CERAFIL®

MINIATURE CERAMIC INSULATION CONDUCTOR WIRE FOR VERY HIGH TEMPERATURES

-90°C TO +500°C, PEAK +1 000°C

WEIGHING FAR LESS
MINIATURE SIZE
VERY HIGH TEMPERATURES

CERAFIL®

Ceramic insulation conductor wire for very high temperatures designed for highly-technical markets such as the aerospace, space and nuclear industries to:

- ✔ **Special winding of motors or sensors** operating at very low voltages in extreme use conditions over +500°C
- ✔ **Safety components** capable of withstanding a thermal incident
- ✔ **Measuring temperature** in a confined environment subject to extreme heat

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PRODUCT DESCRIPTION

Conductor	Copper/Nickel support
Diameter range	Ø = 0.07 mm to 1 mm
Insulation	Ceramic 5 to 20 µm thick
Nickel migration	At temperature > 315°C after prolonged use, the **CERAFIL®** can be subject to nickel migration that may cause an increase in its max. resistivity*

ELECTRICAL CHARACTERISTICS

Test voltage (1 min)	150 V AC/212 V DC
Max. resistivity (ρ) at 20°C	3 µΩ.cm
Max. resistivity (ρ) depending on the temperature (t)	Linear/temperature change ρ(t) = ρ(20°C) + 0.0109*t
* Max. resistivity (ρ) at 500°C	8.45 µΩ.cm initially 8.70 µΩ.cm after 3 000 h 9.04 µΩ.cm after 20 000 h
Insulation resistance	75 000 MΩ.m at 25°C 22 MΩ.m at 800°C

THERMAL CHARACTERISTICS

Operating temperature	-90°C at +500°C (in continuous operation)
Peak temperature	+800°C for 240 h minimum +1 000°C

FIRE RESISTANCE

Totally non-combustible: at temperature > 1 000°C the **CERAFIL®** may melt but cannot ignite

CHEMICAL CHARACTERISTICS

Chemical resistance	Inert to normal and organic solvents
Hydrophilic	Product sensitive to moisture

RADIATION RESISTANCE

Withstands prolonged exposure to neutrons and gamma rays without altering the mechanical resistance of the insulating material. Contact us.

MECHANICAL CHARACTERISTICS

Minimum bending radius	5 x external diameter of the **CERAFIL®**
Breaking load	23.9 daN/mm²

VACUUM RESISTANCE

No outgassing

A FEW USE PRECAUTIONS

Ceramic is very different from traditional insulating materials. This material is rigid and hydrophilic and therefore special care must be taken when using it.
CERAFIL® must be stored in a dry environment and must be handled with care, with no mechanical abuse (folding, pulling, etc.). It must be stripped using fine grain sandpaper.
Please contact us if you need further information.

CERAFIL®, a ceramic insulation conductor wire for very high temperatures, is the result of several years of research in our laboratory. Our team of engineers has developed an innovative technology that deposits ceramic on a very small diameter conductor wire (from 0.07 mm). This very high temperature miniature wire has been designed to constitute extremely reliable windings capable of withstanding any thermal overloads (mechanical heating, short-circuit, location with thermal risk, etc.).

These outstanding advantages - miniature size, weighing far less and extreme temperature resistance - mean that the **CERAFIL®** is nowadays used in many highly technical applications and research projects in such areas as the aerospace, space and nuclear industries.

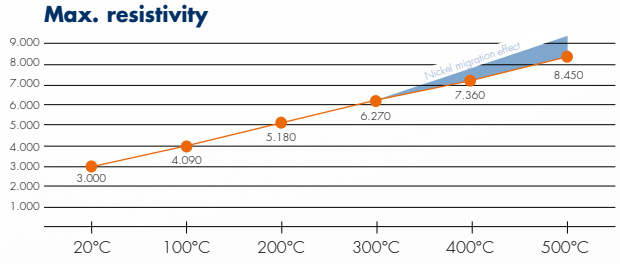
We also produce on request thermocouple cables with **CERAFIL®** ceramic insulation to measure temperatures in a confined environment subject to extreme heat.

CONSTRUCTION AND MAIN PROPERTIES OF THE CERAFIL®

Conductor diameter (mm)	AWG	Nominal outer diameter (mm)	Tolerance (mm)	Linear weight (g/km)	Length (m/kg)	Maximum tensile strength (N)	Min. bending radius (mm)	Max. linear resistance at 20°C (Ω/m)
07/100	41	0.088	+/- 0.002	34	29 800	0.23	0.45	7.795
10/100	38	0.115	+/- 0.005	71	14 000	0.47	0.6	3.818
12/100	36	0.138	+/- 0.002	101	9 901	0.67	0.7	2.652
15/100	34	0.168	+/- 0.002	161	6 210	1.06	0.85	1.697
17/100	34	0.188	+/- 0.002	202	4 950	1.36	0.93	1.322
20/100	32	0.218	+/- 0.002	286	3 500	1.88	1.1	0.954
25/100	30	0.268	+/- 0.002	446	2 240	2.95	1.35	0.611
30/100	28	0.318	+/- 0.002	637	1 570	4.24	1.6	0.424
35/100	27	0.368	+/- 0.002	862	1 160	5.77	1.85	0.312
40/100	26	0.418	+/- 0.002	1 136	880	7.54	2.1	0.239
45/100	25	0.468	+/- 0.002	1 433	698	9.55	2.35	0.189
50/100	24	0.518	+/- 0.002	1 754	570	11.78	2.6	0.153
55/100	23	0.568	+/- 0.002	2 105	475	14.25	2.85	0.126
60/100	22	0.618	+/- 0.002	2 500	400	16.96	3.1	0.106
65/100	22	0.668	+/- 0.002	2 899	345	19.91	3.35	0.09
70/100	21	0.718	+/- 0.002	3 356	298	23.09	3.6	0.078
80/100	20	0.818	+/- 0.002	4 348	230	30.16	4.1	0.059
90/100	19	0.918	+/- 0.002	5 814	172	38.17	4.6	0.047
100/100	18	1.018	+/- 0.002	7 194	139	47.12	5.1	0.038

CHANGES IN THE ELECTRICAL PROPERTIES OF THE CERAFIL® DEPENDING ON THE TEMPERATURE

Temperature (°C)	Max. resistivity (µΩ.cm)
20°C	3.000
100°C	4.090
200°C	5.180
300°C	6.270
400°C	7.360
500°C	8.450



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