Ualloy276 (Alloy C-276)

Nickel Alloy C-276 refers to Hastelloy C-276, UNS N10276 which known as HRSA, corrosion resistant material especially applicated for sulfur and chloride-bearing environments.

Alloy Type	Alloy Name	Trade Name	UNS NO.	Germany	ANFOR	DIN	Specification
Nickel-Chromium-Molybdenum Alloy	Alloy C-276 NC17D	/	UNS N10276	2.4819	NC15D14KFe	NiMo15Cr15W NiMo16Cr15W G-NiMo30	ASTM B574

Hastelloy C-276 Chemical composition

C	Cr	Ni	Co	W	Mo	Fe	Mn	Si	P	S	V
≤0.01	14.5-16.5	Reminder	≤2.5	3-4.5	15-17	4-7	≤1	≤0.08	≤0.04	≤0.03	≤0.35

Hastelloy C-276 Mechanical Properties in Solution Annealed Condition

Density	Melting Point	Tensile Strength min, psi(MPa)	Yield Strength(0.2% offset),min,psi(MPa)	Elogation in 2 in.(50.8mm) or 4D min, %
8.89g/cm^3 0.321lb/in^3	1371°C 2500°F	100 000(690)	41 000(283)	40

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Hastelloy C-276 Heat Treatment

It is generally soaked at 1121°C(2050°F) and then quenched rapidly.

Corrosion Resistance

Hastelloy C-276 is resistant to stress corrosion cracking, pitting and crevice corrosion in a wide range of harsh environments containing sulfuric acids, hydrofluoric acids and nitric acids.

Hastelloy C-276 Coefficient of Thermal Expansion

θ/°C	20-100	20-200	20-300	20-400	20-500	20-600	20-700	20-800
α	12.2	12.4	12.9	13.2	13.5	13.6	14.1	14.8

Hastelloy C-276 Thermal Conductivity

θ/°C	-168	-73	20	25	100	200	300	400	500	600	700	800	900	1000
W/(m·°C)	7.2	8.7	9.8	/	11.2	12.8	14.7	16.4	18.2	20	21.9	23.7	25.4	27

Hastelloy C-276 Young's Modulus

θ/°C	25	100	200	300	400	500	600	700	800	900	1000
Gpa	205	203	198	192	186	180	178	167	159	150	141

Hastelloy C-276 Machining and Drilling Speeds

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Machinability: 20%

Process	SMM	SFM
Turning	70-90	230-300
Milling	50-70	160-230
Parting	45-60	150-200
Grooving	60-80	200-260
Drilling	60-80	200-260

Is Hastelloy C-276 Magnetic?

Non-magnetic.

Is Hastelloy C-276 Toxic?

Non-toxic.

Hastelloy C-276 Etchant

Generally 95ml hydrochloric acid mixed with 5 gm. Of oxalic acid are used.

Galvanic Corrosion

Hastelloy C-276 and alloy 825 are passive to galvanic corrosion while alloy 625 is active to that.

Hydrogen Embrittlement

Hastelloy C-276 also suffers hydrogen embrittlement, especially in the thermally aged condition when it loses its solution-annealed ductility. It

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has been found that Hastelloy C-276 is more prone to hydrogen embrittlement than alloy 625 and stainless steel 316L.

Hastelloy C-276 Applications

Desulphurization of flue gas equipment (FGD)

Scrubbers
Ducting
Stack liners
Chemical process equipment
flanges
Fittings
Fasteners
Gasket
Gate valve
Needle valve
Ball valve
Bolts
Reactor
Elbow

Hastlloy is a trademark of high-performance nickel-based alloys developed by Haynes International, Inc.

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