Waspaloy

Waspaloy is Ni-Cr-Co based superalloy.Excellent mechanical properties below 980 ° C (1800 ° F), high strength and oxidation resistance at 760-870 ° C (1400-1600 ° F).

Its strength is superior to that of alloy 718 at temperature above 1200-1300℉ (650-750℃), and is generally comparable to Haynes R-41 alloy.

Waspaloy Material Composition

C	Cr	Mo	Ni	Co	Al	Ti	Fe	Si	Mn	P	S	B	Zr	Cu
0.03-0.1	18-21	3.5-5	Balance	12-15	1.2-1.6	2.75-3.25	≤2	≤0.15	≤0.1	≤0.015	≤0.015	0.003-0.01	0.02-0.08	≤0.1

Waspaloy Material Mechanical Properties

Grade	Density	Melting Point	Mechanical Property					
			Temperature	Tensile Strength	Yield Strength	Elogation min	Ψ min	Hardness min
Waspaloy	8.22	1330-1360℃ 2426-2480℉	815℃ 1499℉	608 Mpa	/	20	32	299-387 HBS

Applications of Waspaloy

▶Gas Turbine Blades

▶Sealing Ring

▶Shaft

▶Turbine Disc

▶High Temperature Fasteners

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▶Exotic Fasteners

▶Special Fasteners

Alloy Name	Trade Name	UNS NO.	Germany Spec	French Spec	Specification
Waspaloy	/	N07001	W.Nr.2.4654	NC20K14	Waspaloy AMS5708 Waspaloy AMS5709

Waspaloy coefficient of thermal expansion

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

Waspaloy thermal conductivity

θ/℃	360	460	545	640	770	855	985
W/(m·℃)	16.8	18.3	20.2	22.4	24.1	25.3	28.0

Oxidation resistance in air with a duration of 100h

θ/℃	900	1000
Oxidation rate g/(m2.h)	**0.083**	**0.226**

Waspaloy welding

Can be fusion welded by argon-arc methods using a matched composition filler metal. If matching alloy is not available, then the nearest alloy richer in the essential chemistry (Ni, Co, Cr, Mo) shall be adopted.

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Waspaloy machining

Heavy duty equipment and tooling shall be used to minimize work-hardening of it ahead of cutting.

Waspaloy elastic modulus

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

Waspaloy is a registered trademark of high-performance nickel-based alloy developed by United Technologies Corp.
Incoloy is a trademark of high-performance nickel-based alloys developed by Special Metals Corporation.
Inconel is a trademark of high-performance nickel-based alloys developed by Special Metals Corporation.

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