
CN5 (CuNi2)

Copper Nickel No 5

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Alloys : CN5 (CuNi2 Copper Nickel)

[JIS C 2532]

Heat and oxidation resistance equal to or higher than that of electrical copper materials.
It is non-magnetic and has better workability than electrical copper.
Used in road heaters, floor heaters, electrical fuses, etc.

JIS	JIS Code	Electrical Resistivity [$\mu\Omega\text{m}$]	Average TCR [$\times 10^{-6}/^{\circ}\text{C}$]
GCN5	C 2532	0.05 \pm 0.0075	* 1300

(*)Reference value

Thermal Expansion Coefficient $\times 10^{-6}/$	Density g/cm ³ (20 $^{\circ}\text{C}$)	Melting Point $^{\circ}\text{C}$	Max Operating Temperature $^{\circ}\text{C}$
17.5	8.90	1080	200

Chemical Composition	Mn	Ni	Cu+Ni+Mn
(%)	≤ 1.0	0.5~3	≥ 99

Alloys	Type	Diameter (mm)	
CN5W	Wire	$\phi 6.00 \sim 0.06$	
CN5R	Ribbon	$t=2.90 \sim 0.05$	$w=40 \sim 0.4$ (Depends on thickness)
CN5P	Plate	Please consult	
CN5	Foil	Please consult	

CN5 (CuNi2 Copper Nickel)

Resistance·Length·Weight

Wire

Electrical Resistivity (23°CμΩm) 0.05±0.0075

Diameter (mm)	Tolerance (mm)	Cross section (mm ²)	Resistance Tolerance (%)	DC Resistance (Ω/m)	Length (m/Kg)	Weight (g/m)
6.00	±0.080	28.27	±5	0.00177	3.97	252
5.50	±0.080	23.76	±5	0.00210	4.73	211
5.00	±0.080	19.64	±5	0.00255	5.72	175
4.50	±0.080	15.90	±5	0.00314	7.06	142
4.00	±0.080	12.57	±5	0.00398	8.94	112
3.50	±0.080	9.621	±5	0.00520	11.7	85.6
3.20	±0.060	8.042	±5	0.00622	14.0	71.6
2.90	±0.060	6.605	±5	0.00757	17.0	58.8
2.60	±0.060	5.309	±5	0.00942	21.2	47.3
2.30	±0.050	4.155	±5	0.0120	27.0	37.0
2.00	±0.050	3.142	±5	0.0159	35.8	28.0
1.80	±0.050	2.545	±5	0.0196	44.2	22.6
1.60	±0.040	2.011	±5	0.0249	55.9	17.9
1.50	±0.040	1.767	±5	0.0283	63.6	15.7
1.40	±0.040	1.539	±5	0.0325	73.0	13.7
1.30	±0.040	1.327	±5	0.0377	84.7	11.8
1.20	±0.040	1.131	±5	0.0442	99.3	10.1
1.10	±0.030	0.9503	±6	0.0526	118	8.46
1.00	±0.030	0.7854	±6	0.0637	143	6.99
0.90	±0.030	0.6362	±6	0.0786	177	5.66
0.85	±0.030	0.5675	±6	0.0881	198	5.05
0.80	±0.030	0.5027	±6	0.0995	224	4.47
0.75	±0.025	0.4418	±6	0.113	254	3.93
0.70	±0.025	0.3848	±6	0.130	292	3.43
0.65	±0.025	0.3318	±6	0.151	339	2.95
0.60	±0.025	0.2827	±6	0.177	397	2.52
0.55	±0.020	0.2376	±7	0.210	473	2.11
0.50	±0.020	0.1964	±7	0.255	572	1.75
0.45	±0.020	0.1590	±7	0.314	706	1.42
0.40	±0.015	0.1257	±7	0.398	894	1.12
0.35	±0.015	0.09621	±7	0.520	1168	0.856
0.32	±0.015	0.08042	±7	0.622	1397	0.716
0.29	±0.012	0.06605	±7	0.757	1701	0.588
0.26	±0.012	0.05309	±8	0.942	2116	0.473
0.23	±0.012	0.04155	±8	1.20	2704	0.370
0.20	±0.010	0.03142	±8	1.59	3577	0.280
0.18	±0.010	0.02545	±8	1.96	4415	0.226
0.16	±0.010	0.02011	±8	2.49	5588	0.179
0.15	±0.008	0.01767	±8	2.83	6358	0.157
0.14	±0.008	0.01539	±8	3.25	7299	0.137
0.13	±0.008	0.01327	±9	3.77	8465	0.118
0.12	±0.008	0.01131	±9	4.42	9935	0.101
0.11	±0.006	0.009503	±9	5.26	11823	0.0846
0.10	±0.006	0.007854	±9	6.37	14306	0.0699
0.09	±0.005	0.006362	±10	7.86	17662	0.0566
0.08	±0.005	0.005027	±10	9.95	22353	0.0447
0.07	±0.005	0.003848	±10	13.0	29196	0.0343
0.06	±0.004	0.002827	±11	17.7	39739	0.0252

CN5 (CuNi2 Copper Nickel)

Temperature Current Characteristics · Diameter · Temperature · Current

Wire Electrical Resistivity (23°CμΩm) 0.05±0.0075 [Unit: Ampere]

Diameter (mm)	50 (°C)	100 (°C)	150 (°C)	200 (°C)	250 (°C)	300 (°C)	350 (°C)	400 (°C)
6.00	225	323	584	735	884	1039	1186	1352
5.50	202	371	514	647	777	914	1049	1196
5.00	174	321	446	563	675	794	909	1029
4.50	150	276	382	482	579	682	780	887
4.00	130	241	335	419	502	590	673	762
3.50	108	199	275	346	414	485	555	628
3.20	94.1	173	240	304	363	424	484	551
2.90	81.6	155	210	263	314	368	420	477
2.60	73.1	134	184	232	276	323	370	417
2.30	61.2	112	156	194	232	270	310	348
2.00	50.0	91.7	126	159	189	221	253	285
1.80	45.6	82.9	114	142	170	197	224	254
1.60	38.6	70.3	96.7	121	143	168	190	214
1.50	35.1	63.9	88.0	110	130	153	172	195
1.40	31.9	57.9	79.8	100	119	138	158	176
1.30	30.0	54.6	75.3	94.1	111	129	147	164
1.20	26.7	49.0	66.8	83.6	99.0	115	130	146
1.10	24.5	43.3	59.3	73.8	87.5	102	115	129
1.00	20.8	38.0	51.9	64.9	76.9	89.1	101	114
0.90	17.6	32.3	45.2	55.2	65.4	75.8	85.8	96.2
0.80	16.0	29.4	40.1	50.0	59.1	68.0	77.0	83.8
0.70	13.2	24.4	33.1	41.4	49.1	56.4	63.8	69.5
0.65	11.9	22.0	29.9	37.2	44.1	50.8	57.5	62.5
0.60	11.2	20.8	28.3	35.2	41.6	47.6	53.7	59.5
0.55	10.0	18.4	25.1	31.3	36.8	42.3	47.7	52.7
0.50	8.72	16.3	22.1	27.3	32.3	38.9	41.9	46.3
0.45	7.18	14.0	19.1	23.9	28.1	32.2	36.3	40.2
0.40	6.87	12.7	17.3	21.5	25.3	28.9	32.5	36.1
0.35	5.75	10.7	14.6	17.9	21.3	24.2	27.3	30.3
0.32	5.12	9.50	12.9	16.1	18.9	21.6	24.2	27.0
0.29	4.50	8.34	11.4	14.0	16.6	19.0	21.3	23.5
0.26	4.17	7.69	10.5	12.9	15.2	17.3	19.3	21.5
0.23	3.59	6.59	8.96	11.1	13.0	14.8	16.7	18.3
0.20	2.97	5.46	7.42	9.24	10.8	12.3	13.7	14.7
0.18	2.67	4.93	6.70	8.26	9.67	11.1	12.3	13.9
0.16	2.25	4.18	5.63	7.02	8.46	9.37	10.5	11.8
0.15	2.10	3.88	5.26	6.51	7.60	8.70	9.69	10.9
0.14	1.91	3.53	4.80	5.92	6.92	7.92	8.82	9.90
0.13	1.81	3.30	4.50	5.56	6.49	7.50	8.25	9.08
0.12	1.60	2.96	4.05	4.99	5.82	6.64	7.35	8.15
0.11	1.42	2.65	3.60	4.50	5.17	5.90	6.57	7.23
0.10	1.23	2.28	3.11	3.84	4.49	5.13	5.71	6.31
0.09	1.10	2.03	2.75	3.40	3.98	4.54	5.06	5.56
0.08	0.956	1.77	2.42	2.99	3.46	3.95	4.41	4.78
0.07	0.798	1.48	2.16	2.51	2.85	3.31	3.68	4.04
0.06	0.671	1.24	1.69	1.97	2.41	2.76	3.06	3.37
0.05	0.522	0.674	1.31	1.61	1.88	2.15	2.39	2.63
0.04	0.390	0.727	0.980	1.21	1.41	1.61	1.78	1.97
0.03	0.264	0.492	0.665	0.817	0.958	1.09	1.21	1.33
0.025	0.213	0.394	0.532	0.655	0.766	0.868	0.961	1.06

CN5 (CuNi2 Copper Nickel)

Conductor resistance

Ribbon

Electrical Resistivity (23°CμΩm) 0.05±0.0075

[Unit: Ω/m]

Thickness (mm)	Width mm)													
	40.0	32.0	25.0	20.0	16.0	13.0	10.0	6.5	5.0	3.2	2.4	1.6	0.8	0.4
2.90	0.00044	0.00055	0.00070	0.00088	0.00110	0.00135	0.00176							
2.60	0.00049	0.00061	0.00078	0.00098	0.00123	0.00151	0.00196	0.00308						
2.30	0.00055	0.00069	0.00089	0.00111	0.00139	0.00171	0.00222	0.00348	0.00453					
2.00	0.00064	0.00080	0.00102	0.00128	0.00159	0.00196	0.00255	0.00401	0.00521					
1.80	0.00071	0.00089	0.00113	0.00142	0.00177	0.00218	0.00283	0.00445	0.00579					
1.60	0.00080	0.00100	0.00128	0.00159	0.00199	0.00245	0.00319	0.00501	0.00651					
1.40	0.00091	0.00114	0.00146	0.00182	0.00228	0.00280	0.00364	0.00572	0.00744					
1.20	0.00106	0.00133	0.00170	0.00213	0.00266	0.00327	0.00425	0.0067	0.00868					
1.00	0.00128	0.00159	0.00204	0.00255	0.00319	0.00392	0.00510	0.0080	0.0104					
0.90		0.00177	0.00227	0.00283	0.00354	0.00436	0.00567	0.0089	0.0116	0.0181	0.0241			
0.80		0.00199	0.00255	0.00319	0.00399	0.00491	0.00638	0.0100	0.0130	0.0203	0.0271			
0.70			0.00292	0.00364	0.00456	0.00561	0.00729	0.0114	0.0149	0.0233	0.0310			
0.60			0.00340	0.00425	0.00531	0.00654	0.0085	0.0134	0.0174	0.0271	0.0362			
0.50			0.00408	0.00510	0.00638	0.00785	0.0102	0.0160	0.0208	0.0326	0.0434			
0.45			0.00454	0.00567	0.00709	0.00872	0.0113	0.0178	0.0231	0.0362	0.0482	0.0723		
0.40					0.00797	0.00981	0.0128	0.0200	0.0260	0.0407	0.0543	0.0814		
0.35						0.01120	0.0146	0.0229	0.0298	0.0465	0.0620	0.0930		
0.32						0.01230	0.0159	0.0250	0.0326	0.0509	0.0678	0.102		
0.29							0.0176	0.0276	0.0359	0.0561	0.0748	0.112	0.224	
0.26							0.0196	0.0308	0.0401	0.0626	0.0835	0.125	0.250	0.501
0.23								0.0348	0.0453	0.0708	0.0944	0.142	0.283	0.566
0.20								0.0401	0.0521	0.0814	0.109	0.163	0.326	0.651
0.18								0.0445	0.0579	0.0904	0.121	0.181	0.362	0.723
0.16										0.102	0.136	0.203	0.407	0.814
0.14										0.116	0.155	0.233	0.465	0.930
0.12											0.181	0.271	0.543	1.09
0.10												0.326	0.651	1.30
0.08												0.407	0.814	1.63

*Allowable tolerance of conductor resistance : Width 10mm or more ±7% , Width 10mm or less ±8%

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.