Ualloy80A (Alloy 80A)

Nimonic 80A refers to alloy 80A, UNS N07080 belongs to nickel-chromium alloy. It offers high creep resistance and oxidation resistance from 650-850℃ （1202-1562℉）. The Al and Ti content makes alloy 80A γ’ dispersion-strengthened.

Alloy 80A | Nimonic 80A Chemical Composition

	Ni	Fe	Mn	C	Si	S	Cr	Al	Ti
Min	Balance						18	0.5	1.8
Max	Balance	3	1	0.1	1	0.015	21	1.8	2.7

Alloy 80A | Nimonic 80A Mechanical Property

ASTM B637 Alloy 80A solution+stabilization+precipitation harden	Density	Melting	Tensile Strength, min,psi(Mpa)	Yield Strength (0.2% offset),min,psi(Mpa)	Elogation in 2 in.(50mm) or 4D,min,%
	8.19	1320-1365℃ 2408-2489℉	930	620	20

Alloy 80A | Nimonic 80A Stress Rupture Property

solution+stabilization+precipitation harden	Test Temperature	Stress	Minimum Hours	Elongation in 2 in. or 50mm (or 4D),min,%
	1400°F （760℃）	47000psi (325Mpa)	23	3.5

Alloy 80A | Nimonic 80A Applications

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Information presentation property of Ualloy

- Combustion chamber components
- Exhaust valves
- Marine turbine rotors
- Turbine discs
- Jet nozzles
- High-temperature fasteners
- High-strength fasteners

Alloy 80A | Nimonic 80A Oxidation Resistance

θ/℃	700	750	800
Oxidation Rate/(g/(m2.h))	0.037	0.041	0.047

Alloy 80A | Nimonic 80A Thermal Conductivity

θ/℃	100	200	300	400	500	600	700	800	900
W/(m·℃)	12.11	13.83	15.48	16.75	18.39	20.93	23.48	25.57	27.66

Alloy 80A | Nimonic 80A Coefficient of Thermal Expansion

θ/℃	16-100	16-200	16-300	16-400	16-500	16-600	16-700
α	12.18	12.86	13.69	14.08	14.50	14.94	15.36

Alloy 80A | Nimonic 80A Modulus of Elasticity

θ/℃	18	100	200	300	400	500	600	700
E/GPa	222	218	214	206	200	194	189	179

Alloy 80A | Nimonic 80A heat treatment

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Solution Treatment	Stabilizing Treatment	Precipitation Treatment
1950±25°F（1066±14℃），hold 8h, air cool	1560±25°F（849±14℃），hold 24h, air cool	1290±25°F（699±14℃），hold 16h, air cool

Nimonic is a registered trademark of high-performance nickel-based alloy developed by Special Metals Corporation.

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