DANYANG RESISTANCE WIRE FACTORY

For Heating resistance wires and ribbons

Danyang Resistance Wire Factory

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Company Profiles and Products Introduction

Danyang Resistance Wire Factory was found in 1990. The company contains 12000m^2 and 150 employees. It has become a famous enterprise specializing in high resistance heating wires and ribbons, heating cables, heating elements inland after more than 20 years hard work. Our company has full work flow and test technic. The products cover full ranges of Fe-Cr-Al series, Ni-Cr series, Cu-Ni series and other materials as stainless steel wires, heating elements with different models. The products apply to chemical industry, metallurgy mechanism, glass industry, ceramic industry, home appliance area widely.

Our company has got the honor of double A company of high credit in Jiangsu Province, Star Enterprise in Zhenjiang. And we passed ISO9001:2000 Certificate. Our annual output has reached 1500 tons and the products export to Europe, Asia and America countries.

Our company specilizes in Iron-Chrome-Aluminium ,Nickel-Chrome and Nickel-Chrome-Iron resistance wires and strips. The products have outstanding performance, steady resistance temperature coefficient, high service temperature, competitive price and complete specifications. We have full ranges of 0Cr25Al5, 0Cr23Al5, 0Cr21Al4, 0Cr21Al6, 1Cr13Al4, 0Cr21Al6Nb, 0Cr27Al7Mo, Ni80Cr20, Ni60Cr15, Ni30Cr20 wires and strips. The material can totally replace Kanthal A, Kanthal D, Nikrothal 8,etc.

Main characteristics of Ni-Cr and Ni-Cr-Fe electric heating alloys

Alloy Nomenclature / **Performance**		**Cr20Ni80**	**Cr30Ni70**	**Cr15Ni60**	**Cr20Ni35**	**Cr20Ni30**
Main Chemical composition	Ni	Rest	Rest	55.0-61.0	34.0-37.0	30.0-34.0
	Cr	20.0-23.0	28.0-31.0	15.0-18.0	18.0-21.0	18.0-21.0
	Fe	≤1.0	≤1.0	Rest	Rest	Rest
Max. continuous service temp. of element		1200	1250	1150	1100	1100
Resistivity at 20ºC (μΩ·m)		1.09	1.18	1.12	1.0	1.04
Density (g/cm^3)		8.40	8.10	8.20	7.90	7.90
Thermal conductivity (KJ/m·h·ºC)		60.3	45.2	45.2	43.8	43.8
Coefficient of lines expansion ($\alpha \times 10^{-6}$/ºC)		18.0	17.0	17.0	19.0	19.0
Melting point (approx.)(ºC)		1400	1380	1390	1390	1390
Elongation at rupture (%)		>20	>20	>20	>20	>20
Micrographic structure		austenite	austenite	austenite	austenite	austenite
Magnetic properties		nonmagnetic	nonmagnetic	Weak magnetic	Weak magnetic	Weak magnetic

A series of Ni-Cr,Ni-Cr-Fe alloys with their diameters and characteristics(conversion table)

Dia. (mm)	Cross sectional area (mm^2)	Surface per meter (cm^2/m)	Cr20Ni80,Cr30Ni70,Cr15Ni60			Cr20Ni30,Cr20Ni35		
			Resistivity (μΩ • m 1.09~1.20±0.05)			Resistivity (μΩ • m 1.04-1.06±0.05)		
			Resistance per meter at	Length per kg.(m/kg)	Weight per Meter(kg/m)	Resistance per meter at	Length per kg.(m/kg)	Weight per Meter
0.10	0.0078	3.14	143.9	15578	0.0000641	132.4	16228	0.0000616
0.12	0.0113	3.77	99.90	10753	0.0000929	91.96	11202	0.0000892
0.15	0.0177	4.71	63.94	6865	0.0001456	58.85	7151.5	0.000140
0.17	0.0227	5.34	9.78	5353	0.0001868	45.82	5576.3	0.000179
0.19	0.0284	5.97	39.85	4278	0.0002337	36.86	4457.1	0.000224
0.21	0.0346	6.60	29.72	3198	0.0003126	27.36	3331.1	0.000300
0.25	0.0491	7.85	22.86	2475	0.000404	21.19	2578.1	0.000388
0.27	0.0573	8.48	18.35	1973	0.0005068	16.89	2054.9	0.000487
0.29	0.0661	9.11	15.98	1718	0.000582	14.71	1790.7	0.000558
0.31	0.0755	9.74	14.05	1511	0.0006618	12.93	1574.4	0.000635
0.35	0.0962	11.00	11.74	1263	0.0007917	10.81	1315.8	0.000760
0.40	0.1257	12.57	8.992	966.6	0.001035	8.276	1007.0	0.000993
0.45	0.1590	14.14	7.105	764.2	0.001309	6.539	796.1	0.00126
0.50	0.1963	15.71	5.755	619.0	0.001616	5.297	644.8	0.00155
0.60	0.283	18.85	4.103	429.4	0.002329	3.749	447.3	0.00224
0.70	0.385	22.0	3.014	315.6	0.003169	2.754	328.8	0.00304
0.80	0.503	25.1	2.308	241.6	0.004139	2.109	251.7	0.00397
0.90	0.636	28.3	1.823	191.0	0.005236	1.666	199.0	0.00503
1.00	0.785	31.4	1.477	154.8	0.006460	1.350	161.3	0.00620
1.20	1.131	37.7	0.999	107.4	0.009311	0.9196	111.9	0.00894
1.40	1.539	44.0	0.734	78.95	0.01267	0.6756	82.25	0.01216
1.60	3.01	50.3	0.562	60.45	0.01654	0.5173	62.98	0.01588
1.80	2.54	56.5	0.444	47.84	0.02090	0.4087	49.84	0.02006
2.00	3.14	62.8	0.360	38.70	0.02584	0.3310	40.31	0.02408
2.20	3.80	69.1	0.297	31.98	0.03127	0.2736	33.31	0.03002
2.50	4.91	78.5	0.2053	22.89	0.04369	0.2109	23.84	0.04195
3.00	7.07	94.2	0.160	17.19	0.05817	0.1471	17.90	0.05587
3.50	9.62	110.0	0.117	12.63	0.07918	0.1081	13.16	0.07599
4.00	12.57	125.7	0.090	9.667	0.1034	0.08276	10.07	0.09930
4.50	15.90	141.4	0.071	7.642	0.1309	0.06539	7.961	0.1256
5.00	19.63	157.1	0.056	6.190	0.1616	0.05297	6.448	0.1551
5.50	23.80	172.8	0.049	5.105	0.1959	0.04462	5.319	0.1880
6.00	28.30	188.5	0.041	4.294	0.2329	0.03749	4.473	0.2236
6.50	33.20	204	0.035	3.660	0.2732	0.03194	3.813	0.2623
7.00	38.50	220	0.030	3.156	0.3169	0.02754	3.288	0.3041

Main characteristics of Fe-Cr-Al high resistance and electric heating alloys

Alloy Nomenclature / Performance		1Cr13Al4	0Cr25Al5	0Cr21Al6	0Cr23Al5	0Cr21Al4	0Cr21Al6Nb	0Cr27Al7Mo2
Main Chemical composition	Cr	12.0-15.0	23.0-26.0	19.0-22.0	20.5-23.5	18.0-21.0	21.0-23.0	26.5-27.8
	Al	4.0-6.0	4.5-6.5	5.0-7.0	4.2-5.3	3.0-4.2	5.0-7.0	6.0-7.0
	Re	opportune	opportune	opportune	opportune	opportune	opportune	opportune
	Fe	Rest	Rest	Rest	Rest	Rest	Rest	Rest
							Nb0.5	Mo1.8-2.2
Max. continuous service temp. of element		950	1250	1250	1250	1100	1350	1400
Resistivity at 20ºC (μΩ·m)		1.25	1.42	1.42	1.35	1.23	1.45	1.53
Density (g/cm^3)		7.40	7.10	7.16	7.25	7.35	7.10	7.10
Thermal conductivity (KJ/m·h·ºC)		52.7	46.1	63.2	60.2	46.9	46.1	45.2
Coefficient of lines expansion ($\alpha\times10^{-6}$/ºC)		15.4	16.0	14.7	15.0	13.5	16.0	16.0
Melting point (approx.)(ºC)		1450	1500	1500	1500	1500	1510	1520
Tensile strength (N/mm^2)		580-680	630-780	630-780	630-780	600-700	650-800	680-830
Elongation at rupture (%)		>16	>12	>12	>12	>12	>12	>10
Variation of area (%)		65-75	60-75	65-75	65-75	65-75	65-75	65-75
Repeat bending frequency (F/R)		>5	>5	>5	>5	>5	>5	>5
Hardness (H.B.)		200-260	200-260	200-260	200-260	200-260	200-260	200-260
continuous service time (Hours/ ºC)		--	≥80/1300	≥80/1300	≥80/1300	≥80/1250	≥50/1350	≥50/1350
Micrographic structure		Ferrite	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite	Ferrite
Magnetic properties		Magnetic	Magnetic	Magnetic	Magnetic	Magnetic	Magnetic	Magnetic

A series of Fe-Cr-Al alloys with their diameters and characteristics(conversion table 1)

Dia.(mm)	sectional area (mm^2)	Surface per meter(cm^2/m)	0Cr21Al6Nb			0Cr27Al7Mo2		
			Resistivity (μΩ • m 1.45±0.07)			Resistivity (μΩ • m 1.53±0.07)		
			Resistance per meter at 20ºC(Ω/m)	Length per kg.(m/kg)	Weight per Meter(kg/m)	Resistance per meter at 20ºC	Length per kg.(kg/m)	Weight per Meter
0.10	0.0078	3.14	184.6	17933	0.0000558	194.8	17933	0.0000558
0.12	0.0113	3.77	128.2	12453	0.0000803	135.3	12453	0.0000803
0.15	0.0177	4.71	82.1	7970	0.000125	80.6	7970	0.000125
0.17	0.0227	5.34	63.9	6205	0.000161	67.4	6205	0.000161
0.19	0.0284	5.97	51.1	4968	0.000201	54.0	4968	0.000201
0.21	0.0346	6.60	41.9	4066	0.000246	44.2	4066	0.000246
0.25	0.0491	7.85	29.5	2870	0.000349	31.2	2870	0.000349
0.27	0.0573	8.48	25.0	2460	0.000407	26.7	2460	0.000407
0.29	0.0661	9.11	22.0	2131	0.000469	23.2	2132	0.000469
0.31	0.0755	9.74	19.2	1866	0.000536	20.3	1866	0.000536
0.35	0.0962	11.00	15.1	1464	0.000683	15.9	1464	0.000683
0.40	0.1257	12.57	11.54	1121	0.000892	12.19	1121	0.000892
0.45	0.1590	14.14	9.12	886	0.001129	9.62	886	0.001129
0.50	0.1963	15.71	7.38	717	0.001394	7.79	717	0.001394
0.60	0.283	18.85	5.13	498	0.00201	5.41	498	0.00201
0.70	0.385	22.0	3.77	366	0.00273	3.98	366	0.00273
0.80	0.503	25.1	2.88	280	0.00357	3.04	280	0.00357
0.90	0.636	28.3	2.28	221	0.00452	2.41	221	0.00452
1.00	0.785	31.4	1.85	179.5	0.00557	1.95	179.5	0.00557
1.20	1.131	37.7	1.282	124.5	0.00803	1.35	124.5	0.00803
1.40	1.539	44.0	0.942	91.5	0.01093	0.994	91.5	0.01093
1.60	3.01	50.3	0.721	70.1	0.01427	0.761	70.1	0.01427
1.80	2.54	56.5	0.570	55.5	0.01803	0.601	55.5	0.01803
2.00	3.14	62.8	0.462	44.8	0.0229	0.487	44.8	0.0229
2.20	3.80	69.1	0.381	37.0	0.0270	0.402	37.0	0.0270
2.50	4.91	78.5	0.295	28.7	0.0349	0.312	28.7	0.0349
3.00	7.07	94.2	0.205	19.92	0.052	0.216	19.92	0.052
3.50	9.62	110.0	0.1510	14.64	0.0683	0.159	14.64	0.0683
4.00	12.57	125.7	0.1154	11.21	0.0892	0.1218	11.21	0.0892
4.50	15.90	141.4	0.0912	8.86	0.1129	0.0962	8.86	0.1129
5.00	19.63	157.1	0.0738	7.17	0.1394	0.0779	7.17	0.1394
5.50	23.80	172.8	0.0610	5.92	0.1690	0.0644	5.92	0.1690
6.00	28.30	188.5	0.0513	4.98	0.201	0.0541	4.98	0.201
6.50	33.20	204	0.0437	4.24	0.236	0.0461	4.24	0.236
7.00	38.50	220	0.0377	3.66	0.273	0.0398	3.66	0.273

A series of Fe-Cr-Al alloys with their diameters and characteristics(conversion table 2)

Dia.(mm)	sectional area (mm^2)	Surface per meter(cm^2/m)	0Cr23Al5			0Cr21Al4		
			Resistivity μΩ • m 1.35±0.06			Resistivity μΩ • m 1.23±0.06		
			Resistance per meter at	Length per kg.(m/kg)	Weight per Meter(kg/m)	Resistance per meter at 20ºC(Ω/m)	Length per kg.(m/kg)	Weight per Meter
0.10	0.0078	3.14	173.1	17683	0.0000566	156.6	17452	0.0000573
0.12	0.0113	3.77	119.5	12206	0.0000819	108.8	12033	0.0000831
0.15	0.0177	4.71	76.4	7793	0.000128	69.6	7692	0.000130
0.17	0.0227	5.34	59.5	6076	0.000165	54.2	5988	0.000167
0.19	0.0284	5.97	47.5	4854	0.00206	43.4	4785	0.000209
0.21	0.0346	6.60	35.5	3986	0.000276	35.5	3937	0.000254
0.25	0.0491	7.85	27.5	2809	0.000356	25.1	2770	0.000361
0.27	0.0573	8.48	21.9	2407	0.000447	21.5	2375	0.000421
0.29	0.0661	9.11	19.1	2087	0.000513	18.6	2058	0.000486
0.31	0.0755	9.74	16.8	1827	0.000583	16.3	1802	0.000555
0.35	0.0962	11.00	14.0	1434	0.000697	12.8	1414	0.000707
0.40	0.1257	12.57	10.7	1097	0.000911	9.79	1082	0.000924
0.45	0.1590	14.14	8.49	867	0.00115	7.73	855	0.00117
0.50	0.1963	15.71	6.88	703	0.00142	6.26	694	0.00144
0.60	0.283	18.85	4.77	496	0.00205	4.35	480	0.00208
0.70	0.385	22.0	3.51	358	0.00279	3.20	353	0.00283
0.80	0.503	25.1	2.69	274	0.00365	2.45	270	0.003697
0.90	0.636	28.3	2.12	217	0.00461	1.93	213	0.004675
1.00	0.785	31.4	1.72	176	0.00569	1.57	173	0.005770
1.20	1.131	37.7	1.194	122	0.00820	1.09	120	0.008313
1.40	1.539	44.0	0.877	89.6	0.01116	0.799	88.4	0.01131
1.60	3.01	50.3	0.672	68.6	0.01457	0.612	67.7	0.01477
1.80	2.54	56.5	0.532	54.3	0.01842	0.483	53.56	0.01867
2.00	3.14	62.8	0.430	43.9	0.02277	0.392	43.33	0.02308
2.20	3.80	69.1	0.355	36.3	0.02755	0.324	35.80	0.02793
2.50	4.91	78.5	0.275	28.1	0.03849	0.251	27.71	0.03609
3.00	7.07	94.2	0.191	19.5	0.05126	0.1740	19.25	0.05196
3.50	9.62	110.0	0.140	14.3	0.06975	0.1278	14.14	0.07071
4.00	12.57	125.7	0.107	11.0	0.09113	0.0979	10.82	0.09239
4.50	15.90	141.4	0.0849	8.67	0.1153	0.0773	8.55	0.1169
5.00	19.63	157.1	0.0688	7.03	0.1423	0.0626	6.93	0.1443
5.50	23.80	172.8	0.0568	5.80	0.1726	0.0518	5.72	0.1749
6.00	28.30	188.5	0.0477	4.88	0.2052	0.0435	4.81	0.2080
6.50	33.20	204	0.0407	4.15	0.2407	0.0371	4.09	0.2440
7.00	38.50	220	0.0351	3.58	0.2791	0.0320	3.53	0.2830

A series of Fe-Cr-Al alloys with their diameters and characteristics(conversion table 3)

Dia. (mm)	Surface per meter (cm^2/m)	1Cr13Al4			0Cr25Al5			0Cr21Al6		
		Resistivity (μΩ • m 1.25±0.08)			Resistivity (μΩ • m 1.42±0.07)			Resistivity (μΩ • m 1.42±0.07)		
		Ohm/m at 20ºC	Length per kg.(m/kg)	Weight per Meter(kg/m)	Resistance per meter at 20ºC	Length per kg.(m/kg)	Weight per Meter	Ohm/m at 20ºC	Length per kg.(m/kg)	Weight per Meter(kg/m)
0.10	3.14	159.2	17206	0.0000581	180.6	17933	0.0000558	180.6	17905	0.0000558
0.12	3.77	110.5	11949	0.0000836	125.6	12453	0.0000803	125.6	12360	0.0000809
0.15	4.71	70.7	7647	0.000131	80.4	7970	0.000125	80.4	7891	0.000128
0.17	5.34	55.1	5954	0.000168	62.6	6205	0.000161	62.6	6153	0.000163
0.19	5.97	44.1	4766	0.000210	50.1	4959	0.000201	50.1	4918	0.000203
0.21	6.60	36.1	3901	0.000256	41.0	4066	0.000246	41.0	4037	0.000248
0.25	7.85	25.5	2753	0.000363	28.9	2870	0.000346	28.9	2844	0.000352
0.27	8.48	21.8	2360	0.000424	24.8	2460	0.000407	24.8	2437	0.000410
0.29	9.11	18.9	2046	0.000489	21.5	2132	0.000469	21.5	2113	0.000473
0.31	9.74	16.6	1790	0.000559	18.8	1866	0.000536	18.8	1849	0.000541
0.35	11.00	13.0	1405	0.000712	14.8	1464	0.000683	14.8	1452	0.000689
0.40	12.57	9.95	1075	0.000930	11.3	1121	0.000892	11.3	1111	0.000900
0.45	14.14	7.86	850	0.001177	8.93	886	0.001129	8.93	878	0.001138
0.50	15.71	6.37	688	0.001453	7.23	717	0.001394	7.23	711	0.001406
0.60	18.85	4.42	480	0.002092	5.02	498	0.00201	5.02	494	0.002026
0.70	22.0	3.25	351	0.002848	3.69	366	0.00273	3.69	362	0.002751
0.80	25.1	2.49	269	0.003720	2.83	280	0.00357	2.83	278	0.003601
0.90	28.3	1.96	212	0.004708	2.23	221	0.00452	2.23	220	0.004554
1.00	31.4	1.59	172	0.005812	1.808	179.5	0.00557	1.808	177.9	0.005620
1.20	37.7	1.11	119	0.008369	1.256	124.5	0.00803	1.256	123.5	0.008098
1.40	44.0	0.812	87.8	0.001139	0.922	91.5	0.01093	0.922	90.8	0.01102
1.60	50.3	0.622	67.2	0.01488	0.706	70.1	0.01427	0.706	69.5	0.01439
1.80	56.5	0.491	53.1	0.01883	0.558	55.5	0.01803	0.558	54.9	0.01819
2.00	62.8	0.398	43.0	0.02325	0.452	44.8	0.0223	0.452	44.5	0.02248
2.20	69.1	0.329	35.5	0.02813	0.374	37.0	0.0270	0.374	36.8	0.02720
2.50	78.5	0.255	27.5	0.03632	0.289	28.7	0.0349	0.289	28.4	0.03516
2.80	88.0	0.203	21.9	0.04557	0.231	22.9	0.0437	0.231	22.7	0.04411
3.00	94.2	0.1768	19.1	0.05231	0.201	19.92	0.0502	0.201	19.8	0.05062
3.50	110.0	0.1299	14.0	0.07120	0.1476	14.64	0.0683	0.1476	14.5	0.06888
4.00	125.7	0.0995	10.75	0.09299	0.1130	11.21	0.0892	0.1130	11.1	0.09000
4.50	141.4	0.0786	8.50	0.1177	0.0893	8.86	0.1129	0.0893	8.78	0.1138
5.00	157.1	0.0637	6.88	0.1453	0.0723	7.17	0.1394	0.0723	7.11	0.1406
5.50	172.8	0.0526	5.69	0.1758	0.0598	5.92	0.1690	0.0598	5.87	0.1704
6.00	188.5	0.0442	4.78	0.2092	0.0502	4.98	0.201	0.0502	4.94	0.2026
6.50	204	0.0377	4.07	0.2456	0.0428	4.24	0.236	0.0428	4.21	0.2377
7.00	220	0.0325	3.51	0.2848	0.0369	3.66	0.273	0.0369	3.63	0.2757

Main Characteristics Of Copper-based Low Resistance Heating Alloys

properties Alloy Nomenclature	Resistivity μΩ.m (20^{0}C)	Max. working Temperature (^{0}C)	Tensile Strength (Mpa)	Melting point (^{0}C)	Density (g/cm^3)	TCR x 10^{-6} / ^{0}C (20~600 ^{0}C)	EMF vs Cu (μV / ^{0}C) (0~100 ^{0}C)
NC003 (CuNi1)	0.03	200	210	1085	8.9	<100	-8
NC005 (CuNi2)	0.05	200	220	1090	8.9	<120	-12
NC010 (CuNi6)	0.10	220	250	1095	8.9	<60	-18
NC012 (CuNi8)	0.12	250	270	1097	8.9	<57	-22
NC015 (CuNi10)	0.15	250	290	1100	8.9	<50	-25
NC020 (CuNi14)	0.20	300	310	1115	8.9	<30	-28
NC025 (CuNi19)	0.25	300	340	1135	8.9	<25	-32
NC030 (CuNi23)	0.30	300	350	1150	8.9	<16	-34
NC035 (CuNi30)	0.35	350	400	1170	8.9	<10	-37
NC040 (CuNi34)	0.40	350	400	1180	8.9	0	-39
NC050 (CuNi44)	0.50	400	420	1200	8.9	<-6	-43

Fe-Cr-Al,Ni-Cr ribbon with their specification and characteristics(1)

width× thickness (mm)	Cross sectional (mm^2)	Cr20Ni80			Cr15Ni60		
		Resistivity (1.09~1.14±0.05μΩ·m)			Resistivity (1.11~1.15±0.05μΩ·m)		
		Resistance per meter (Ω/m)	Length per kg.(m/kg)	Weight per Meter(kg/m)	Resistance per meter (Ω/m)	Length per kg.(m/kg)	Weight per Meter(kg/m)
0.08×0.2	0.0152	71.71	7832	0.000128	73.03	8023	0.000125
0.4	0.0304	35.86	3916	0.000255	36.51	4012	0.000249
0.6	0.0456	23.90	2611	0.000383	24.34	2674	0.000374
0.8	0.0608	17.93	1958	0.000511	18.26	2006	0.000499
1.0	0.0760	14.87	1567	0.000638	45.00	1605	0.000623
1.5	0.114	9.912	1044	0.000958	10.00	1070	0.000935
0.1×0.2	0.0190	57.37	6266	0.000160	58..42	6418	0.000156
0.4	0.0380	28.68	3133	0.000319	29.21	3209	0.000312
0.6	0.0570	19.12	2089	0.000479	19.47	2139	0.000467
0.8	0.0760	14.34	1566	0.000638	14.61	1605	0.000623
1.0	0.0950	11.89	1253	0.000798	12.00	1284	0.000779
1.5	0.143	7.902	833	0.00120	7.97	853	0.00117
2.0	0.190	5.947	627	0.00160	6.00	642	0.00156
0.15×0.2	0.0285	38.25	4184	0.000239	38.95	4279	0.000234
0.4	0.0570	19.12	2089	0.000479	19.47	2139	0.000467
0.6	0.0855	12.75	1392	0.000718	12.98	1426	0.000701
0.8	0.114	9.561	1044	0.000958	9.74	1070	0.000935
1.0	0.143	7.902	833	0.00120	7.97	853	0.00117
1.5	0.214	5.280	556	0.00180	5.33	570	0.00175
2.0	0.285	3.965	418	0.00239	4.00	428	0.00234
0.2×0.4	0.0760	14.34	1567	0.000638	14.61	1605	0.000623
0.6	0.114	9.561	1044	0.000958	9.74	1070	0.000935
0.8	0.152	7.171	783	0.00128	7.30	802	0.00125
1.0	0.190	5.947	627	0.00160	6.00	642	0.00156
1.5	0.285	3.965	418	0.00239	4.00	428	0.00234
2.0	0.380	2.974	313	0.00319	3.00	321	0.00312
3.0	0.570	1.982	209	0.00479	2.00	214	0.00467
0.4×0.6	0.228	4.781	522	0.00192	4.87	535	0.00187
0.8	0.304	3.586	392	0.00255	3.65	401	0.00249
1.0	0.380	2.974	313	0.00319	3.00	321	0.00312
1.5	0.570	1.982	209	0.00479	2.00	214	0.00467
2.0	0.760	1.487	157	0.00638	1.50	161	0.00623
3.0	1.140	0.991	104	0.00958	1.00	107	0.00935
4.0	1.520	0.750	78.3	0.01277	0.757	80.2	0.0125
0.6×0.8	0.456	2.390	261	0.00383	2.43	267	0.00374
1.0	0.570	1.982	209	0.00479	2.00	214	0.00467
1.5	0.855	1.322	139	0.00718	1.33	143	0.00701
2.0	1.140	0.991	104	0.00958	1.00	107	0.00935
3.0	1.71	0.661	69.6	0.01436	0.667	71.3	0.0140
4.0	2.28	0.500	52.2	0.01915	0.504	53.5	0.0187
0.8×1.0	0.760	1.487	157	0.0638	1.50	161	0.00623
1.5	1.140	0.991	104	0.00958	1.00	107	0.00935
2.0	1.520	0.743	78.3	0.01277	0.750	80.2	0.0125
3.0	2.28	0.496	52.2	0.01915	0.500	53.5	0.0187
4.0	3.04	0.375	39.2	0.02554	0.378	40.1	0.0249
1.0×1.5	1.425	0.793	83.5	0.01197	0.800	85.6	0.0117
2.0	1.90	0.595	62.7	0.01596	0.600	64.2	0.0156
3.0	2.85	0.396	41.8	0.02394	0.400	42.8	0.0234
4.0	3.80	0.300	31.3	0.03192	0.303	32.1	0.0312

Fe-Cr-Al,Ni-Cr ribbon with their specification and characteristics(2)

width× thickness (mm)	Cross sectional (mm^2)	0Cr25Al5			0Cr21Al4		
		Resistivity (1.42±0.06μΩ·m)			Resistivity (1.23±0.06μΩ·m)		
		Resistance per meter (Ω/m)	Length per kg.(m/kg)	Weight per Meter(kg/m)	Resistance per meter (Ω/m)	Length per kg.(m/kg)	Weight per Meter(kg/m)
0.08×0.2	0.0152	93.42	9266	0.000108	80.92	8951	0.000112
0.4	0.0304	46.71	4633	0.000216	40.46	4475	0.000223
0.6	0.0456	31.14	3.89	0.000324	26.97	2984	0.000335
0.8	0.0608	23.36	2317	0.000432	20.23	2238	0.000447
1.0	0.0760	18.68	1584	0.000540	16.18	1790	0.000559
1.2	0.0912	15.57	1544	0.000648	13.49	1492	0.000670
1.5	0.114	12.46	1235	0.000809	10.79	1193	0.000838
0.1×0.2	0.0190	74.74	7413	0.000135	64.74	7161	0.000140
0.4	0.0380	37.37	3706	0.000270	32.37	3580	0.000279
0.6	0.0570	24.91	2471	0.000405	21.58	2387	0.000419
0.8	0.0760	18.68	1853	0.000540	16.18	1790	0.000559
1.0	0.0950	14.95	1483	0.000675	12.95	1432	0.000698
1.5	0.143	9.930	985	0.00102	8.601	951	0.00105
2.0	0.190	7.474	741	0.00135	6.474	716	0.00140
0.15×0.2	0.0285	49.82	4942	0.000202	43.16	4773	0.000209
0.4	0.0570	24.91	2471	0.000405	21.58	2387	0.000419
0.6	0.0855	16.61	1647	0.000607	14.39	1591	0.000628
0.8	0.114	12.46	1235	0.000809	10.79	1193	0.000838
1.0	0.143	9.930	985	0.00102	8.601	951	0.00105
1.5	0.214	6.636	658	0.00152	5.748	636	0.00157
2.0	0.285	4.982	494	0.00202	4.316	477	0.00209
0.2×0.4	0.0760	18.68	1853	0.000540	16.18	1790	0.000559
0.6	0.114	12.46	1235	0.000809	10.79	1193	0.000838
0.8	0.152	9.342	927	0.00108	8.092	895	0.00112
1.0	0.190	7.474	741	0.00135	6.474	716	0.00140
1.5	0.285	4.982	494	0.00202	4.316	477	0.00209
2.0	0.380	3.373	371	0.00270	3.237	358	0.00279
3.0	0.570	2.491	247	0.00405	2.158	239	0.00419
0.4×0.6	0.228	6.228	618	0.00162	5.395	597	0.00168
0.8	0.304	4.671	463	0.00216	4.046	448	0.00223
1.0	0.380	3.373	371	0.00270	3.237	358	0.00279
1.5	0.570	2.491	247	0.00405	2.158	239	0.00419
2.0	0.760	1.868	185	0.00540	1.618	179	0.00559
3.0	1.140	1.246	124	0.00809	1.079	119	0.00838
4.0	1.520	0.9342	92.7	0.01079	0.809	90	0.0112
0.6×0.8	0.456	3.114	309	0.00324	2.697	298	0.00335
1.0	0.570	2.491	247	0.00405	2.158	239	0.00419
1.5	0.855	1.661	165	0.00607	1.439	159	0.00628
2.0	1.140	1.246	124	0.00809	1.079	119	0.00838
3.0	1.71	0.8304	82.4	0.01214	0.719	80	0.0126
4.0	2.28	0.6228	61.8	0.01619	0.540	60	0.0168
0.8×1.0	0.760	1.868	185	0.00540	1.618	179	0.00559
1.5	1.140	1.246	124	0.00809	1.079	119	0.00838
2.0	1.520	0.9342	92.7	0.01079	0.8092	90	0.0112
3.0	2.28	0.6228	61.8	0.01619	0.540	60	0.0168
4.0	3.04	0.4671	46.3	0.02158	0.405	45	0.0223
1.0×1.5	1.425	0.9965	98.8	0.01012	0.863	95	0.0105
2.0	1.90	0.7474	74.1	0.01349	0.647	72	0.0140
3.0	2.85	0.4982	49.4	0.02024	0.432	48	0.0209
4.0	3.80	0.3737	37.1	0.02698	0.324	36	0.0279

Fe-Cr-Al,Ni-Cr ribbon with their specification and characteristics(3)

width× thickness (mm)	Cross sectional (mm^2)	Cr20Ni80			Cr15Ni60		
		Resistivity (1.09~1.14±0.05μΩ·m)			Resistivity (1.11~1.15±0.05μΩ·m)		
		Resistance per meter (Ω/m)	Length per kg.(m/kg)	Weight per Meter(kg/m)	Resistance per meter (Ω/m)	Length per kg.(m/kg)	Weight per Meter(kg/m)
10×0.5	4.90	0.222	24.30	0.04116	0.2265	24.89	0.04018
0.8	7.84	0.139	15.18	0.06586	0.1416	15.56	0.06429
1.0	9.80	0.115	12.15	0.08232	0.1163	12.44	0.08036
1.2	11.76	0.0961	10.12	0.09878	0.0969	10.37	0.09643
1.5	14.70	0.0769	8.10	0.1235	0.0776	8.30	0.1205
2.0	19.60	0.0577	6.08	0.1646	0.0582	6.22	0.1607
15×0.8	11.76	0.0927	10.12	0.09878	0.0944	10.37	0.09643
1.0	14.70	0.0769	8.10	0.1235	0.0776	8.30	0.1205
1.2	17.64	0.0641	6.75	0.1482	0.0646	6.91	0.1446
1.5	22.05	0.0512	5.40	0.1852	0.0517	5.53	0.1808
2.0	29.40	0.0384	4.05	0.2470	0.0388	4.15	0.2411
2.5	36.75	0.0307	3.24	0.3087	0.0310	3.32	0.3014
20×0.8	15.68	0.0695	7.59	0.1317	0.0708	7.78	0.1286
1.0	19.60	0.0577	6.07	0.1646	0.0582	6.22	0.1607
1.2	23.52	0.0480	5.06	0.1976	0.0485	5.18	0.1929
1.5	29.40	0.0384	4.05	0.2470	0.0388	4.15	0.2411
2.0	39.20	0.0288	3.04	0.3293	0.0291	3.11	0.3214
2.5	49.00	0.0231	2.43	0.4116	0.0233	2.49	0.4018
3.0	58.80	0.0192	2.02	0.4939	0.0194	2.07	0.4822
25×1.0	24.50	0.0461	4.86	0.2058	0.0465	4.98	0.2009
1.2	29.40	0.0384	4.05	0.2470	0.0388	4.15	0.2411
1.5	36.75	0.0307	3.24	0.3087	0.0310	3.32	0.3014
2.0	49.00	0.0231	2.43	0.4116	0.0233	2.49	0.4018
2.5	61.25	0.0184	1.94	0.5145	0.0186	1.99	0.5023
3.0	73.50	0.0154	1.62	0.6174	0.0155	1.66	0.6027
30×1.0	29.40	0.0384	4.05	0.2470	0.0388	4.15	0.2411
1.2	35.28	0.0320	3.37	0.2964	0.0323	3.46	0.2893
1.5	44.10	0.0256	2.70	0.3704	0.0259	2.77	0.3616
2.0	58.80	0.0192	2.02	0.4939	0.0194	2.07	0.4822
2.5	73.50	0.0154	1.62	0.6174	0.0155	1.66	0.6027
3.0	88.20	0.0128	1.35	0.7409	0.0129	1.38	0.7232
3.5	102.9	0.0111	1.16	0.8644	0.0112	1.19	0.8238
35×1.0	34.30	0.0329	3.47	0.2881	0.0332	3.56	0.2813
1.5	51.45	0.0220	2.31	0.4322	0.0222	2.37	0.4219
2.0	68.60	0.0165	1.74	0.5762	0.0166	1.78	0.5625
2.5	85.75	0.0132	1.39	0.7203	0.0133	1.42	0.7032
3.0	102.9	0.0110	1.16	0.8644	0.0111	1.19	0.8438
3.5	120.1	0.0095	0.99	1.0088	0.0096	1.02	0.9848
40×1.0	39.2	0.0288	3.04	0.3293	0.0291	3.11	0.3214
1.5	58.80	0.0192	2.02	0.4939	0.0194	2.07	0.4822
2.0	78.40	0.0144	1.52	0.6586	0.0145	1.56	0.6429
2.5	98.00	0.0115	1.21	0.8232	0.0116	1.24	0.8036
3.0	117.6	0.0096	1.01	0.9878	0.0097	1.04	0.9643
3.5	137.2	0.0083	0.87	1.1525	0.0084	0.89	1.1250
4.0	156.8	0.0073	0.76	1.3171	0.0073	0.78	1.2858

Fe-Cr-Al,Ni-Cr ribbon with their specification and characteristics(4)

width× thickness (mm)	Cross sectional (mm^2)	0Cr25Al5			0Cr21Al4		
		Resistivity (1.42±0.06μΩ·m)			Resistivity (1.23±0.06μΩ·m)		
		Resistance per meter (Ω/m)	Length per kg.(m/kg)	Weight per Meter(kg/m)	Resistance per meter (Ω/m)	Length per kg.(m/kg)	Weight per Meter(kg/m)
10×0.5	4.90	0.2900	28.74	0.03479	0.2510	27.76	0.03602
0.8	7.84	0.1811	17.97	0.05566	0.1569	17.35	0.05762
1.0	9.80	0.1449	14.37	0.06958	0.1255	13.88	0.07203
1.2	11.76	0.1207	11.98	0.08350	0.1046	11.57	0.08644
1.5	14.70	0.0966	9.58	0.10437	0.0837	9.26	0.10805
2.0	19.60	0.0724	7.19	0.13920	0.0628	6.94	0.14406
15×0.8	11.76	0.1207	11.98	0.08350	0.1046	11.57	0.08644
1.0	14.70	0.0966	9.58	0.10437	0.0837	9.26	0.10805
1.2	17.64	0.0805	7.98	0.12524	0.0697	7.71	0.1297
1.5	22.05	0.0644	6.39	0.15656	0.0558	6.17	0.16207
2.0	29.40	0.0483	4.79	0.20874	0.0418	4.63	0.21609
2.5	36.75	0.0386	3.83	0.26093	0.0335	3.70	0.27011
20×0.8	15.68	0.0906	8.98	0.11133	0.0784	8.68	0.11525
1.0	19.60	0.0724	7.19	0.13916	0.0628	6.94	0.14406
1.2	23.52	0.0604	5.99	0.16699	0.0523	5.78	0.17287
1.5	29.40	0.0483	4.79	0.20874	0.0418	4.63	0.21609
2.0	39.20	0.0362	3.59	0.27832	0.0314	3.47	0.28812
2.5	49.00	0.0290	2.87	0.34790	0.0251	2.78	0.36015
3.0	58.80	0.0241	2.40	0.41748	0.0209	2.31	0.43218
25×1.0	24.50	0.0580	5.75	0.17395	0.0502	5.55	0.18008
1.2	29.40	0.0483	4.79	0.20874	0.0418	4.63	0.21609
1.5	36.75	0.0386	3.83	0.26093	0.0335	3.70	0.27011
2.0	49.00	0.0290	2.87	0.34790	0.0251	2.78	0.36015
2.5	61.25	0.0232	2.30	0.43488	0.0201	2.22	0.45019
3.0	73.50	0.0193	1.92	0.52185	0.0167	1.85	0.54023
30×1.0	29.40	0.0483	4.79	0.20874	0.0418	4.63	0.21609
1.5	44.10	0.0322	3.19	0.31311	0.0279	3.09	0.32414
2.0	58.80	0.0241	2.40	0.41748	0.0209	2.31	0.43218
2.5	73.50	0.0193	1.92	0.52185	0.0167	1.85	0.54023
3.0	88.20	0.0161	1.60	0.62622	0.0139	1.54	0.64827
3.5	102.9	0.0138	1.37	0.73059	0.0120	1.32	0.75632
35×1.0	34.30	0.0414	4.11	0.24353	0.0359	3.97	0.25211
1.5	51.45	0.0276	2.74	0.36530	0.0239	2.64	0.37816
2.0	68.60	0.0207	2.05	0.48706	0.0179	1.98	0.50421
2.5	85.75	0.0166	1.64	0.60883	0.0143	1.59	0.63026
3.0	102.9	0.0138	1.37	0.73059	0.0120	1.32	0.75632
3.5	120.1	0.0118	1.17	0.85271	0.0102	1.13	0.88274
40×1.0	39.2	0.0362	3.59	0.27832	0.0314	3.47	0.28812
1.5	58.80	0.0241	2.40	0.41748	0.0209	2.31	0.43218
2.0	78.40	0.0181	1.80	0.55664	0.0157	1.74	0.57624
2.5	98.00	0.0145	1.44	0.69580	0.0126	1.39	0.72030
3.0	117.6	0.0121	1.20	0.83496	0.0105	1.16	0.86436
3.5	137.2	0.0103	1.03	0.97412	0.0090	0.99	1.00842
4.0	156.8	0.0091	0.898	1.11328	0.0078	0.87	1.15248