PRODUCT DATASHEET / 2026

IRON–CHROMIUM–ALUMINIUM RESISTANCE & HEATING ALLOY · 铌稳定化铁铬铝合金

# 0Cr21Al6Nb

Kanthal A-1 · Aluchrom O · Alloy 875

Niobium-stabilised Fe–Cr–Al: holds its shape above 1000 °C and resists green rot in controlled atmospheres.

铌稳定化铁铬铝合金——1000 °C 以上抗蠕变、抗下垂，控制气氛下抵抗“绿腐”。

Roughly 0.5–1.5 % niobium forms fine $Fe_2Nb$-type Laves phases with aluminium and iron. That precipitation hardening gives markedly better creep and sag resistance above 1000 °C than niobium-free Fe–Cr–Al grades, so elements keep their pitch and position.

Niobium also stabilises the alloy in reducing or low-oxygen atmospheres, where standard Fe–Cr–Al suffers green rot from selective chromium oxidation. With finer grains, it delivers 1.5–2 times the usual service life at a price still far below nickel-chromium.

**SPECIFICATION 规格**

ALLOY TYPE 合金类型
**Ferritic Fe–Cr–Al–Nb**

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 | Nb |
|---|---|---|---|---|---|---|---|---|---|
| ≤0.05 | ≤0.025 | ≤0.02 | ≤0.5 | ≤0.6 | 21.0–23.0 | ≤0.6 | 5.0–7.0 | Remainder | 0.5 |

## 02 PHYSICAL PROPERTIES 物理性能

TYPICAL VALUES

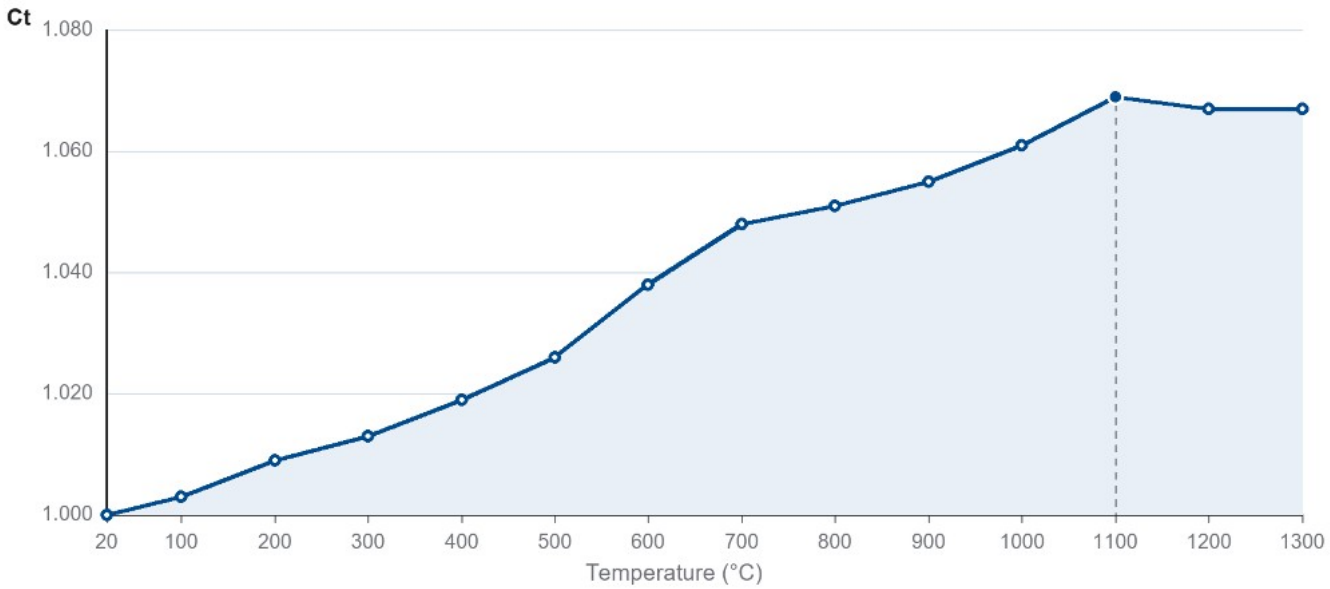
| | | | |
|---|---|---|---|
| Max. Working Temp. | **1350 °C** | Resistivity at 20 °C (μΩ·m) | **1.45±0.07** |
| Density | **7.10 g/cm³** | Thermal conductivity (20 °C) | **13 W/(m·K)** |
| Average linear expansion coefficient (20-1000 °C) | **16.0×10⁻⁶/°C** | Specific heat capacity | **0.49 J/(g·K)** |
| Approx. melting point | **1510 °C** | Elongation after Fracture (A/%) | **Ø≤3.0 mm: ≥10%<br>Ø>3.0 mm: ≥12%** |
| Tensile strength (Rm /MPa) | **≥650** | Accelerated life test | **≥50 h/1350 °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 1.003 to 1.069 (+0.3 % to +6.9 %); 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 | 1.003 | 1.009 | 1.013 | 1.019 | 1.026 | 1.038 | 1.048 | 1.051 | 1.055 | 1.061 | 1.069 | 1.067 | 1.067 |

## 05 PERFORMANCE 性能要点

VERIFIED DATA

**Creep and sag**
Laves-phase hardening holds elements above 1000 °C.

**Green rot**
Stable in dissociated ammonia and endothermic gas.

**Grain control**
Niobium refines grains; toughness survives long service.

**Service life**
1.5–2× standard Fe–Cr–Al; ≥50 h at 1350 °C.

## 06 APPLICATIONS 应用领域

SERVICE-PROVEN SECTORS

**Atmosphere furnaces**
bright annealing and controlled gas

**Horizontal elements**
long unsupported spans above 1000 °C

**Heat-treatment fixtures**
muffles, retorts and trays

**Sintering furnaces**
powder-metallurgy duty

**Industrial kilns**
1300 °C class elements

TRADE NAMES · 商品牌号

Kanthal A-1 · Aluchrom O · Alchrome 875 · Alloy 875 · Icralloy 25 · Resistohm 145 · Alferon 25 · MWS-875 · Stablohm 875

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## 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** | 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 |
| **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 |

**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**
Pickled · golden 1.2–3.9 · blue 4.0–10.0

**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