
Kanthal A-1

Fe-Chrome

TOKYO RESISTANCE WIRE CO., LTD.

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Alloys : Kanthal A-1 (Fe-Chrome)

A high temperature alloy used up to an exothermic temperature of 1,400°C. Commonly used in high temperature furnaces in the heat treatment, ceramic glass, steel and electronics industries. It has better oxidation resistance than AF at temperatures above 1,300°C.

Electrical Resistivity [μΩm]
1.45

Thermal Expansion Coefficient ×10-6/	Density g/cm3 (20°C)	Melting Point °C	Max Operating Temperature °C
15.0	7.10	1500	1400

化学成分	Cr	Al	Fe	その他
(%)	22	5.8	BAL	Fe+Special Additives

Resistance increase by temperature

°C	20	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400
Coefficient	1.000	1.000	1.000	1.000	1.000	1.010	1.020	1.030	1.030	1.030	1.040	1.040	1.040	1.040	1.050

Alloys	Type	Diameter (mm)	
A-1	Wire	φ10.0~1.00	
A-1	Ribbon	t=2.0、2.5、3.0	w=20、25、30

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Resistance·Length·Weight

Wire

Electrical Resistivity (20°CμΩm) 1.45

Diameter (mm)	Tolerance (mm)	Cross section (mm ²)	Resistance Tolerance (%)	DC Resistance (Ω/m)	Length (m/Kg)	Weight (g/m)
10.00	±0.06	78.50	±5	0.01847	1.794	557.4
9.50	±0.05	70.85	±5	0.02047	1.988	503.0
8.25	±0.05	53.43	±5	0.02714	2.636	379.3
8.00	±0.05	50.24	±5	0.02886	2.803	356.7
6.00	±0.04	28.26	±5	0.05131	4.984	200.6
5.00	±0.03	19.63	±5	0.07389	7.177	139.3
4.50	±0.03	15.90	±5	0.09122	8.860	112.9
4.00	±0.03	12.56	±5	0.1154	11.21	89.18
3.50	±0.03	9.616	±5	0.1508	14.65	68.28
3.25	±0.03	8.292	±5	0.1749	16.99	58.87
3.20	±0.03	8.038	±5	0.1804	17.52	57.07
3.00	±0.03	7.065	±5	0.2052	19.94	50.16
2.90	±0.02	6.602	±5	0.2196	21.33	46.87
2.80	±0.02	6.154	±5	0.2356	22.89	43.70
2.60	±0.02	5.307	±5	0.2732	26.54	37.68
2.50	±0.02	4.906	±5	0.2955	28.71	34.83
2.30	±0.02	4.153	±5	0.3492	33.92	29.48
2.00	±0.02	3.140	±5	0.4618	44.86	22.29
1.80	±0.02	2.543	±5	0.5701	55.38	18.06
1.60	±0.02	2.010	±5	0.7215	70.09	14.27
1.50	±0.02	1.766	±5	0.8209	79.74	12.54
1.40	±0.02	1.539	±5	0.9424	91.54	10.92
1.30	±0.02	1.327	±5	1.093	106.2	9.419
1.20	±0.02	1.130	±5	1.283	124.6	8.026
1.10	±0.02	0.9499	±5	1.527	148.3	6.744
1.00	±0.02	0.7850	±5	1.847	179.4	5.574

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Temperature Current Characteristics · Diameter · Temperature · Current

Wire Electrical Resistivity (23°CμΩm) 1.45 [Unit: Ampere]

Diameter (mm)	200 (°C)	300 (°C)	400 (°C)	500 (°C)	600 (°C)	700 (°C)	800 (°C)	900 (°C)	1000 (°C)	1100 (°C)
8.25	63.6	88.8	111	135	167	200	241	281	326	370
8.00	52.5	73.3	92.5	111	133	163	200	233	266	303
6.00	41.4	57.7	72.5	88.1	109	130	155	185	215	241
5.00	31.8	43.7	55.5	66.6	82.9	100	121	141	163	185
4.50	26.6	37.0	47.4	57.0	69.6	85.1	104	118	141	159
4.00	22.9	31.1	40.0	48.1	59.2	69.6	83.6	98.4	118	133
3.50	18.5	25.2	32.6	39.2	48.8	57.7	71.0	83.6	96.2	111
3.20	16.3	22.2	28.9	34.0	42.2	50.3	61.4	72.5	84.4	96.2
2.90	13.9	19.2	25.2	29.6	36.3	43.7	53.3	62.2	72.5	82.1
2.60	11.5	16.3	20.7	25.2	31.1	37.0	45.9	53.3	61.4	68.8
2.30	9.77	13.4	17.8	21.5	25.9	31.1	38.5	44.4	51.1	58.5
2.00	8.14	11.1	14.8	17.8	21.5	25.9	30.3	36.3	41.4	47.4
1.80	7.18	9.77	12.8	15.5	18.5	22.2	24.4	31.1	35.5	40.7
1.60	6.07	8.36	11.1	13.0	15.5	19.2	22.9	25.9	30.3	34.0
1.50	5.62	7.70	10.1	11.8	14.4	17.0	20.7	23.7	27.4	31.1
1.40	5.18	7.03	9.25	10.8	13.3	15.5	19.2	21.5	25.2	28.9
1.30	4.74	6.44	8.36	9.84	12.0	14.1	17.0	19.2	22.2	25.9
1.20	4.37	5.77	7.77	8.73	10.4	11.9	14.8	17.0	20.0	22.9
1.10	3.85	5.18	6.66	7.99	9.62	11.4	13.5	15.5	17.8	20.0
1.00	3.48	4.51	5.92	6.96	8.51	9.99	11.5	13.0	14.8	17.0

(*) Reference value

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Conductor resistance · Length · Weight

Ribbon Electrical Resistivity (20°CμΩm) 1.45

[Unit: Ω/m]

Diameter (mm)	Cross-sectional area (mm ²)	Conductor resistance tolerance (%)	Conductor resistance (Ω/m)	Length (m/Kg)	Weight (g/m)
3.0×30	88.20	±5	0.01611	1.565	639.0
2.0×25	49.00	±5	0.02900	2.817	355.0
2.5×25	61.25	±5	0.02320	2.254	443.8
2.0×20	39.20	±5	0.03625	3.521	284.0

Conductor Resistance Tolerance of Ribbon

Thickness [mm]	Width [mm]	Resistance Tolerance [%]
0.08above 3.15below	10below	±8
	10above	±7

*We can manufacture products other than the standard (size and tolerance), so please contact us.

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