FLYU®

0Cr21Al6Nb FeCrAl RESISTANCE WIRE

DATASHEET

CHANGSHU IPACE INTERNATIONAL CORP

0Cr21Al6Nb contains approximately 0.5-1.5% Niobium (Nb). Niobium forms fine intermetallic compounds (such as Fe_2Nb-type Laves phases) with aluminum and iron, creating a significant precipitation hardening effect. This gives it far superior creep resistance and sag resistance at temperatures above 1000℃ compared to standard Fe-Cr-Al alloys like 0Cr25Al5 or 0Cr20Al3 that do not contain niobium. When heated in hydrogen-containing atmospheres (such as dissociated ammonia or endothermic gas), standard Fe-Cr-Al alloys are prone to "green rot" (embrittlement caused by selective oxidation of chromium). The addition of niobium significantly improves the alloy's stability in reducing or low-oxygen partial pressure atmospheres, making it suitable for atmosphere-controlled heat treatment furnaces (e.g., bright annealing furnaces), a task where standard 0Cr25Al5 often fails. Since niobium refines grains and inhibits excessive grain growth at high temperatures, the material maintains good ductility and toughness after long-term high-temperature operation, reducing the risk of fracture caused by coarse grains. Its service life is typically 1.5 to 2 times that of standard Fe-Cr-Al alloys. Although more expensive than standard 0Cr25Al5 (due to the addition of niobium), its price is still far lower than nickel-chromium alloys (such as Cr20Ni80). In scenarios requiring temperatures above 1300℃ or harsh atmospheres, it offers a perfect balance solution: lower cost than Ni-Cr alloys and higher performance than standard Fe-Cr-Al alloys.

0Cr21Al6Nb also has the following common names: Kanthal A-1, Aluchrom O, Alchrome 875, Alloy 875, Icralloy 25, Resistohm 145, Alferon 25, MWS-875, Stablohm 875 etc.

CHEMICAL COMPOSITION

C	P	S	Mn	Si	Cr	Ni	Al	Fe	Nb
≤									
0.06	0.025	0.02	0.5	≤0.6	23.0~26.0	≤0.6	4.5~6.5	Remainder	0.5

PHYSICAL PROPERTIES

Max. Working Temp.	1350ºC	Resistivity at 20ºC (μΩ·m)	1.45±0.07
Density	7.10 g/cm^3	Thermal conductivity (20ºC)	13 W/(m·K)
Average linear expansion coefficient(20-1000ºC)	16.0×10^{-6}/ºC	Specific heat capacity	0.49 J/(g·K)
Approx. melting point	1510ºC	Elongation after Fracture (A/%)	Diameter≤3.0mm: ≥10% Diameter>3.0mm: ≥12%
Tensile strength(R_m /MPa)	≥650	Accelerated life test	≥50h/1350ºC
Micrographic structure	Ferrite	Magnetic properties	Magnetic

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TEMPERATURE FACTOR OF RESISTIVITY

Temp(° C)	100	200	300	400	500	600	700	800	900	1000	1100	1200
Ct	0.997	0.996	0.994	0.991	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99

TECHNICAL PARAMETERS

Diameter (mm)	Ohm per meter (20ºC Ω/m)	Length per kg (m/kg)	Weight per meter (g/m)	Diameter (mm)	Ohm per meter (20ºC Ω/m)	Length per kg (m/kg)	Weight per meter (g/m)
0.05	738.480	71731.87	0.01394	1.1	1.5258	148.21	6.74735
0.06	512.833	49813.80	0.02007	1.2	1.2821	124.53	8.02990
0.07	376.775	36597.89	0.02732	1.3	1.0924	106.11	9.42398
0.08	288.469	28020.26	0.03569	1.4	0.9419	91.49	10.92959
0.09	227.926	22139.46	0.04517	1.5	0.8205	79.70	12.54673
0.1	184.620	17932.97	0.05576	1.6	0.7212	70.05	14.27538
0.11	152.578	14820.63	0.06747	1.7	0.6388	62.05	16.11557
0.12	128.208	12453.45	0.08030	1.8	0.5698	55.35	18.06728
0.13	109.243	10611.22	0.09424	1.9	0.5114	49.68	20.13052
0.15	82.053	7970.21	0.12547	2.0	0.4615	44.83	22.30529
0.17	63.882	6205.18	0.16116	2.2	0.3814	37.05	26.98940
0.19	51.141	4967.58	0.20131	2.4	0.3205	31.13	32.11962
0.21	41.864	4066.43	0.24592	2.6	0.2731	26.53	37.69594
0.25	29.539	2869.27	0.34852	2.8	0.2355	22.87	43.71837
0.27	25.325	2459.94	0.40651	3.0	0.2051	19.93	50.18690
0.29	21.952	2132.34	0.46897	3.2	0.1803	17.51	57.10154
0.31	19.211	1866.07	0.53588	3.4	0.1597	15.51	64.46229
0.35	15.071	1463.92	0.68310	3.6	0.1425	13.84	72.26914
0.40	11.539	1120.81	0.89221	3.8	0.1279	12.42	80.52209
0.45	9.117	885.58	1.12921	4.0	0.1154	11.21	89.22116
0.50	7.385	717.32	1.39408	4.5	0.0912	8.86	112.92053
0.55	6.103	592.83	1.68684	5.0	0.0738	7.17	139.40806
0.60	5.128	498.14	2.00748	5.5	0.0610	5.93	168.68375

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Diameter (mm)	Ohm per meter (20ºC Ω/m)	Length per kg (m/kg)	Weight per meter (g/m)	Diameter (mm)	Ohm per meter (20ºC Ω/m)	Length per kg (m/kg)	Weight per meter (g/m)
0.65	4.370	424.45	2.35600	6.0	0.0513	4.98	200.74760
0.70	3.768	365.98	2.73240	6.5	0.0437	4.24	235.59962
0.80	2.885	280.20	3.56885	7.0	0.0377	3.66	273.23979
0.85	2.555	248.21	4.02889	7.5	0.0328	3.19	313.66813
0.90	2.279	221.39	4.51682	8.0	0.0288	2.80	356.88462
0.95	2.046	198.70	5.03263	8.5	0.0256	2.48	402.88928
1.00	1.846	179.33	5.57632	9.0	0.0228	2.21	451.68210

Above parameters are based on Chinese National Standard GB/T1234-2012. The tolerance of resistance per meter: 0.03-0.06mm is ±10%; 0.07-0.12mm is ±8%; 0.13-0.17mm is ±7%; 0.18-0.32mm is ±6%; A wire diameter above 0.32mm is ±5%. **We provide various shapes of Iron-Chromium-Aluminum alloy products, such as wires, ribbons and rods in the following sizes**:

Bright and soft annealed finish: 0.05 - 1.6mm; Acid-pickled finish: 1.0 -12.0mm; Golden surface: 1.2-3.9mm; Blue surface: 4.0-10.0mm; Rods: 6.0-150.0mm; Flat wire: width from 0.2 - 6.0mm and thickness from 0.08 - 1.0mm; Heating ribbon: width from 5.0 - 300mm and thickness from 0.05 - 4.0mm