FLYU®

Cr15Ni60 NICHROME RESISTANCE WIRE

DATASHEET

CHANGSHU IPACE INTERNATIONAL CORP

Cr15Ni60 (DIN W.Nr. 2.4867) offers a more economical option for applications below 900°C while maintaining adequate performance with lower precious metal content. It makes cost-effective for mass production. Cr15Ni60 demonstrates excellent resistance stability with minimal variation over temperature ranges. The resistivity at 20°C is approximately 1.12-1.15 μΩ·m, providing consistent heating performance in medium-temperature applications. The 15% chromium content forms a protective Cr_2O_3 oxide layer that provides adequate oxidation resistance up to 900°C. Below this temperature, the alloy maintains stable performance with low oxidation rates. At room temperature, Cr15Ni60 exhibits high plasticity with good cold stamping and drawing capabilities. This facilitates manufacturing of various forms including fine wires, ribbons, and complex-shaped heating elements. The alloy demonstrates excellent weldability with minimal risk of cracking during welding processes. The coefficient of thermal expansion (CTE) is approximately 14.5-16.8×10^{-6}/℃ between 25°C and 800°C, showing good linear variation. This matches well with common ceramic and insulating materials, reducing thermal stress during heating cycles. The elastic modulus of Cr15Ni60 at room temperature is approximately 205 GPa, maintaining good mechanical strength at operating temperatures. This ensures structural integrity during prolonged heating cycles. The alloy exhibits stable microstructure during repeated heating and cooling cycles, extending service life in applications with frequent temperature fluctuations. Cr15Ni60 is suitable for household appliances, industrial heating equipment below 900°C, precision instruments, electrical resistors, and various heating elements where cost-effectiveness is important.

Cr15Ni60 also has the following common names: Chromel C, Nikrothal 60, N6, HAI-NiCr 60, Tophet C, Resistohm 60, Cronifer II, Electroloy, Nichrome, Alloy C, Nikrothal 6, MWS-675, Stablohm 675, 60/15 Nichrome, NiCr 60/15 or NiCr60/16.

CHEMICAL COMPOSITION

C	P	S	Mn	Si	Cr	Ni	Al	Fe
⩽								
0.08	0.02	0.015	0.6	0.75~1.6	15.0~18.0	55.0~61.0	⩽0.5	Remainder

PHYSICAL PROPERTIES

Max. Working Temp.	1150ºC	Resistivity at 20ºC (μΩ·m)	<0.50mm 1.12±0.05 ≥0.50mm 1.15±0.05
Density	8.20 g/cm^3	Thermal conductivity (20ºC)	13 W/(m·K)
Average linear expansion coefficient(20-1000ºC)	17.0×10^{-6}/K	Specific heat capacity	0.46 J/(g·K)
Approx. melting point	1390ºC	Elongation after Fracture (A/%)	Diameter≤3.0mm: ≥20% Diameter>3.0mm: ≥25%

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Tensile strength(R_m /MPa)	≥600	Accelerated life test	≥80h/1150ºC
Micrographic structure	Austenite	Magnetic properties	Weak magnetic

TEMPERATURE FACTOR OF RESISTIVITY

Temp(° C)	100	200	300	400	500	600	700	800	900	1000	1100	1200
Ct	1.011	1.024	1.038	1.052	1.064	1.069	1.073	1.078	1.088	1.095	1.109	-

TECHNICAL PARAMETERS

Diameter (mm)	Ohm per meter (20ºC Ω/m)	Length per kg (m/kg)	Weight per meter (g/m)	Diameter (mm)	Ohm per meter (20ºC Ω/m)	Length per kg (m/kg)	Weight per meter (g/m)
0.05	570.412	62109.30	0.01610	1.1	1.2101	128.32	7.79271
0.06	396.119	43131.46	0.02318	1.2	1.0168	107.83	9.27397
0.07	291.026	31688.42	0.03156	1.3	0.8664	91.88	10.88404
0.08	222.817	24261.44	0.04122	1.4	0.7471	79.22	12.62291
0.09	176.053	19169.54	0.05217	1.5	0.6508	69.01	14.49058
0.1	142.603	15527.32	0.06440	1.6	0.5720	60.65	16.48706
0.11	117.854	12832.50	0.07793	1.7	0.5067	53.73	18.61235
0.12	99.030	10782.86	0.09274	1.8	0.4519	47.92	20.86644
0.13	84.380	9187.77	0.10884	1.9	0.4056	43.01	23.24934
0.15	63.379	6901.03	0.14491	2.0	0.3661	38.82	25.76104
0.17	49.344	5372.78	0.18612	2.2	0.3025	32.08	31.17086
0.19	39.502	4301.20	0.23249	2.4	0.2542	26.96	37.09589
0.21	32.336	3520.94	0.28402	2.6	0.2166	22.97	43.53615
0.25	22.816	2484.37	0.40252	2.8	0.1868	19.81	50.49163
0.27	19.561	2129.95	0.46949	3.0	0.1627	17.25	57.96234
0.29	16.956	1846.29	0.54163	3.2	0.1430	15.16	65.94826
0.31	14.839	1615.75	0.61891	3.4	0.1267	13.43	74.44940
0.35	11.641	1267.54	0.78893	3.6	0.1130	11.98	83.46576
0.40	8.913	970.46	1.03044	3.8	0.1014	10.75	92.99735
0.45	7.042	766.78	1.30415	4.0	0.0915	9.70	103.04415
0.50	5.857	621.09	1.61006	4.5	0.0723	7.67	130.41525

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Diameter (mm)	Ohm per meter (20ºC Ω/m)	Length per kg (m/kg)	Weight per meter (g/m)	Diameter (mm)	Ohm per meter (20ºC Ω/m)	Length per kg (m/kg)	Weight per meter (g/m)
0.55	4.840	513.30	1.94818	5.0	0.0586	6.21	161.00649
0.60	4.067	431.31	2.31849	5.5	0.0484	5.13	194.81785
0.65	3.466	367.51	2.72101	6.0	0.0407	4.31	231.84934
0.70	2.988	316.88	3.15573	6.5	0.0347	3.68	272.10096
0.80	2.288	242.61	4.12177	7.0	0.0299	3.17	315.57272
0.85	2.027	214.91	4.65309	7.5	0.0260	2.76	362.26460
0.90	1.808	191.70	5.21661	8.0	0.0229	2.43	412.17661
0.95	1.622	172.05	5.81233	8.5	0.0203	2.15	465.30875
1.00	1.464	155.27	6.44026	9.0	0.0181	1.92	521.66102

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 Nickel-Chromium-Iron alloy products, such as wires, ribbons and rods in the following sizes**:

Bright and soft annealed finish: 0.025 - 1.6mm; Acid-pickled finish or primary color (dark green): 1.0 -12.0mm; 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