

## Resistance wire and strip

**Forms of Delivery**

Round bare Wire: Diameter: 0.02-12mm

Enamelled wire: 0.05-1.5mm

Ribbon/Strip: (0.05-3.0mm)x(0.5-250mm)

Stranded wire: (0.03-0.5mm)x(3-1000strands)


**Treatment:**

Annealed, Oxidized/ Acid treated/ bright



Cold-drawing resistance wire			
Diameter mm	Tolerance mm	Diameter mm	Tolerance mm
0.03-0.05	±0.005	>0.50-1.00	±0.02
>0.05-0.10	±0.006	>1.00-3.00	±0.03
>0.10-0.20	±0.008	>3.00-6.00	±0.04
>0.20-0.30	±0.010	>6.00-8.00	±0.05
>0.30-0.50	±0.015	>8.00-12.0	±0.4

Cold-drawing resistance strip			
Thickness mm	Tolerance mm	Width mm	Tolerance mm
0.05-0.10	±0.010	5.00-10.0	±0.2
>0.10-0.20	±0.015	>10.0-20.0	±0.2
>0.20-0.50	±0.020	>20.0-30.0	±0.2
>0.50-1.00	±0.030	>30.0-50.0	±0.3
>1.00-1.80	±0.040	>50.0-90.0	±0.3
>1.80-2.50	±0.050	>90.0-120.0	±0.5
>2.50-3.50	±0.060	>120.0-250.0	±0.6



Alloy material	Chemical composition %									
	C	P	S	Mn	Si	Cr	Ni	Al	Fe	others
	Max(≤)									
Cr20Ni80	0.08	0.02	0.015	0.6	0.75~1.60	20.0~23.0	Rest	≤0.50	≤1.0	—
Cr30Ni70	0.08	0.02	0.015	0.6	0.75~1.60	28.0~31.0	Rest	≤0.50	≤1.0	—
Cr15Ni60	0.08	0.02	0.015	0.6	0.75~1.60	15.0~17.0	55.0~61.0	≤0.50	Rest	—
Cr20Ni35	0.08	0.02	0.015	1	1.00~3.00	18.0~21.0	34.5~36.0	—	Rest	—
Cr20Ni30	0.08	0.02	0.015	1	1.00~2.00	18.0~21.0	30.0~31.5	—	Rest	—
1Cr13Al4	0.12	0.025	0.025	0.7	≤1.00	12.5~15.0	—	3.5~4.5	Rest	—
0Cr15Al5	0.12	0.025	0.025	0.7	≤1.00	14.5~15.5	—	4.5~5.3	Rest	—
0Cr25Al5	0.06	0.025	0.025	0.7	≤0.60	23.0~26.0	≤0.60	4.5~6.5	Rest	—
0Cr23Al5	0.06	0.025	0.025	0.7	≤0.60	20.5~23.5	≤0.60	4.2~5.3	Rest	—
0Cr21Al6	0.06	0.025	0.025	0.7	≤1.00	19.0~22.0	≤0.60	5.0~7.0	Rest	—
1Cr20Al3	0.06	0.025	0.025	0.7	≤1.00	18.0~21.0	≤0.60	3.0~4.2	Rest	—
0Cr21Al6Nb	0.05	0.025	0.025	0.7	≤0.60	21.0~23.0	≤0.60	5.0~7.0	Rest	Nb add 0.5
0Cr27Al7Mo2	0.05	0.025	0.025	0.2	≤0.40	26.5~27.8	≤0.60	6.0~7.0	Rest	Mo add 2.0

## Resistance wire and strip

Alloy Type	Diameter (mm)	Resistivity ( $\mu\Omega\text{m}$ )(20°C)	Density (g/cm <sup>3</sup> )	Tensile Strength N/mm <sup>2</sup>	Elongation (%)	Bending (times)	Max continuous service temp (°C)	Working life (hours)
Cr20Ni80	< 0.50	1.09±0.05	8.4	850-950	> 20	> 9	1200	> 20000
	0.50 ~ 3.0	1.13±0.05	8.4	850-950	> 20	> 9	1200	> 20000
	> 3.00	1.14±0.05	8.4	850-950	> 20	> 9	1200	> 20000
Cr30Ni70	< 0.50	1.18±0.05	8.1	850-950	> 20	> 9	1250	> 20000
	≥ 0.50	1.20±0.05	8.1	850-950	> 20	> 9	1250	> 20000
Cr15Ni60	< 0.50	1.12±0.05	8.2	850-950	> 20	> 9	1125	> 20000
	≥ 0.50	1.15±0.05	8.2	850-950	> 20	> 9	1125	> 20000
Cr20Ni35	< 0.50	1.04±0.05	7.9	850-950	> 20	> 9	1100	> 18000
	≥ 0.50	1.06±0.05	7.9	850-950	> 20	> 9	1100	> 18000
1Cr13Al4	0.06 ~ 12.0	1.25±0.08	7.4	588-735	> 16	> 6	950	> 10000
0Cr15Al5		1.25±0.08	7.4	588-735	> 16	> 6	1000	> 10000
0Cr25Al5		1.42±0.07	7.1	634-784	> 12	> 5	1300	> 8000
0Cr23Al5		1.35±0.06	7.25	634-784	> 12	> 5	1250	> 8000
0Cr21Al6		1.42±0.07	7.1	634-784	> 12	> 5	1300	> 8000
1Cr20Al3		1.23±0.06	7.35	634-784	> 12	> 5	1100	> 8000
0Cr21Al6Nb		1.45±0.07	7.1	634-784	> 12	> 5	1350	> 8000
0Cr27Al7Mo2		0.06 ~ 12.0	1.53±0.07	7.1	686-784	> 12	> 5	1400

Alloy Type	Chemical composition %							Density g/cm <sup>3</sup>	Melting Point °C	Resistivity ( $\mu\Omega\text{m}$ )(20°C)	Tensile Strength N/mm <sup>2</sup>	Elongation (%)	Max continuous service temp (°C)
	Cu	Mn	Ni	Cr	Al	Fe							
(Cu-Ni alloy)	CuNi44	Rest	1.0	44	-	-	-	8.9	1280	0.49	≥ 400	≥20	450-700
	CuNi40	Rest	1.0	40	-	-	-	8.9	1280	0.48±0.03	≥ 400	≥20	450-700
	CuNi34	Rest	1.0	34	-	-	-	8.9	1180	0.40	≥ 400	≥20	350-600
	CuNi30	Rest	1.0	30	-	-	-	8.9	1170	0.35	≥ 400	≥20	350-600
	CuNi23	Rest	0.5	23	-	-	-	8.9	1150	0.30	≥ 350	≥20	300-450
	CuNi19	Rest	0.5	19	-	-	-	8.9	1135	0.25	≥ 340	≥20	300-450
	CuNi15	Rest	0.3	14.5	-	-	-	8.9	1115	0.20	≥ 310	≥20	300-400
	CuNi10	Rest	-	10	-	-	-	8.9	1100	0.15	≥ 290	≥20	250-350
	CuNi8	Rest	-	8	-	-	-	8.9	1097	0.12	≥ 270	≥20	250-350
	CuNi6	Rest	-	6	-	-	-	8.9	1095	0.10	≥ 251	≥18	200-300
	CuNi2	Rest	-	2	-	-	-	8.9	1090	0.05	≥ 220	≥18	200-300
	CuNi1	Rest	-	1	-	-	-	8.9	1085	0.03	≥ 210	≥18	200-300
Karma	-	-	Rest	19-22	2.5-3.2	2-3	8.1	1400	1.33±0.07	950	10-20	-60-300	
Manganin (Cu-Mn alloy)	CuMn12	Rest	11-13	2-3	-	-	-	8.4	960	0.47±0.03	490-539	10-30	50
	CuMn13	Rest	11-13	-	-	-	-	8.4	960	0.44±0.04	490-539	10-30	80
	CuMn8	Rest	8-10	2-5	-	-	-	8.7	960	0.35±0.05	490-539	10-30	80

Resistance wire and strip

Diameter	Cross section	Cr20Ni80		Cr30Ni70		Cr15Ni60		Cr20Ni35	
		kg/km	$\Omega/m, 20^{\circ}C$	kg/km	$\Omega/m, 20^{\circ}C$	kg/km	$\Omega/m, 20^{\circ}C$	kg/km	$\Omega/m, 20^{\circ}C$
0.03	0.00071	0.006	1542.82	0.006	1670.21	0.006	1585.28	0.006	1472.05
0.04	0.00126	0.011	867.83	0.010	939.49	0.010	891.72	0.010	828.03
0.05	0.00196	0.016	555.41	0.016	601.27	0.016	570.70	0.016	529.94
0.06	0.00283	0.024	385.70	0.023	417.55	0.023	396.32	0.022	368.01
0.07	0.00385	0.032	283.37	0.031	306.77	0.032	291.17	0.030	270.38
0.08	0.00502	0.042	216.96	0.041	234.87	0.041	222.93	0.040	207.01
0.09	0.00636	0.053	171.42	0.052	185.58	0.052	176.14	0.050	163.56
0.10	0.00785	0.066	138.85	0.064	150.32	0.064	142.68	0.062	132.48
0.15	0.01766	0.148	61.71	0.143	66.81	0.145	63.41	0.140	58.88
0.20	0.03140	0.264	34.71	0.254	37.58	0.257	35.67	0.248	33.12
0.25	0.04906	0.412	22.22	0.397	24.05	0.402	22.83	0.388	21.20
0.30	0.07065	0.593	15.43	0.572	16.70	0.579	15.85	0.558	14.72
0.35	0.09616	0.808	11.3350	0.779	12.2709	0.789	11.6470	0.760	10.8150
0.40	0.12560	1.055	8.6783	1.017	9.3949	1.030	8.9172	0.992	8.2803
0.45	0.15896	1.335	6.8570	1.288	7.4231	1.303	7.0457	1.256	6.5424
0.50	0.19625	1.649	5.7070	1.590	6.0127	1.609	5.7580	1.550	5.4013
0.55	0.23746	1.995	4.7165	1.923	5.0534	1.947	4.7586	1.876	4.3796
0.60	0.28260	2.37	3.9632	2.29	4.2463	2.32	3.9986	2.23	3.6801
0.65	0.33166	2.79	3.3769	2.69	3.6181	2.72	3.4071	2.62	3.1357
0.70	0.38465	3.23	2.9117	3.12	3.1197	3.15	2.9377	3.04	2.7038
0.75	0.44156	3.71	2.5364	3.58	2.7176	3.62	2.5591	3.49	2.3553
0.80	0.50240	4.22	2.2293	4.07	2.3885	4.12	2.2492	3.97	2.0701
0.85	0.56716	4.76	1.9747	4.59	2.1158	4.65	1.9924	4.48	1.8337
0.90	0.63585	5.34	1.7614	5.15	1.8872	5.21	1.7771	5.02	1.6356
0.95	0.70846	5.95	1.5809	5.74	1.6938	5.81	1.5950	5.60	1.4680
1.00	0.78500	6.59	1.4268	6.36	1.5287	6.44	1.4395	6.20	1.3248
1.20	1.13040	9.50	0.9908	9.16	1.0616	9.27	0.9996	8.93	0.9200
1.40	1.53860	12.92	0.7279	12.46	0.7799	12.62	0.7344	12.15	0.6759
1.60	2.00960	16.88	0.5573	16.28	0.5971	16.48	0.5623	15.88	0.5175
1.80	2.54340	21.36	0.4404	20.60	0.4718	20.86	0.4443	20.09	0.4089
2.00	3.14000	26.38	0.3567	25.43	0.3822	25.75	0.3599	24.81	0.3312
2.20	3.79940	31.91	0.2948	30.78	0.3158	31.16	0.2974	30.02	0.2737
2.40	4.52160	37.98	0.2477	36.62	0.2654	37.08	0.2499	35.72	0.2300
2.60	5.30660	44.58	0.2111	42.98	0.2261	43.51	0.2129	41.92	0.1960
2.80	6.15440	51.70	0.1820	49.85	0.1950	50.47	0.1836	48.62	0.1690
3.00	7.06500	59.35	0.1585	57.23	0.1699	57.93	0.1599	55.81	0.1472
3.20	8.03840	67.52	0.1418	65.11	0.1493	65.91	0.1406	63.50	0.1294
3.50	9.61625	80.78	0.1185	77.89	0.1248	78.85	0.1175	75.97	0.1082
4.00	12.56000	105.50	0.0908	101.74	0.0955	102.99	0.0900	99.22	0.0828
4.50	15.89625	133.53	0.0717	128.76	0.0755	130.35	0.0711	125.58	0.0654
5.00	19.62500	164.85	0.0581	158.96	0.0611	160.93	0.0576	155.04	0.0530
5.50	23.74625	199.47	0.0480	192.34	0.0505	194.72	0.0476	187.60	0.0438
6.00	28.26000	237.38	0.0403	228.91	0.0425	231.73	0.0400	223.25	0.0368
6.50	33.16625	278.60	0.0344	268.65	0.0362	271.96	0.0341	262.01	0.0314
7.00	38.46500	323.11	0.0296	311.57	0.0312	315.41	0.0294	303.87	0.0270
8.00	50.24000	422.02	0.0227	406.94	0.0239	411.97	0.0225	396.90	0.0207



### Resistance wire and strip

Diameter	Cross section	1Cr13AL4		0Cr25AL5		0Cr21AL6		0Cr21AL6Nb		0Cr27AL7Mo2	
		mm	mm <sup>2</sup>	kg/km	Ω/m,20°C	kg/km	Ω/m,20°C	kg/km	Ω/m,20°C	kg/km	Ω/m,20°C
0.06	0.00283	0.021	442.32	0.020	502.48	0.020	502.48	0.020	513.09	0.020	541.40
0.07	0.0038	0.0285	324.97	0.0273	369.17	0.0275	369.17	0.0273	376.97	0.0273	397.76
0.08	0.0050	0.0372	248.81	0.0357	282.64	0.0360	282.64	0.0357	288.61	0.0357	304.54
0.09	0.0064	0.0471	196.59	0.0451	223.32	0.0455	223.32	0.0451	228.04	0.0451	240.62
0.10	0.00785	0.058	159.24	0.056	180.89	0.056	180.89	0.056	184.71	0.056	194.90
0.15	0.01766	0.131	70.77	0.125	80.40	0.126	80.40	0.125	82.09	0.125	86.62
0.20	0.03140	0.232	39.81	0.223	45.22	0.225	45.22	0.223	46.18	0.223	48.73
0.25	0.04906	0.363	25.48	0.348	28.94	0.351	28.94	0.348	29.55	0.348	31.18
0.30	0.07065	0.523	17.69	0.502	20.10	0.506	20.10	0.502	20.52	0.502	21.66
0.35	0.09616	0.712	13.00	0.683	14.77	0.689	14.77	0.683	15.08	0.683	15.91
0.40	0.12560	0.929	9.95	0.892	11.31	0.899	11.31	0.892	11.54	0.892	12.18
0.45	0.15896	1.176	7.8635	1.129	8.9329	1.138	8.9329	1.129	9.1216	1.129	9.6249
0.50	0.19625	1.452	6.3694	1.393	7.2357	1.405	7.2357	1.393	7.3885	1.393	7.7962
0.55	0.23746	1.757	5.2640	1.686	5.9799	1.700	5.9799	1.686	6.1062	1.686	6.4431
0.60	0.28260	2.09	4.4232	2.01	5.0248	2.02	5.0248	2.01	5.1309	2.01	5.4140
0.65	0.33166	2.45	3.7689	2.35	4.2815	2.37	4.2815	2.35	4.3719	2.35	4.6131
0.70	0.38465	2.85	3.2497	2.73	3.6917	2.75	3.6917	2.73	3.7697	2.73	3.9776
0.75	0.44156	3.27	2.8309	3.14	3.2159	3.16	3.2159	3.14	3.2838	3.14	3.4650
0.80	0.50240	3.72	2.4881	3.57	2.8264	3.60	2.8264	3.57	2.8861	3.57	3.0454
0.85	0.56716	4.20	2.2040	4.03	2.5037	4.06	2.5037	4.03	2.5566	4.03	2.6976
0.90	0.63585	4.71	1.9659	4.51	2.2332	4.55	2.2332	4.51	2.2804	4.51	2.4062
0.95	0.70846	5.24	1.7644	5.03	2.0043	5.07	2.0043	5.03	2.0467	5.03	2.1596
1.00	0.78500	5.81	1.5924	5.57	1.8089	5.62	1.8089	5.57	1.8471	5.57	1.9490
1.20	1.13040	8.36	1.1058	8.03	1.2562	8.09	1.2562	8.03	1.2827	8.03	1.3535
1.40	1.53860	11.39	0.8124	10.92	0.9229	11.02	0.9229	10.92	0.9424	10.92	0.9944
1.60	2.00960	14.87	0.6220	14.27	0.7066	14.39	0.7066	14.27	0.7215	14.27	0.7613
1.80	2.54340	18.82	0.4915	18.06	0.5583	18.21	0.5583	18.06	0.5701	18.06	0.6016
2.00	3.14000	23.24	0.3981	22.29	0.4522	22.48	0.4522	22.29	0.4618	22.29	0.4873
2.20	3.79940	28.12	0.3290	26.98	0.3737	27.20	0.3737	26.98	0.3816	26.98	0.4027
2.40	4.52160	33.46	0.2765	32.10	0.3140	32.37	0.3140	32.10	0.3207	32.10	0.3384
2.60	5.30660	39.27	0.2356	37.68	0.2676	38.00	0.2676	37.68	0.2732	37.68	0.2883
2.80	6.15440	45.54	0.2031	43.70	0.2307	44.07	0.2307	43.70	0.2356	43.70	0.2486
3.00	7.06500	52.28	0.1769	50.16	0.2010	50.59	0.2010	50.16	0.2052	50.16	0.2166
3.20	8.03840	59.48	0.1555	57.07	0.1767	57.55	0.1767	57.07	0.1804	57.07	0.1903
3.50	9.61625	71.16	0.1300	68.28	0.1477	68.85	0.1477	68.28	0.1508	68.28	0.1591
4.00	12.56000	92.94	0.0995	89.18	0.1131	89.93	0.1131	89.18	0.1154	89.18	0.1218
4.50	15.89625	117.63	0.0786	112.86	0.0893	113.82	0.0893	112.86	0.0912	112.86	0.0962
5.00	19.62500	145.23	0.0637	139.34	0.0724	140.52	0.0724	139.34	0.0739	139.34	0.0780
5.50	23.74625	175.72	0.0526	168.60	0.0598	170.02	0.0598	168.60	0.0611	168.60	0.0644
6.00	28.26000	209.12	0.0442	200.65	0.0502	202.34	0.0502	200.65	0.0513	200.65	0.0541
6.50	33.16625	245.43	0.0377	235.48	0.0428	237.47	0.0428	235.48	0.0437	235.48	0.0461
7.00	38.46500	284.64	0.0325	273.10	0.0369	275.41	0.0369	273.10	0.0377	273.10	0.0398
8.00	50.24000	371.78	0.0249	356.70	0.0283	359.72	0.0283	356.70	0.0289	356.70	0.0305