Corrosion-resistance alloy

Alloy 625

Description

Alloy 625 is a nickel-chromium-molybdenum-niobium superalloy designed for outstanding combination of high tensile strength, creep resistance and corrosion resistance without relying on precipitation hardening heat treatment.

It exhibits resistance to pitting, crevice corrosion and stress corrosion cracking in chloride-containing brines, seawater and acidic media, and maintains stable mechanical properties under cyclic thermal load up to around 980°C.

Grade: UNS N06625 | Inconel® 625 | W.Nr.2.4819

Chemical Composition (wt%)

Ni	Cr	Mo	Nb+Ta	Fe	C	Si	Mn	P	S
⩾58.0	20.0–23.0	8.0–10.0	3.15–4.15	⩽5.0	⩽0.10	⩽0.50	⩽0.50	⩽0.020	⩽0.015

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Physical Properties

Mean coefficient of thermal expansion

°C	Metric Units	°F	British Units
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
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

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	/	/

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

Applicable standards

Technical Standards	Product Form
ASTM B574	Bar
AMS 5650	Bar
ASTM B564	Bar, Forging
AMS 5536	Plate, Sheet, Strip
ASTM B575	Plate, Sheet, Strip
ASTM B619	Welded pipe
ASTM B618	Welded tube
ASTM B622	Seamless pipe
ASTM B574	Wire
AMS 5837	Wire
ASTM F3056	Additive Manufacturing Powder
AMS 7929	Additive Manufacturing Powder

Disclaimer

Data is typical for reference only; actual values based on actual application.

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