be used.

Nickel Alloy 625 Coefficient of Thermal Expansion

Physical Property	°C	Metric Units	°F	British Units
Mean Coefficient of Thermal Expansion	20-204	13.1x10(-6)m/m-°C	68-400	7.3 micrinches/in.-°F
	20-316	13.5	68-600	7.5
	20-427	13.9	68-800	7.7
	20-538	14.4	68-1000	8.0
	20-649	15.1	68-1200	8.4
	20-760	15.7	68-1400	8.7
	20-871	16.6	68-1600	9.2
	20-982	17.3	68-1800	9.6

Solution temperature reflection on Alloy 625 hardness

Solution T	970°C 1778°F	990°C 1814°F	1050°C 1922°F	1120°C 2048 °F	1160°C 2120°F
Hardness HBS	217	207	197	187	187

Web: Ualloy.com
Tel: 86-0571-63255636
Fax: 86-0571-63256181
E: sales@ualloy.com

Information presentation property of Ualloy

Alloy 625 Oxidation Resistance

Cyclic Oxidation/h		100	200	300	400	500	600	700	800
Weight Change/%	980°C	0.086	0.065	0.065	0.048	0.021		0.03	-0.081
	1095°C	-0.182	-1.086	-3.335	-5.399	-6.566	-10.066		

Nickel Alloy 625 Corrosion Resistance

It has strong resistance to pitting, crevice corrosion and stress corrosion generated by oxidation and reducing acids.

Alloy 625 SCC (Stress Corrosion Cracking)

Test conditions and results of Inconel 625 specimens in air and high temperature steam

Test step	Temperature / °C	Medium environment	Loading method	CGR / mms^{-1}	Duration / h
S1	700	Air	Constant *K*	3.39×10^{-8}	146
S2	700	Water vapor	Constant *K*	5.43×10^{-8}	161
S3	750	Air	Constant *K*	4.66×10^{-7}	145
S4	750	Water vapor	Constant *K*	5.06×10^{-7}	148
S5	725	Air	Constant *K*	1.48×10^{-7}	156

Web: Ualloy.com
Tel: 86-0571-63255636
Fax: 86-0571-63256181
E: sales@ualloy.com

Information presentation property of Ualloy

Test step	Temperature / °C	Medium environment	Loading method	CGR / mms^{-1}	Duration / h
S6	725	Water vapor	Constant *K*	2.08×10^{-7}	172

Nickel Alloy 625 Stem | Bolts | Bellows | Fittings | Flange Mechanical Property

Garde	Tensile Strength Min.	0.2% Offset Yield strength Min.	Elongation in 2 in (50mm) or 4D min. %	Min ROA % reduction od area	Hardness
API 6A 60k	110000Psi (758Mpa)	60000Psi (414Mpa)	18	35	187-321 HBW 19-35 HRC

Alloy 625 Machining

Tool Type	Application
High speed steel	complex surface processing
High speed steel containing cobalt	Low cutting speed

Web: Ualloy.com
Tel: 86-0571-63255636
Fax: 86-0571-63256181
E: sales@ualloy.com

Information presentation property of Ualloy

Carbide cutting tool	The cutting speed is higher than that of high-speed steel Semi-finishing and finishing
Silicon nitride ceramics	Higher cutting speed than carbide tools Semi-finishing and finishing
PCBN tool	Continuous cutting

Alloy 625 | Inconel 625 Embrittlement

It shows a pronounced susceptibility to hydrogen embrittlement at room temperature.

Alloy 625 | Inconel 625 Modulus of Elasticity

θ/°C	20	95	205	315	425	540	650	760	870
E/GPa	205	200	195	190	185	175	170	160	146

Web: Ualloy.com
Tel: 86-0571-63255636
Fax: 86-0571-63256181
E: sales@ualloy.com

Information presentation property of Ualloy

Nickel Alloy 625 Applications

Offshore oil rigs
Springs, sealings, fasteners, valve seats
Bellows and gaskets
Marine equipment
Fuel nozzles

Inconel is a trademark of high-performance nickel-based alloys developed by Special Metals Corporation.

Web: Ualloy.com
Tel: 86-0571-63255636
Fax: 86-0571-63256181
E: sales@ualloy.com

Information presentation property of Ualloy