0Cr25Al5

DIN W.Nr. 1.4765

The representative Fe-Cr-Al heating alloy: 1300 °C capability, high resistivity, low density and 50–70 % less material cost than nickel-chromium.

1300 °C	1.42 μΩ·m	7.1 g/cm³	≥80 h
MAX. WORKING TEMPERATURE	RESISTIVITY AT 20 °C	DENSITY	ACCELERATED LIFE AT 1300 °C

PRODUCT OVERVIEW

0Cr25Al5 (DIN W.Nr. 1.4765) is the benchmark Fe-Cr-Al heating alloy. It reaches 1300 °C, well above the nickel-chromium range, and its room-temperature resistivity of about 1.42 μΩ·m means a shorter element for a given power and therefore less material.

The aluminium content builds a dense Al_2O_3 film that is more stable than the Cr_2O_3 layer formed on nickel-chromium, so at 1200 °C the oxidation rate is lower and service life longer. Material cost runs 50–70 % below nickel-chromium, a decisive advantage in volume production. Density is about 7.1–7.4 g/cm³, roughly 15 % below the 8.4 g/cm³ of Cr20Ni80, which lightens the finished equipment. The Al_2O_3 film also resists sulphur-bearing atmospheres better than Cr_2O_3, suiting certain chemical and metallurgical environments, and the temperature coefficient of resistance is small enough to keep resistance stable through the working range.

Typical uses are industrial electric furnaces, household heating appliances, high-temperature heating elements and heat-treatment equipment; the advantage is largest above 1200 °C.

ALSO KNOWN AS

Resistohm 142 · FCHW-1 / FCHR-1 · FeCrAl Ⅱ B · CrAl 25/5 · FRCA33 · GFC142 / GFC142W · X27tO5T

CHEMICAL COMPOSITION

C	P	S	Mn	Si	Cr	Ni	Al	Fe
≤0.06	≤0.025	≤0.02	≤0.5	≤0.6	23.0–26.0	≤0.6	4.5–6.5	Bal.

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

TYPICAL APPLICATIONS

- Industrial electric furnaces
- Household heating appliances
- Heat-treatment equipment
- Service above 1200 °C

— High-temperature heating elements

— Sulphur-bearing chemical plant

PHYSICAL & MECHANICAL PROPERTIES

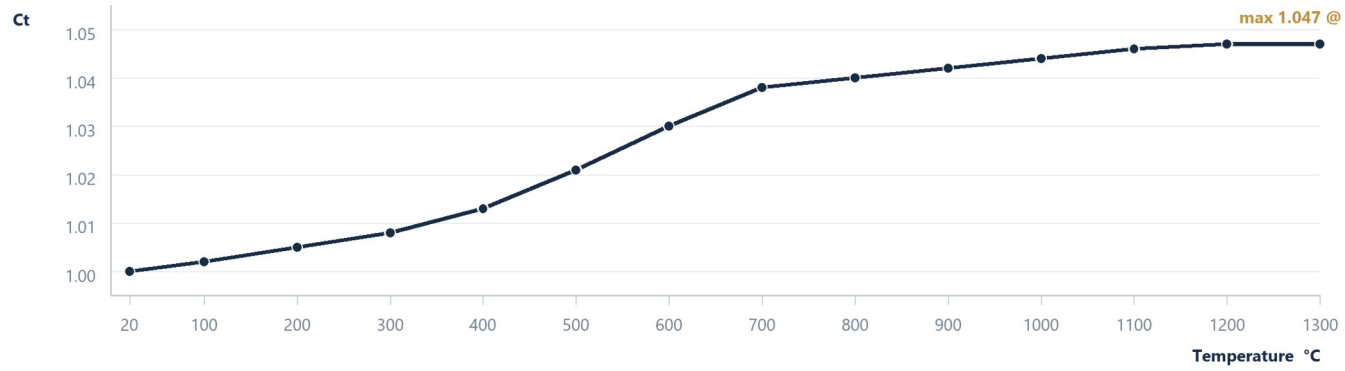
Property	Value	Property	Value
Max. working temperature	1300 °C	Resistivity at 20 °C (μΩ·m)	1.42 ± 0.07
Density	7.1 g/cm³	Thermal conductivity (20 °C)	13 W/(m·K)
Mean linear expansion 20–1000 °C	15.0 × 10^{-6} /K	Specific heat capacity	0.46 J/(g·K)
Approx. melting point	1500 °C	Elongation after fracture A/%	≤3.0 mm: ≥12 % >3.0 mm: ≥15 %
Tensile strength Rm	≥600 MPa	Accelerated life test	≥80 h at 1300 °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	1.002	1.005	1.008	1.013	1.021	1.030	1.038	1.040	1.042	1.044	1.046	1.047	1.047



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
Wire	Golden surface	1.2 – 3.9 mm
Wire	Blue surface	4.0 – 10.0 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	723.201	71731.87	0.01394	1.1	1.4942	148.21	6.74735
0.06	502.223	49813.80	0.02007	1.2	1.2556	124.53	8.02990
0.07	368.980	36597.89	0.02732	1.3	1.0698	106.11	9.42398
0.08	282.500	28020.26	0.03569	1.4	0.9224	91.49	10.92959
0.09	223.210	22139.46	0.04517	1.5	0.8036	79.70	12.54673
0.1	180.800	17932.97	0.05576	1.6	0.7063	70.05	14.27538
0.11	149.422	14820.63	0.06747	1.7	0.6256	62.05	16.11557
0.12	125.556	12453.45	0.08030	1.8	0.5580	55.35	18.06728
0.13	106.982	10611.22	0.09424	1.9	0.5008	49.68	20.13052
0.15	80.356	7970.21	0.12547	2.0	0.4520	44.83	22.30529
0.17	62.561	6205.18	0.16116	2.2	0.3736	37.05	26.98940
0.19	50.083	4967.58	0.20131	2.4	0.3139	31.13	32.11962
0.21	40.998	4066.43	0.24592	2.6	0.2675	26.53	37.69594
0.25	28.928	2869.27	0.34852	2.8	0.2306	22.87	43.71837
0.27	24.801	2459.94	0.40651	3.0	0.2009	19.93	50.18690
0.29	21.498	2132.34	0.46897	3.2	0.1766	17.51	57.10154
0.31	18.814	1866.07	0.53588	3.4	0.1564	15.51	64.46229
0.35	14.759	1463.92	0.68310	3.6	0.1395	13.84	72.26914
0.40	11.300	1120.81	0.89221	3.8	0.1252	12.42	80.52209
0.45	8.928	885.58	1.12921	4.0	0.1130	11.21	89.22116
0.50	7.232	717.32	1.39408	4.5	0.0893	8.86	112.92053
0.55	5.977	592.83	1.68684	5.0	0.0723	7.17	139.40806
0.60	5.022	498.14	2.00748	5.5	0.0598	5.93	168.68375
0.65	4.279	424.45	2.35600	6.0	0.0502	4.98	200.74760
0.70	3.690	365.98	2.73240	6.5	0.0428	4.24	235.59962
0.80	2.825	280.20	3.56885	7.0	0.0369	3.66	273.23979
0.85	2.502	248.21	4.02889	7.5	0.0321	3.19	313.66813
0.90	2.232	221.39	4.51682	8.0	0.0283	2.80	356.88462
0.95	2.003	198.70	5.03263	8.5	0.0250	2.48	402.88928
1.00	1.808	179.33	5.57632	9.0	0.0223	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.