1Cr13Al4

DIN W.Nr. 1.4725

Low-aluminium Fe-Cr-Al grade valued for weldability and load-bearing capability rather than extreme temperature resistance.

950 °C	1.25 μΩ·m	7.4 g/cm³	≥80 h
MAX. WORKING TEMPERATURE	RESISTIVITY AT 20 °C	DENSITY	ACCELERATED LIFE AT 950 °C

PRODUCT OVERVIEW

1Cr13Al4 (DIN W.Nr. 1.4725) is not an extreme-temperature grade — that is 0Cr25Al5's territory. Its value is mechanical: it is one of the few iron-chromium-aluminium alloys that can carry structural load and be welded into assemblies. For a complex weldable element needing some strength around 900 °C it beats the high-aluminium heating alloys and costs far less than nickel-chromium heat-resisting steel.

Lower aluminium and moderate chromium greatly reduce room-temperature brittleness and improve elongation and impact toughness, so the alloy accepts cold bending, stamping and welding. Most Fe-Cr-Al alloys — high-aluminium ones especially — are hard to weld because of grain coarsening at temperature and brittleness when cold. 1Cr13Al4 keeps aluminium below that threshold and welds by TIG without difficulty, which supports large welded fabrications such as furnace linings and heating frames.

Within its temperature range the Al_2O_3 film gives good oxidation and carburisation resistance, and as a nickel-free iron-based alloy the material cost is far below nickel-chromium — the best balance when the duty calls for heat and corrosion resistance, some electrical heating function, and real machinability.

ALSO KNOWN AS

Resistohm 125 · CrAl 14/4 (DIN W.Nr. 1.4725) · Alkrothal 14 · 15ĸO5 · Alloy 750 · Ohmalloy 40 · Alferon 902 · Alchrome 750 · Aluchrom W · 750 Alloy · Stablohm 750

CHEMICAL COMPOSITION

C	P	S	Mn	Si	Cr	Ni	Al	Fe
≤0.12	≤0.025	≤0.02	≤0.5	≤0.7	12.0–15.0	≤0.6	4.0–6.0	Bal.

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

TYPICAL APPLICATIONS

- Complex weldable heating elements
- Welded heating frames and furnace linings
- Load-bearing heating structures
- Service around 900 °C
- Parts needing cold bending and stamping

PHYSICAL & MECHANICAL PROPERTIES

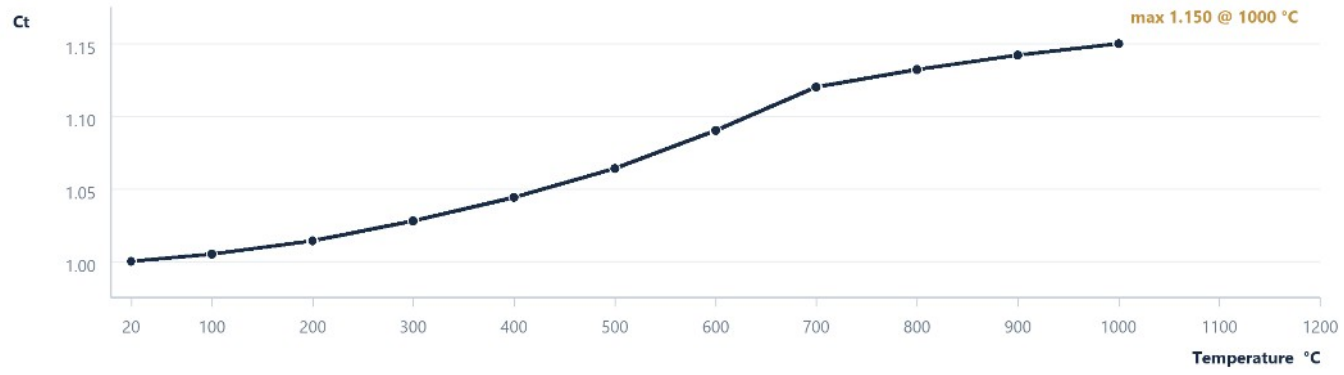
Property	Value	Property	Value
Max. working temperature	950 °C	Resistivity at 20 °C (μΩ·m)	1.25 ± 0.08
Density	7.4 g/cm³	Thermal conductivity (20 °C)	15 W/(m·K)
Mean linear expansion 20–1000 °C	15.4 × 10^{-6} /K	Specific heat capacity	0.49 J/(g·K)
Approx. melting point	1450 °C	Elongation after fracture A/%	≤3.0 mm: ≥12 % >3.0 mm: ≥15 %
Tensile strength Rm	≥580 MPa	Accelerated life test	≥80 h at 950 °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
Ct	1.000	1.005	1.014	1.028	1.044	1.064	1.090	1.120	1.132	1.142	1.150		



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	636.620	68823.82	0.01453	1.1	1.3153	142.20	7.03245
0.06	442.097	47794.32	0.02092	1.2	1.1052	119.49	8.36920
0.07	324.806	35114.19	0.02848	1.3	0.9417	101.81	9.82218
0.08	248.680	26884.30	0.03720	1.4	0.8120	87.79	11.39141
0.09	196.488	21241.92	0.04708	1.5	0.7074	76.47	13.07687
0.1	159.155	17205.95	0.05812	1.6	0.6217	67.21	14.87857
0.11	131.533	14219.80	0.07032	1.7	0.5507	59.54	16.79651
0.12	110.524	11948.58	0.08369	1.8	0.4912	53.10	18.83069
0.13	94.175	10181.04	0.09822	1.9	0.4409	47.66	20.98111
0.15	70.736	7647.09	0.13077	2.0	0.3979	43.01	23.24777
0.17	55.071	5953.62	0.16797	2.2	0.3288	35.55	28.12980
0.19	44.087	4766.19	0.20981	2.4	0.2763	29.87	33.47678
0.21	36.090	3901.58	0.25631	2.6	0.2354	25.45	39.28872
0.25	25.465	2752.95	0.36325	2.8	0.2030	21.95	45.56562
0.27	21.832	2360.21	0.42369	3.0	0.1768	19.12	52.30747
0.29	18.925	2045.89	0.48878	3.2	0.1554	16.80	59.51428
0.31	16.561	1790.42	0.55853	3.4	0.1377	14.88	67.18604
0.35	12.992	1404.57	0.71196	3.6	0.1228	13.28	75.32276
0.40	9.947	1075.37	0.92991	3.8	0.1102	11.92	83.92444
0.45	7.860	849.68	1.17692	4.0	0.0995	10.75	92.99106
0.50	6.366	688.24	1.45299	4.5	0.0786	8.50	117.69182
0.55	5.261	568.79	1.75811	5.0	0.0637	6.88	145.29854
0.60	4.421	477.94	2.09230	5.5	0.0526	5.69	175.81123
0.65	3.767	407.24	2.45555	6.0	0.0442	4.78	209.22989
0.70	3.248	351.14	2.84785	6.5	0.0377	4.07	245.55453
0.80	2.487	268.84	3.71964	7.0	0.0325	3.51	284.78513
0.85	2.203	238.14	4.19913	7.5	0.0283	3.06	326.92171
0.90	1.965	212.42	4.70767	8.0	0.0249	2.69	371.96426
0.95	1.763	190.65	5.24528	8.5	0.0220	2.38	419.91277
1.00	1.592	172.06	5.81194	9.0	0.0196	2.12	470.76726

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.