PRODUCT DATASHEET / 2026

IRON–CHROMIUM–ALUMINIUM RESISTANCE & HEATING ALLOY · 低铝易加工铁铬铝合金

0Cr20Al3

0Cr21Al4 · Resistohm 123 · CrAl 193

The aluminium-lean Fe–Cr–Al grade: ductile at room temperature, easy to draw and deep-draw, and still protective to 1100 °C.

低铝铁铬铝合金——室温韧性好、易拉丝深冲，1100 °C 以下抗氧化可靠。

0Cr20Al3/0Cr21Al4 holds 3.0–4.2 % aluminium, deliberately below the high-aluminium grades. Room-temperature brittleness drops sharply and elongation stays above 20 %, so fine wire, deep-drawn parts and complex cold-formed elements need fewer intermediate anneals.

Maximum working temperature of about 1100 °C is a little lower than 0Cr25Al5, but for most industrial and domestic heaters below 1100 °C this is the most economical Fe–Cr–Al choice. A dense Al_2O_3 film still forms, and the leaner aluminium avoids the weld cracking typical above 5 % Al.

SPECIFICATION 规格

ALLOY TYPE 合金类型
Ferritic Fe–Cr–Al

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
≤0.08	≤0.025	≤0.02	≤0.5	≤0.7	18.0–21.0	≤0.6	3.0-4.2	Remainder

02 PHYSICAL PROPERTIES 物理性能

TYPICAL VALUES

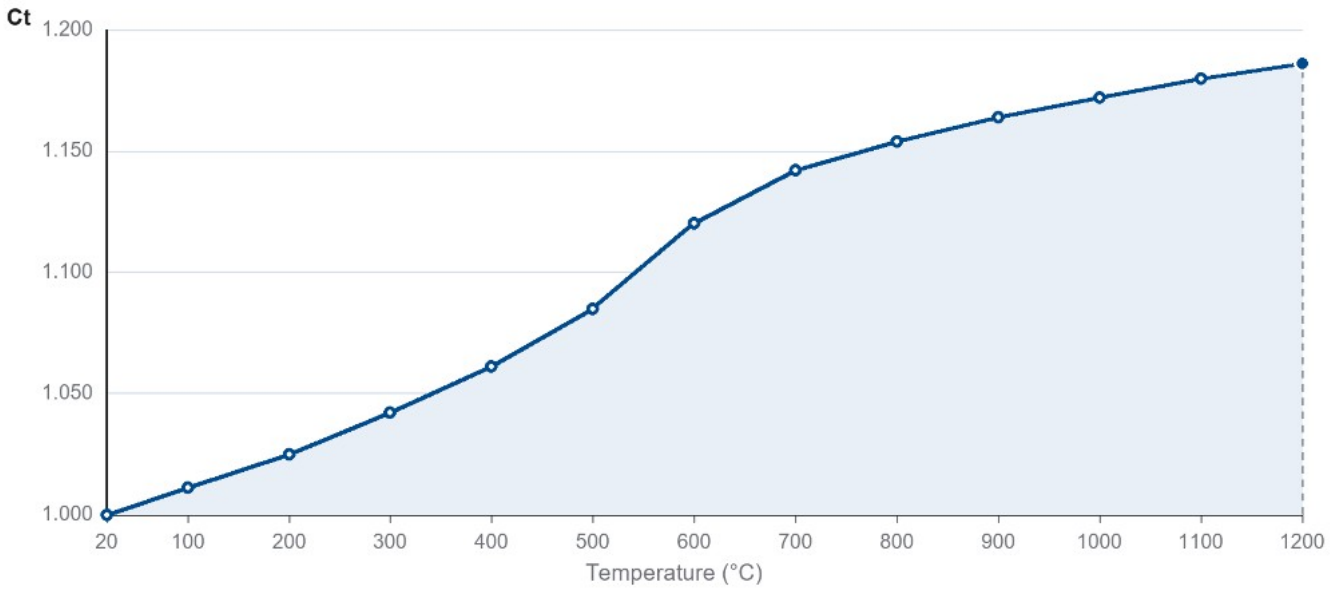
Max. Working Temp.	**1100 °C**	Resistivity at 20 °C (μΩ·m)	**1.23±0.07**
Density	**7.35 g/cm³**	Thermal conductivity (20 °C)	**13 W/(m·K)**
Average linear expansion coefficient (20-1000 °C)	**13.5×10⁻⁶/K**	Specific heat capacity	**0.49 J/(g·K)**
Approx. melting point	**1500 °C**	Elongation after Fracture (A/%)	**Ø≤3.0 mm: ≥12% Ø>3.0 mm: ≥15%**
Tensile strength (Rm /MPa)	**≥580**	Accelerated life test	**≥80 h/1250 °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 1200 °C the factor ranges from 1.011 to 1.186 (+1.1 % to +18.6 %); 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
Ct	1.000	1.011	1.025	1.042	1.061	1.085	1.12	1.142	1.154	1.164	1.172	1.180	1.186

05 PERFORMANCE 性能要点

VERIFIED DATA

Cold forming
Elongation above 20 %; deep drawing with fewer anneals.

Weldability
Aluminium held near 4 %: a wider weld window than 0Cr25Al5.

Oxidation at 1000–1100 °C
Life typically better than Cr20Ni80 at the same temperature.

Cost
Nickel-free — the economical choice below 1100 °C.

06 APPLICATIONS 应用领域

SERVICE-PROVEN SECTORS

Industrial heating elements
elements for service below 1100 °C

Domestic appliances
heaters wound from fine wire

Deep-drawn parts
complex cold-formed heating components

Welded assemblies
resistance- and TIG-welded elements

Fine wire elements
small-gauge, tight-tolerance windings

TRADE NAMES · 商品牌号

0Cr21Al4 · Resistohm 123 · CrAl 193 · GFC123 · 0Cr19Al3 · FCHW-2 / FCHR-2 · CrAl 20 5

Several names above are registered trademarks of their respective owners; they are given for cross-reference only.

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	626.434	69292.01	0.01443	**1.1**	1.2943	143.17	6.98493
0.06	435.024	48119.45	0.02078	**1.2**	1.0876	120.30	8.31265
0.07	319.609	35353.06	0.02829	**1.3**	0.9267	102.50	9.75582
0.08	244.701	27067.19	0.03695	**1.4**	0.7990	88.38	11.31444
0.09	193.344	21386.42	0.04676	**1.5**	0.6960	76.99	12.98851
0.1	156.609	17323.00	0.05773	**1.6**	0.6118	67.67	14.77804
0.11	129.429	14316.53	0.06985	**1.7**	0.5419	59.94	16.68302
0.12	108.756	12029.86	0.08313	**1.8**	0.4834	53.47	18.70346
0.13	92.668	10250.30	0.09756	**1.9**	0.4338	47.99	20.83934
0.15	69.604	7699.11	0.12989	**2.0**	0.3915	43.31	23.09069
0.17	54.190	5994.12	0.16683	**2.2**	0.3236	35.79	27.93973
0.19	43.382	4798.62	0.20839	**2.4**	0.2719	30.07	33.25059
0.21	35.512	3928.12	0.25457	**2.6**	0.2317	25.63	39.02326
0.25	25.057	2771.68	0.36079	**2.8**	0.1998	22.10	45.25775
0.27	21.483	2376.27	0.42083	**3.0**	0.1740	19.25	51.95404
0.29	18.622	2059.81	0.48548	**3.2**	0.1529	16.92	59.11216
0.31	16.296	1802.60	0.55475	**3.4**	0.1355	14.99	66.73208
0.35	12.784	1414.12	0.70715	**3.6**	0.1208	13.37	74.81382
0.40	9.788	1082.69	0.92363	**3.8**	0.1085	12.00	83.35738
0.45	7.734	855.46	1.16897	**4.0**	0.0979	10.83	92.36275
0.50	6.264	692.92	1.44317	**4.5**	0.0773	8.55	116.89660
0.55	5.177	572.66	1.74623	**5.0**	0.0626	6.93	144.31679
0.60	4.350	481.19	2.07816	**5.5**	0.0518	5.73	174.62332
0.65	3.707	410.01	2.43895	**6.0**	0.0435	4.81	207.81618
0.70	3.196	353.53	2.82861	**6.5**	0.0371	4.10	243.89538
0.80	2.447	270.67	3.69451	**7.0**	0.0320	3.54	282.86091
0.85	2.168	239.76	4.17076	**7.5**	0.0278	3.08	324.71278
0.90	1.933	213.86	4.67586	**8.0**	0.0245	2.71	369.45098
0.95	1.735	191.94	5.20984	**8.5**	0.0217	2.40	417.07552
1.00	1.566	173.23	5.77267	**9.0**	0.0193	2.14	467.58640

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

江苏禾一电热材料有限公司 Jiangsu Heyi Electric Heating Material Co., Ltd

江苏省丹阳市吕城镇养正东路 42 号 No.42 Yangzheng East Road, Lvcheng Town, Danyang City, Jiangsu, China

TEL +86 511 8605 2233 MAIL sales@heyiheating.com WEB www.heyiheating.com

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