PRODUCT DATASHEET / 2026

IRON–CHROMIUM–ALUMINIUM RESISTANCE & HEATING ALLOY · 稀土改性铁铬铝合金

0Cr20Al6RE

GB/T 1234-2012 · RE-modified · Al 5–6 %

Rare-earth additions pin the oxide scale and the grain boundaries: 1.5 to 2× the cyclic life of standard 0Cr25Al5, to 1300 °C.

稀土改性铁铬铝——氧化膜附着牢固、抗热疲劳，循环寿命为普通 0Cr25Al5 的 1.5–2 倍。

0Cr20Al6RE adds trace rare earths, mainly lanthanum and cerium, to the Fe–Cr–Al system. The result is the reactive-element effect: the Al_2O_3 scale adheres far more strongly and resists spalling during thermal cycling, which is where conventional Fe–Cr–Al fails first.

The same rare-earth oxide particles pin grain boundaries, so the alloy keeps a fine grain structure and its toughness after long exposure at 1200–1300 °C. Oxidation life at those temperatures runs 1.5 to 2 times that of standard 0Cr25Al5 — the reason it is specified for start-stop duty.

SPECIFICATION 规格

ALLOY TYPE 合金类型
Ferritic Fe–Cr–Al–RE

STRUCTURE 晶体结构
Ferrite

MAGNETIC 磁性
Magnetic

STANDARDS 标准
GB/T 1234-2012

01 CHEMICAL COMPOSITION 化学成份

WT. % · GB/T 1234-2012

C	P	S	Mn	Si	Cr	Ni	Al	Fe	RE
≤0.04	≤0.025	≤0.02	≤0.5	≤0.4	19.0–21.0	≤0.6	5.0–6.0	Remainder	0.04–1.0

02 PHYSICAL PROPERTIES 物理性能

TYPICAL VALUES

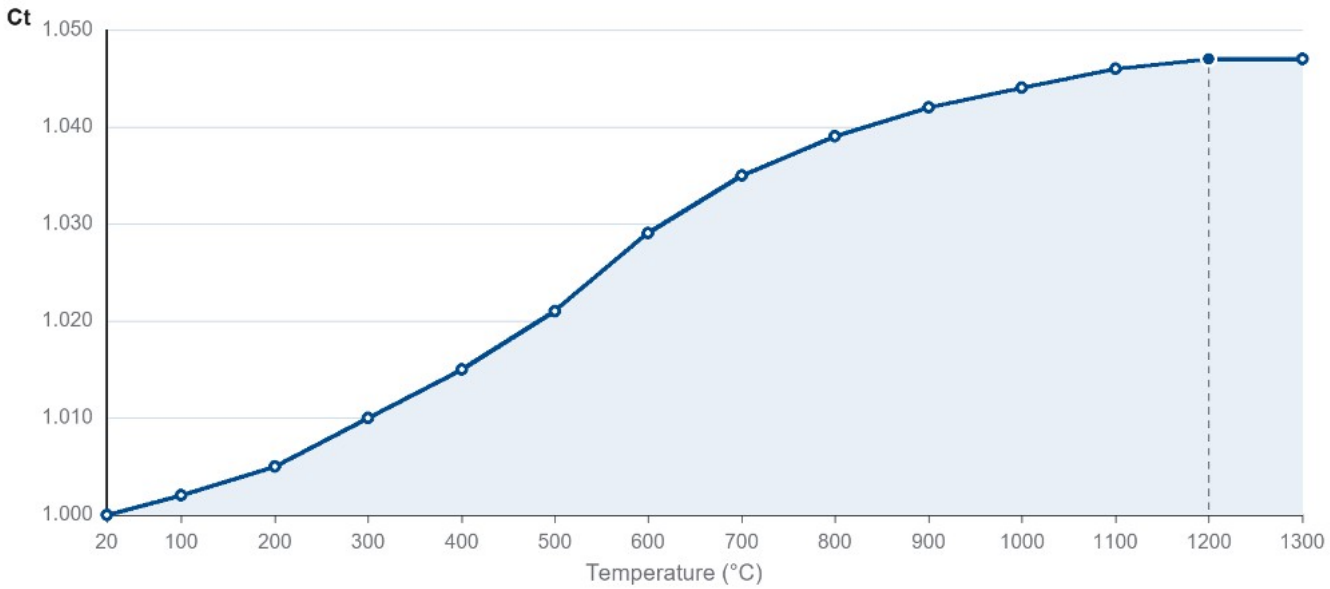
Max. Working Temp.	**1300 °C**	Resistivity at 20 °C (μΩ·m)	**1.40±0.07**
Density	**7.2 g/cm³**	Thermal conductivity (20 °C)	**13 W/(m·K)**
Average linear expansion coefficient (20-1000 °C)	**14.0×10⁻⁶/K**	Specific heat capacity	**0.48 J/(g·K)**
Approx. melting point	**1500 °C**	Elongation after Fracture (A/%)	**Ø≤3.0 mm: ≥12% Ø>3.0 mm: ≥15%**
Tensile strength (Rm /MPa)	**≥600**	Accelerated life test	**≥80 h/1300 °C**
Micrographic structure	**Ferrite**	Magnetic properties	**Magnetic**

03 TEMPERATURE BEHAVIOUR 温度特性

CT · GB/T 1234-2012

Resistance rises predictably with temperature

Ct is the factor by which the 20 °C resistance is multiplied at a given temperature. Standards publish it as a table; plotted here, intermediate values can be read at a glance.



Where the curve is used: $R(T) = R_{20} \times Ct$. From 100 to 1300 °C the factor ranges from 1.002 to 1.047 (+0.2 % to +4.7 %); at constant voltage the power at temperature is P_{20} / Ct.

04 CT BY TEMPERATURE 温度系数表

°C · FACTOR

°C	20	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300
Ct	1.000	1.002	1.005	1.010	1.015	1.021	1.029	1.035	1.039	1.042	1.044	1.046	1.047	1.047

05 PERFORMANCE 性能要点

VERIFIED DATA

Scale adhesion
Rare earths stop the Al_2O_3 layer spalling in cycling.

Cyclic life
1.5–2× the oxidation life of standard 0Cr25Al5.

Grain stability
Zener pinning keeps grains fine after 1200–1300 °C.

Creep
Slightly below 0Cr21Al6Nb, but stronger in oxidation and thermal fatigue.

06 APPLICATIONS 应用领域

SERVICE-PROVEN SECTORS

Batch-type furnaces
frequent start-stop thermal cycling

Heat-treatment retorts
muffles and retorts

Ceramic and glass kilns
intermittent firing

Test and ageing ovens
cyclic laboratory duty

Radiant tubes
high-temperature radiant elements

RELATED GRADES · 同系列牌号

0Cr25Al5 · 0Cr21Al6Nb · 0Cr23Al5 · 0Cr20Al3 · 0Cr24Al6RE · 0Cr27Al7Mo2 · 1Cr13Al4

Same production route and quality system; matched surface finishes available on request.

07 TECHNICAL PARAMETERS 技术参数

GB/T 1234-2012

Metric wire table: resistance, length and mass

Diameter (mm)	Ω/m at 20 °C	m per kg	g per m	Diameter (mm)	Ω/m at 20 °C	m per kg	g per m
0.05	713.015	70735.59	0.01414	**1.1**	1.4732	146.15	6.84238
0.06	495.149	49121.94	0.02036	**1.2**	1.2379	122.80	8.14300
0.07	363.783	36089.59	0.02771	**1.3**	1.0548	104.64	9.55672
0.08	278.521	27631.09	0.03619	**1.4**	0.9095	90.22	11.08353
0.09	220.066	21831.97	0.04580	**1.5**	0.7922	78.60	12.72344
0.1	178.254	17683.90	0.05655	**1.6**	0.6963	69.08	14.47645
0.11	147.317	14614.79	0.06842	**1.7**	0.6168	61.19	16.34255
0.12	123.787	12280.48	0.08143	**1.8**	0.5502	54.58	18.32175
0.13	105.476	10463.84	0.09557	**1.9**	0.4938	48.99	20.41405
0.15	79.224	7859.51	0.12723	**2.0**	0.4456	44.21	22.61945
0.17	61.679	6119.00	0.16343	**2.2**	0.3683	36.54	27.36953
0.19	49.378	4898.59	0.20414	**2.4**	0.3095	30.70	32.57201
0.21	40.420	4009.95	0.24938	**2.6**	0.2637	26.16	38.22687
0.25	28.521	2829.42	0.35343	**2.8**	0.2274	22.56	44.33412
0.27	24.452	2425.77	0.41224	**3.0**	0.1981	19.65	50.89376
0.29	21.195	2102.72	0.47557	**3.2**	0.1741	17.27	57.90579
0.31	18.549	1840.16	0.54343	**3.4**	0.1542	15.30	65.37020
0.35	14.551	1443.58	0.69272	**3.6**	0.1375	13.64	73.28701
0.40	11.141	1105.24	0.90478	**3.8**	0.1234	12.25	81.65621
0.45	8.803	873.28	1.14511	**4.0**	0.1114	11.05	90.47779
0.50	7.130	707.36	1.41372	**4.5**	0.0880	8.73	114.51096
0.55	5.893	584.59	1.71060	**5.0**	0.0713	7.07	141.37155
0.60	4.951	491.22	2.03575	**5.5**	0.0589	5.85	171.05958
0.65	4.219	418.55	2.38918	**6.0**	0.0495	4.91	203.57503
0.70	3.638	360.90	2.77088	**6.5**	0.0422	4.19	238.91792
0.80	2.785	276.31	3.61911	**7.0**	0.0364	3.61	277.08824
0.85	2.467	244.76	4.08564	**7.5**	0.0317	3.14	318.08599
0.90	2.201	218.32	4.58044	**8.0**	0.0279	2.76	361.91117
0.95	1.975	195.94	5.10351	**8.5**	0.0247	2.45	408.56378
1.00	1.783	176.84	5.65486	**9.0**	0.0220	2.18	458.04382

Resistance tolerance 0.03–0.06 mm ±10 % · 0.07–0.12 mm ±8 % · 0.13–0.17 mm ±7 % · 0.18–0.32 mm ±6 % · above 0.32 mm ±5 %.

08 SUPPLY FORMS 供货规格

OTHER SIZES ON REQUEST

WIRE
0.05–1.6 mm
Bright, soft annealed

WIRE
1.0–12.0 mm
Acid-pickled finish

ROD
6.0–150.0 mm
Drawn and annealed

FLAT WIRE
0.2–6.0 × 0.08–1.0 mm
Width × thickness

RIBBON
5.0–300 × 0.05–4.0 mm
Width × thickness

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Founded 1990 · formerly Danyang Resistance Wire Factory · ISO 9001:2015 · 1,500 t per year · about half exported