Ualloy713C (Alloy 713C)

In713C refers to Inco713C, In713LC, belongs to nickel based alloys, usually delivered as cast. It is a γ' phase precipitation hardening cast superalloy having good creep strength, thermal fatigue properties and oxidation resistance below 900℃ (1652℉).

In713C| Inconel 713 Alloy Chemical Composition

	C	Cr	Ni	Mo	Al	Ti	Fe	Nb	B	Zr	Mn	Si	P	S	Pb	Bi
Min	0.08	11.5	Balance	3.8	5.5	0.5		1.8	0.008	0.06						
Max	0.16	13.5		4.8	6.4	1.0	1.0	2.5	0.020	0.15	0.5	0.5	0.015	0.01	0.001	0.0001

In713C| Inconel 713 Material Properties

Grade	Density	Melting Point	Mechanical Properties					Stress Rupture			
			θ	Tensile strength	Yield Strength	Elongation	Reduction of area	Temperature	Stress	Min Hours	Elongation
In713C Inconel 713	8.0	1295-1345℃ 2363-2453℉	20℃ 68℉	755Mpa	635	3.0	/	750℃ 1382℉	605Mpa	40	3.0
			800℃ 1472℉	755Mpa	/	4.0	6.0	800℃ 1472℉	490Mpa	45	3.0

In713C| Inconel 713 Applications

Aerospace Gas Turbine below 900℃ (1652℉)

Ground-based Gas Turbine below 900℃ (1652℉)

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Offshore Gas Turbine below 900℃ （1652℉）

In713C| Inconel 713 corrosion resistance to marine gas

Sample condition and size/mm	Test Condition	θ	T/h	Corrosion weight loss(mg/(cm3.h))
As cast, d20*3	NO.10 diesel oil Oil gas ratio:1:30 Salt spray concerntration:0.075%	900℃ （1652℉）	25	3.33

In713C| Inconel 713 corrosion resistance to vulcanization

Test Condition	θ	T/h	Weight gain/(mg/cm2)
The sample was placed in a specific position of the gas turbine, and the specific component of the gas was mainly CH, and the concentration of H2S fluctuated from 0.1% to 0.4%.	700-840℃ 1292-1544	2408	3.33
		5365	15.50
		13089	15.25

In713C| Inconel 713 Thermal Conductivity

θ/℃	100	200	300	400	500	600	700	800	900
W/(m·℃)	10.15	11.72	12.98	14.55	16.33	18.42	20.52	22.61	24.28

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In713C| Inconel 713 Coefficient of Thermal Expansion

θ/℃	27-100	27-200	27-300	27-400	27-500	27-600	27-700	27-800	27-900	27-1000
α	12.60	12.70	12.90	12.90	13.40	13.70	14.20	14.70	15.50	15.50

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