

# 0Cr23Al5 FeCrAl RESISTANCE WIRE

## DATASHEET

CHANGSHU IPACE INTERNATIONAL CORP

**0Cr23Al5** has similar performance to 0Cr25Al5, with better processability, toughness and cost efficiency, making it the preferred choice for most heating elements. As an important member of the Fe-Cr-Al heating alloy series, 0Cr23Al5 has significant advantages over nickel-chromium alloys in terms of maximum operating temperature, resistivity, cost, and oxidation resistance. Compared to 0Cr25Al5, it has slight advantages in cost and machinability, but slightly lower maximum operating temperature. Selection should be comprehensively evaluated based on specific operating temperature, usage environment, cost budget, and processing requirements. For high-temperature applications of 1100-1300 °C, cost-sensitive scenarios, and applications with certain machinability requirements, 0Cr23Al5 is an ideal choice; while in scenarios requiring good toughness, weldability, and thermal fatigue performance, nickel-chromium alloys are more suitable. Its main performance can be referred to [0Cr25Al5](#).

**0Cr23Al5** also has the following common names: Kanthal D, Alloy 815, Alchrome DK, Alferon 901, Resistohm 135, Aluchrom 5, Stablohm 812, KD, Aluchrom I, Alferon 20, Alloy K, X23I05

### CHEMICAL COMPOSITION

C	P	S	Mn	Si	Cr	Ni	Al	Fe
0.06	0.025	0.02	0.5	≤0.6	20.5~23.5	≤0.6	4.2-5.3	Reminder

### PHYSICAL PROPERTIES

Max. Working Temp.	1300°C	Resistivity at 20°C (μΩ·m)	1.35±0.06
Density	7.25 g/cm <sup>3</sup>	Thermal conductivity (20°C)	13 W/(m·K)
Average linear expansion coefficient(20-1000°C)	15.0 α×10 <sup>-6</sup> /K	Specific heat capacity	0.46 J/(g·K)
Approx. melting point	1500°C	Elongation after Fracture (A%)	Diameter≤3.0mm: ≥12% Diameter>3.0mm: ≥15%
Tensile strength(R <sub>m</sub> /MPa)	≥600	Accelerated life test	≥80h/1300°C
Micrographic structure	Ferrite	Magnetic properties	Magnetic

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### TEMPERATURE FACTOR OF RESISTIVITY

Temp(° C)	100	200	300	400	500	600	700	800	900	1000	1100	1200
Ct	1.002	1007	1.014	1.024	1.036	1.056	1.064	1.070	1.074	1.078	1.081	1.084

### TECHNICAL PARAMETERS

Diameter (mm)	Ohm per meter (20°C Ω/m)	Length per kg (m/kg)	Weight per meter (g/m)	Diameter (mm)	Ohm per meter (20°C Ω/m)	Length per kg (m/kg)	Weight per meter (g/m)
0.05	687.550	70247.76	0.01424	1.1	1.4206	145.14	6.88990
0.06	477.465	48783.17	0.02050	1.2	1.1937	121.96	8.19955
0.07	350.791	35840.69	0.02790	1.3	1.0171	103.92	9.62308
0.08	268.574	27440.53	0.03644	1.4	0.8770	89.60	11.16050
0.09	212.207	21681.41	0.04612	1.5	0.7639	78.05	12.81180
0.1	171.887	17561.94	0.05694	1.6	0.6714	68.60	14.57698
0.11	142.056	14514.00	0.06890	1.7	0.5948	60.77	16.45604
0.12	119.366	12195.79	0.08200	1.8	0.5305	54.20	18.44899
0.13	101.709	10391.68	0.09623	1.9	0.4761	48.65	20.55582
0.15	76.394	7805.31	0.12812	2.0	0.4297	43.90	22.77653
0.17	59.477	6076.80	0.16456	2.2	0.3551	36.28	27.55960
0.19	47.614	4864.80	0.20556	2.4	0.2984	30.49	32.79820
0.21	38.977	3982.30	0.25111	2.6	0.2543	25.98	38.49233
0.25	27.502	2809.91	0.35588	2.8	0.2192	22.40	44.64199
0.27	23.579	2409.05	0.41510	3.0	0.1910	19.51	51.24719
0.29	20.438	2088.22	0.47888	3.2	0.1679	17.15	58.30791
0.31	17.886	1827.47	0.54721	3.4	0.1487	15.19	65.82416
0.35	14.032	1433.63	0.69753	3.6	0.1326	13.55	73.79595
0.40	10.743	1097.62	0.91106	3.8	0.1190	12.16	82.22326
0.45	8.488	867.26	1.15306	4.0	0.1074	10.98	91.10611
0.50	6.875	702.48	1.42353	4.5	0.0849	8.67	115.30617
0.55	5.682	580.56	1.72247	5.0	0.0688	7.02	142.35330

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Diameter (mm)	Ohm per meter (20°C Ω/m)	Length per kg (m/kg)	Weight per meter (g/m)	Diameter (mm)	Ohm per meter (20°C Ω/m)	Length per kg (m/kg)	Weight per meter (g/m)
0.60	4.775	487.83	2.04989	5.5	0.0568	5.81	172.24749
0.65	4.068	415.67	2.40577	6.0	0.0477	4.88	204.98875
0.70	3.508	358.41	2.79012	6.5	0.0407	4.16	240.57707
0.80	2.686	274.41	3.64424	7.0	0.0351	3.58	279.01246
0.85	2.379	243.07	4.11401	7.5	0.0306	3.12	320.29492
0.90	2.122	216.81	4.61225	8.0	0.0269	2.74	364.42444
0.95	1.905	194.59	5.13895	8.5	0.0238	2.43	411.40103
1.00	1.719	175.62	5.69413	9.0	0.0212	2.17	461.22468

Above parameters are based on Chinese National Standard GB/T1234-2012. The tolerance of resistance per meter: 0.03-0.06mm is ±10%; 0.07-0.12mm is ±8%; 0.13-0.17mm is ±7%; 0.18-0.32mm is ±6%; A wire diameter above 0.32mm is ±5%. **We provide various shapes of Iron-Chromium-Aluminum alloy products, such as wires, ribbons and rods in the following sizes:** Bright and soft annealed finish: 0.05 - 1.6mm; Acid-pickled finish: 1.0 -12.0mm; Golden surface: 1.2-3.9mm; Blue surface: 4.0-10.0mm; Rods: 6.0-150.0mm; Flat wire: width from 0.2 - 6.0mm and thickness from 0.08 - 1.0mm; Heating ribbon: width from 5.0 - 300mm and thickness from 0.05 - 4.0mm

Disclaimer: Recommendations are for guidance only, and the suitability of the materials can only be confirmed once we understand the actual usage conditions. Continuous technological development may result in changes to technical data without notice. Some common names of the alloy are registered trademarks. Their ownership belongs to the registrants. This datasheet was updated on 2019-02-12.