0Cr27Al7Mo2

GB/T 1234-2012

The top Fe-Cr-Al grade: molybdenum-strengthened creep resistance and an oxidation life more than twice that of standard 0Cr25Al5 at 1300–1400 °C.

1400 °C	1.53 μΩ·m	7.1 g/cm³	≥50 h
MAX. WORKING TEMPERATURE	RESISTIVITY AT 20 °C	DENSITY	ACCELERATED LIFE AT 1350 °C

PRODUCT OVERVIEW

0Cr27Al7Mo2 adds about 2 % molybdenum and raises chromium and aluminium, producing creep and oxidation resistance that no other iron-based heating alloy matches at 1400 °C. It is harder to process and dearer than standard grades, but for horizontal installation at 1300–1400 °C it is the only iron-based option that combines long life, high reliability and moderate cost.

Molybdenum is a strong solid-solution strengthener: installed horizontally at 1350–1400 °C the alloy shows almost no sag, where standard 0Cr25Al5 softens and fractures quickly — hence its use for horizontal elements in large tunnel and pusher kilns with minimal support. Chromium near 27 %, aluminium near 7 % and the molybdenum together take the safe working temperature to 1400 °C (1425 °C short term).

Molybdenum also restrains grain growth, so the structure stays fine above 1350 °C and resistance to thermal shock survives. At 7 % aluminium the Al_2O_3 film is thicker and denser than on a 5–6 % grade; at 1400 °C the oxidation rate is extremely low and life is typically more than twice that of standard 0Cr25Al5, which earns its cost where replacement is difficult — glass melting tanks, ceramic sintering kilns and similar plant.

CLASSIFICATION

Fe-Cr-Al heating alloy · GB/T 1234-2012 · molybdenum grade for 1300–1400 °C horizontal duty

CHEMICAL COMPOSITION

C	P	S	Mn	Si	Cr	Ni	Al	Fe	Mo
≤0.05	≤0.025	≤0.02	≤0.5	≤0.4	26.5–27.8	≤0.6	6.0–7.0	Bal.	1.8–2.2

Values in weight %. Balance (Bal.) is iron. Composition based on GB/T 1234-2012.

TYPICAL APPLICATIONS

- Horizontal elements in tunnel and pusher kilns
- Glass melting tanks
- Ceramic sintering kilns
- Service at 1300–1400 °C
- Furnaces where replacement is difficult

PHYSICAL & MECHANICAL PROPERTIES

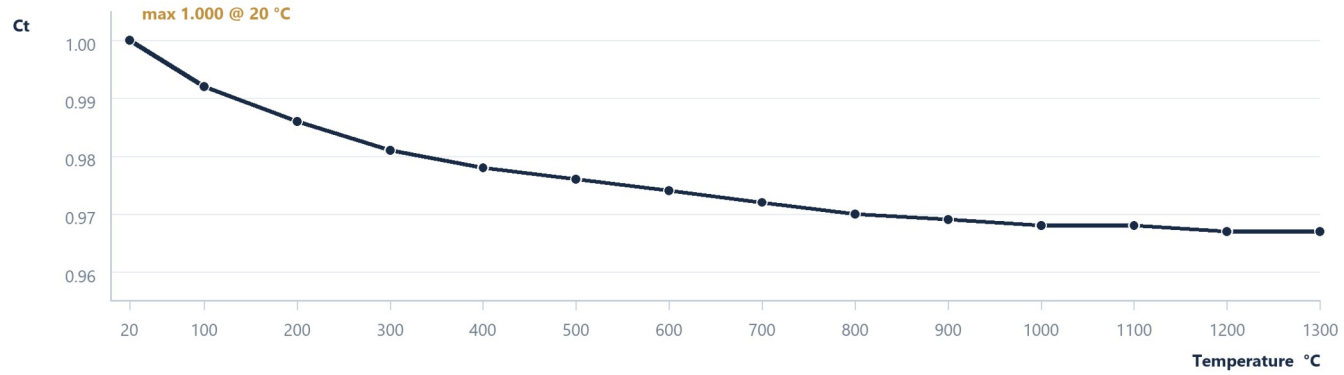
Property	Value	Property	Value
Max. working temperature	1400 °C	Resistivity at 20 °C (μΩ·m)	1.53 ± 0.07
Density	7.1 g/cm³	Thermal conductivity (20 °C)	13 W/(m·K)
Mean linear expansion 20–1000 °C	16.0 × 10^{-6} /K	Specific heat capacity	0.49 J/(g·K)
Approx. melting point	1520 °C	Elongation after fracture A/%	≥10 %
Tensile strength Rm	≥680 MPa	Accelerated life test	≥50 h at 1350 °C
Micrographic structure	Ferrite	Magnetic properties	Magnetic

TEMPERATURE FACTOR OF RESISTIVITY

Ct is applied to the 20 °C resistivity to obtain the value at working temperature:

R (T) = R (20 °C) × Ct

Temp. °C	20	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300
Ct	1.000	0.992	0.986	0.981	0.978	0.976	0.974	0.972	0.970	0.969	0.968	0.968	0.967	0.967



AVAILABLE FORMS & SUPPLY RANGE

Form	Surface / finish	Size range
Wire	Bright, soft annealed	0.05 – 1.6 mm
Wire	Acid-pickled	1.0 – 12.0 mm
Rod	Oxidized, acid-pickled or bright finish	6.0 – 150.0 mm
Flat wire	Bright & soft annealed	width 0.2 – 6.0 mm · thickness 0.08 – 1.0 mm
Heating ribbon	Oxidized, acid-pickled or bright finish	width 5.0 – 300 mm · thickness 0.05 – 4.0 mm

TECHNICAL PARAMETERS

Standard diameters 0.05 – 9.0 mm: resistance, yield length and weight per metre. Calculated to GB/T 1234-2012.

Ø mm	Ω/m at 20 °C	m/kg	g/m	Ø mm	Ω/m at 20 °C	m/kg	g/m
0.05	779.223	71731.87	0.01394	1.1	1.6100	148.21	6.74735
0.06	541.127	49813.80	0.02007	1.2	1.3528	124.53	8.02990
0.07	397.563	36597.89	0.02732	1.3	1.1527	106.11	9.42398
0.08	304.384	28020.26	0.03569	1.4	0.9939	91.49	10.92959
0.09	240.501	22139.46	0.04517	1.5	0.8658	79.70	12.54673
0.1	194.806	17932.97	0.05576	1.6	0.7610	70.05	14.27538
0.11	160.997	14820.63	0.06747	1.7	0.6741	62.05	16.11557
0.12	135.282	12453.45	0.08030	1.8	0.6013	55.35	18.06728
0.13	115.270	10611.22	0.09424	1.9	0.5396	49.68	20.13052
0.15	86.580	7970.21	0.12547	2.0	0.4870	44.83	22.30529
0.17	67.407	6205.18	0.16116	2.2	0.4025	37.05	26.98940
0.19	53.963	4967.58	0.20131	2.4	0.3382	31.13	32.11962
0.21	44.174	4066.43	0.24592	2.6	0.2882	26.53	37.69594
0.25	31.169	2869.27	0.34852	2.8	0.2485	22.87	43.71837
0.27	26.722	2459.94	0.40651	3.0	0.2165	19.93	50.18690
0.29	23.164	2132.34	0.46897	3.2	0.1902	17.51	57.10154
0.31	20.271	1866.07	0.53588	3.4	0.1685	15.51	64.46229
0.35	15.903	1463.92	0.68310	3.6	0.1503	13.84	72.26914
0.40	12.175	1120.81	0.89221	3.8	0.1349	12.42	80.52209
0.45	9.620	885.58	1.12921	4.0	0.1218	11.21	89.22116
0.50	7.792	717.32	1.39408	4.5	0.0962	8.86	112.92053
0.55	6.440	592.83	1.68684	5.0	0.0779	7.17	139.40806
0.60	5.411	498.14	2.00748	5.5	0.0644	5.93	168.68375
0.65	4.611	424.45	2.35600	6.0	0.0541	4.98	200.74760
0.70	3.976	365.98	2.73240	6.5	0.0461	4.24	235.59962
0.80	3.044	280.20	3.56885	7.0	0.0398	3.66	273.23979
0.85	2.696	248.21	4.02889	7.5	0.0346	3.19	313.66813
0.90	2.405	221.39	4.51682	8.0	0.0304	2.80	356.88462
0.95	2.159	198.70	5.03263	8.5	0.0270	2.48	402.88928
1.00	1.948	179.33	5.57632	9.0	0.0241	2.21	451.68210

TOLERANCE OF RESISTANCE PER METRE

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 %

Applies to the resistance values listed in the technical parameter table above.

NOTICE

Recommendations are given for guidance only. Suitability of the material can only be confirmed once the actual service conditions are known. Continuous technical development may lead to changes in these data without notice. Some of the common names listed are registered trademarks of their respective owners. Issued October 2026.