High-temperature alloy

Waspaloy

Description

Waspaloy is a precipitation-hardening nickel-based superalloy. It was originally developed to address the limitations of early Nimonic alloys, which suffered from insufficient creep and rupture strength at temperatures above 760 °C for rotating gas turbine components. Early Nimonic grades offered good performance but lacked adequate high-temperature strength and microstructural stability under long-term thermal exposure.

Grade: UNS N07001, W.Nr.2.4654, NiCr20Co13Mo4Ti3Al

Chemical Composition (wt%)

C	Cr	Mo	Ni	Co	Al	Ti	Fe	Si	Mn	P	S	B
0.03-0.10	18.00-21.00	3.50-5.00	Balance	12.00-15.00	1.20-1.60	2.75-3.25	≤2.00	≤0.75	≤1.00	≤0.030	≤0.030	0.003-0.0

Disclaimer: Data is typical for reference only.

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DATASHEET

Technical standards

Technical Standards	Product Form
ASTM B637	Bar, Forging and Forging stock
AMS 5708	Bars, Forgings, Rings and Wires
AMS 5709	Bars and Forgings

Physical Properties

Thermal conductivity

θ/℃	W/(m·℃)
360	16.8
460	18.3
545	20.2
640	22.4
770	24.1
855	25.3
985	28

Coefficient of thermal expansion

θ/℃	α
20-100	12.47
20-200	12.73
20-300	13.04
20-400	13.53
20-500	13.97
20-600	14.47
20-700	15.05
20-800	15.68
20-900	15.95

Modulus of Elasticity

θ/℃	GPa
15	224
100	219
200	213
300	206
400	200
500	193
600	185
700	178
800	169
900	156

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