PRODUCT DATASHEET / 2026

NICKEL–CHROMIUM RESISTANCE & HEATING ALLOY · 高铬镍铬耐蚀合金

Cr30Ni70

DIN W.Nr. 2.4658 · Nikrothal 70 · NiCr 70/30

30 % chromium builds a denser Cr_2O_3 layer: higher resistivity and real resistance to acids, sulphur and thermal fatigue.

30% 铬形成更致密的氧化膜——电阻率更高，耐酸、耐硫、抗热疲劳更优。

Cr30Ni70 raises chromium to about 30 %, building a denser and more stable Cr_2O_3 layer than Cr20Ni80. At 1000 °C the oxidation rate is only 0.003 mg/cm²·h, and the alloy holds up in acid (10 % HCl), alkaline and sulphide environments where 80/20 grades corrode.

Resistivity of 1.18–1.20 μΩ·m is higher than Cr20Ni80, so shorter elements deliver the same power. Tensile strength still reaches 480 MPa at 800 °C with 340 MPa yield, and thermal-fatigue behaviour under long cyclic loading is markedly better.

SPECIFICATION 规格

ALLOY TYPE 合金类型
Austenitic Ni–Cr

STRUCTURE 晶体结构
Single-phase austenite

MAGNETIC 磁性
Non-magnetic

STANDARDS 标准
GB/T 1234-2012 · DIN 2.4658

01 CHEMICAL COMPOSITION 化学成份

WT. % · GB/T 1234-2012

C	P	S	Mn	Si	Cr	Ni	Al	Fe
≤0.08	≤0.02	≤0.015	≤0.6	0.75–1.6	28.0–31.0	Remainder	≤0.5	≤1.0

02 PHYSICAL PROPERTIES 物理性能

TYPICAL VALUES

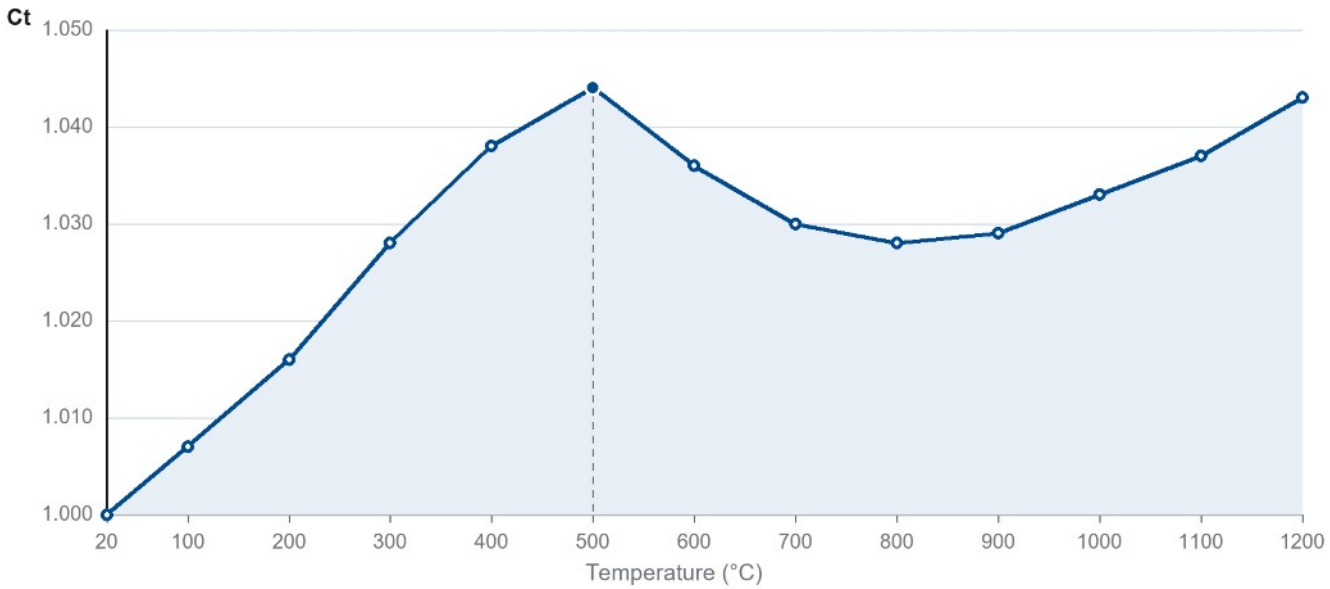
Max. Working Temp.	**1250 °C**	Resistivity at 20 °C (μΩ·m)	**<0.50 mm: 1.18±0.05** **≥0.50 mm: 1.20±0.05**
Density	**8.10 g/cm³**	Thermal conductivity (20 °C)	**14 W/(m·K)**
Average linear expansion coefficient (20-1000 °C)	**17.0×10⁻⁶/K**	Specific heat capacity	**0.46 J/(g·K)**
Approx. melting point	**1380 °C**	Elongation after Fracture (A/%)	**Ø≤3.0 mm: ≥20%** **Ø>3.0 mm: ≥25%**
Tensile strength (Rm /MPa)	**≥650**	Accelerated life test	**≥50 h/1250 °C**
Micrographic structure	**Austenite**	Magnetic properties	**Nonmagnetic**

03 TEMPERATURE BEHAVIOUR 温度特性

CT · GB/T 1234-2012

Resistance rises predictably with temperature

Ct is the factor by which the 20 °C resistance is multiplied at a given temperature. Standards publish it as a table; plotted here, intermediate values can be read at a glance.



Where the curve is used: $R(T) = R_{20} \times Ct$. From 100 to 1200 °C the factor ranges from 1.007 to 1.044 (+0.7 % to +4.4 %); at constant voltage the power at temperature is P_{20} / Ct.

04 CT BY TEMPERATURE 温度系数表

°C · FACTOR

°C	20	100	200	300	400	500	600	700	800	900	1000	1100	1200
Ct	1.000	1.007	1.016	1.028	1.038	1.044	1.036	1.03	1.028	1.029	1.033	1.037	1.043

05 PERFORMANCE 性能要点

VERIFIED DATA

Oxidation

0.003 mg/cm²·h at 1000 °C — a denser Cr_2O_3 layer than 80/20 grades.

Corrosion

Acid (10 % HCl), alkaline and sulphide environments.

Resistivity

1.18–1.20 μΩ·m allows compact element designs.

Hot strength

480 MPa at 800 °C, yield strength 340 MPa.

06 APPLICATIONS 应用领域

SERVICE-PROVEN SECTORS

Aerospace and automotive
high-reliability heating

Chemical and energy plant
corrosive high-temperature duty

Heat exchangers
power-plant service

Thermocouples
high-temperature sensing

Premium furnaces
periodic heat treatment below 1050 °C

TRADE NAMES · 商品牌号

Nikrothal 70 · Chromel 70/30 · N7 · Hytemco · HAI-NiCr 70 · Balco · Tophet 30 · Resistohm 70 · Cronix 70 · Stablohm 710 · 70/30 Nichrome · NiCr 70/30

Several names above are registered trademarks of their respective owners; they are given for cross-reference only.

07 TECHNICAL PARAMETERS 技术参数

GB/T 1234-2012

Metric wire table: resistance, length and mass

Diameter (mm)	Ω/m at 20 °C	m per kg	g per m	Diameter (mm)	Ω/m at 20 °C	m per kg	g per m
0.05	600.970	62876.08	0.01590	**1.1**	1.2627	129.91	7.69768
0.06	417.340	43663.94	0.02290	**1.2**	1.0610	109.16	9.16088
0.07	306.617	32079.63	0.03117	**1.3**	0.9041	93.01	10.75131
0.08	234.754	24560.97	0.04072	**1.4**	0.7795	80.20	12.46897
0.09	185.484	19406.20	0.05153	**1.5**	0.6791	69.86	14.31387
0.1	150.242	15719.02	0.06362	**1.6**	0.5968	61.40	16.28600
0.11	124.167	12990.93	0.07698	**1.7**	0.5287	54.39	18.38537
0.12	104.335	10915.99	0.09161	**1.8**	0.4716	48.52	20.61197
0.13	88.901	9301.20	0.10751	**1.9**	0.4232	43.54	22.96581
0.15	66.774	6986.23	0.14314	**2.0**	0.3820	39.30	25.44688
0.17	51.987	5439.11	0.18385	**2.2**	0.3157	32.48	30.79072
0.19	41.618	4354.30	0.22966	**2.4**	0.2653	27.29	36.64351
0.21	34.069	3564.40	0.28055	**2.6**	0.2260	23.25	43.00523
0.25	24.039	2515.04	0.39761	**2.8**	0.1949	20.05	49.87588
0.27	20.609	2156.24	0.46377	**3.0**	0.1698	17.47	57.25548
0.29	17.865	1869.09	0.53502	**3.2**	0.1492	15.35	65.14401
0.31	15.634	1635.69	0.61136	**3.4**	0.1322	13.60	73.54148
0.35	12.265	1283.19	0.77931	**3.6**	0.1179	12.13	82.44789
0.40	9.390	982.44	1.01788	**3.8**	0.1058	10.89	91.86323
0.45	7.419	776.25	1.28825	**4.0**	0.0955	9.82	101.78752
0.50	6.112	628.76	1.59043	**4.5**	0.0755	7.76	128.82482
0.55	5.051	519.64	1.92442	**5.0**	0.0611	6.29	159.04299
0.60	4.244	436.64	2.29022	**5.5**	0.0505	5.20	192.44202
0.65	3.616	372.05	2.68783	**6.0**	0.0424	4.37	229.02191
0.70	3.118	320.80	3.11724	**6.5**	0.0362	3.72	268.78266
0.80	2.387	245.61	4.07150	**7.0**	0.0312	3.21	311.72427
0.85	2.115	217.56	4.59634	**7.5**	0.0272	2.79	357.84674
0.90	1.886	194.06	5.15299	**8.0**	0.0239	2.46	407.15006
0.95	1.693	174.17	5.74145	**8.5**	0.0211	2.18	459.63425
1.00	1.528	157.19	6.36172	**9.0**	0.0189	1.94	515.29930

Resistance tolerance 0.03–0.06 mm ±10 % · 0.07–0.12 mm ±8 % · 0.13–0.17 mm ±7 % · 0.18–0.32 mm ±6 % · above 0.32 mm ±5 %.

08 SUPPLY FORMS 供货规格

OTHER SIZES ON REQUEST

WIRE
0.025–1.6 mm
Bright, soft annealed

WIRE
1.0–12.0 mm
Acid-pickled / primary colour

ROD
6.0–150.0 mm
Drawn and annealed

FLAT WIRE
0.2–6.0 × 0.08–1.0 mm
Width × thickness

RIBBON
5.0–300 × 0.05–4.0 mm
Width × thickness

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Founded 1990 · formerly Danyang Resistance Wire Factory · ISO 9001:2015 · 1,500 t per year · about half exported