



IEC 61515 / ASTM E585 MIMS cable

Mineral-Insulated Thermocouple Cable

MgO-compacted metal-sheathed (MIMS) thermocouple cable up to +1250 °C



IEC 61515 & ASTM E585

Type K, N, J, T, E · Class 1

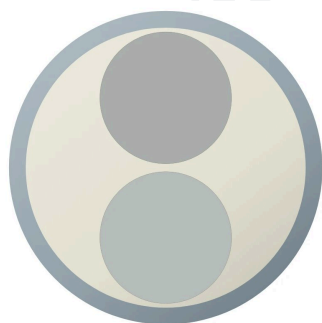
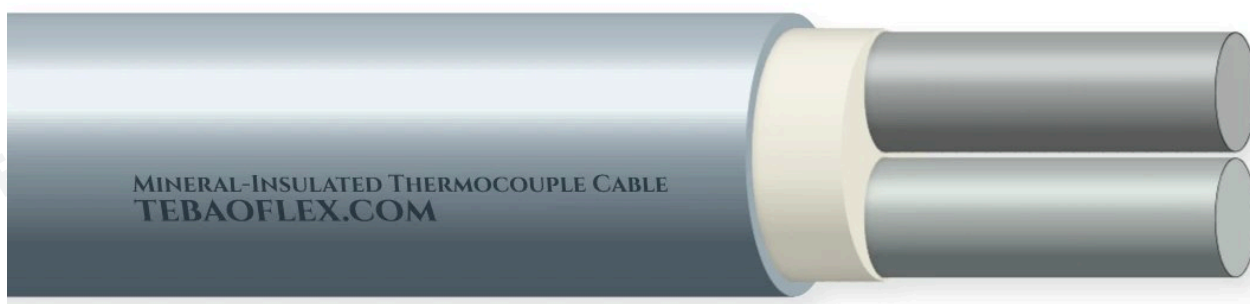
MgO ≥ 99.4 % · Up to +1250 °C

Application

High-integrity Mineral-Insulated Metal-Sheathed (MIMS) thermocouple cable built to IEC 61515 and ASTM E585 with Class 1 Type K, N, J, T or E conductors compacted in high-purity MgO (≥ 99.4 %) inside a seamless Alloy 600, AISI 310, 316L or NiCrSi sheath.

Typical uses: AMS 2750 Aerospace Heat-Treatment & Vacuum Furnaces, Petrochemical Steam Crackers, Reformers & Hydrocrackers, Gas Turbines, Jet Engines & Exhaust Gas Path Testing, Nuclear Reactors, Pressurisers & Superheated Steam, Thermocouple Probe & Sensor OEM Manufacturing

Construction



Cross-section, not to scale

- 1 Solid Class 1 thermocouple alloy conductors
- 2 High-density compacted Magnesium Oxide (MgO)
- 3 Seamless cold-drawn & bright-annealed metallic sheath

Technical data

Typical values

Thermocouple calibrations	Type K, N, J, T, E (IEC 60584-1 Class 1 standard; Class 2 optional)	Conductor configurations	Simplex (1P / 2-wire), Duplex (2P / 4-wire), Triplex (3P / 6-wire)
Insulation resistance @ 20 °C	≥ 1,000 MΩ·m (1 GΩ·m) at 500 V DC (≥ 100 V DC for OD < 1.5 mm)	Insulation resistance @ +1000 °C	≥ 0.5 MΩ·m (Type K / N high-purity MgO ≥ 99.4 %)
Dielectric withstand voltage	500 V rms AC (1.0–1.5 mm OD) · 1,000 V rms AC (≥ 2.0 mm OD) for 1 min	Alloy 600 (NiCr15Fe / UNS N06600)	Max. continuous +1150 °C (oxidising/inert/vacuum; avoid S > +550 °C)
NiCrSi-type high-temp sheath	Max. continuous +1250 °C (matched thermal expansion & chemistry for Type N)	AISI 310 (25Cr-20Ni / 1.4841)	Max. continuous +1100 °C (resists oxidising & sulphurous combustion gases)
AISI 316L (17Cr-12Ni-2Mo / 1.4404)	Max. continuous +850 °C (chemical, pharma, marine & food service)	Standard outer diameters (OD)	0.50, 1.0, 1.5, 2.0, 3.0, 4.5, 6.0, 8.0 mm (and 1/16" to 1/4")
Nominal sheath wall thickness	10 % to 12 % of cable OD (minimum ≥ 8 % of OD)	Nominal conductor diameter	Simplex: ≈ 17 % of OD · Duplex: ≈ 13 % of OD
Minimum bend radius	2 × OD around mandrel without sheath cracking or IR loss	Standards	IEC 61515, ASTM E585 / E585M & ASTM E608

Sizes

16 standard constructions

Tick the sizes you need and send this page to info@tebaoflex.com or WhatsApp +86 185 9591 3361.

Order designation	Type & poles	Sheath alloy	Sheath OD mm	Wall nom. mm	Wire Ø mm≈	Weight ≈ kg/km	Max. sheath temp.
Type K (NiCr / NiAl) Class 1 — Alloy 600 & AISI 310 Sheath 8 sizes							
☐ MI-K-1P-1.0-A600	Type K · Simplex (2-core)	Alloy 600 (NiCr15Fe)	1.0	0.12	0.17	6.2	+1100 °C
☐ MI-K-1P-1.5-A600	Type K · Simplex (2-core)	Alloy 600 (NiCr15Fe)	1.5	0.18	0.26	13.8	+1100 °C
☐ MI-K-1P-3.0-A600	Type K · Simplex (2-core)	Alloy 600 (NiCr15Fe)	3.0	0.36	0.51	55.0	+1150 °C
☐ MI-K-1P-4.5-A600	Type K · Simplex (2-core)	Alloy 600 (NiCr15Fe)	4.5	0.54	0.77	124.0	+1150 °C
☐ MI-K-1P-6.0-A600	Type K · Simplex (2-core)	Alloy 600 (NiCr15Fe)	6.0	0.72	1.02	220.0	+1150 °C
☐ MI-K-2P-3.0-A600	Type K · Duplex (4-core)	Alloy 600 (NiCr15Fe)	3.0	0.36	0.39	57.0	+1150 °C
☐ MI-K-2P-6.0-A600	Type K · Duplex (4-core)	Alloy 600 (NiCr15Fe)	6.0	0.72	0.78	228.0	+1150 °C
☐ MI-K-1P-6.0-SS310	Type K · Simplex (2-core)	AISI 310 (25Cr-20Ni)	6.0	0.72	1.02	216.0	+1100 °C
Type N (NiCrSi / NiSi) Class 1 — Alloy 600 & NiCrSi Sheath (to +1250 °C) 4 sizes							
☐ MI-N-1P-3.0-A600	Type N · Simplex (2-core)	Alloy 600 (NiCr15Fe)	3.0	0.36	0.51	55.0	+1150 °C
☐ MI-N-1P-4.5-A600	Type N · Simplex (2-core)	Alloy 600 (NiCr15Fe)	4.5	0.54	0.77	124.0	+1200 °C
☐ MI-N-1P-6.0-NiCrSi	Type N · Simplex (2-core)	NiCrSi-type sheath	6.0	0.72	1.02	222.0	+1250 °C
☐ MI-N-2P-6.0-NiCrSi	Type N · Duplex (4-core)	NiCrSi-type sheath	6.0	0.72	0.78	230.0	+1250 °C
Type J, T & E Class 1 — AISI 316L Stainless Steel Sheath 4 sizes							
☐ MI-J-1P-3.0-SS316L	Type J · Simplex (2-core)	AISI 316L Stainless	3.0	0.36	0.51	54.0	+750 °C
☐ MI-J-1P-6.0-SS316L	Type J · Simplex (2-core)	AISI 316L Stainless	6.0	0.72	1.02	215.0	+750 °C
☐ MI-T-1P-3.0-SS316L	Type T · Simplex (2-core)	AISI 316L Stainless	3.0	0.36	0.51	54.0	+400 °C
☐ MI-E-1P-3.0-SS316L	Type E · Simplex (2-core)	AISI 316L Stainless	3.0	0.36	0.51	54.0	+850 °C

– Custom diameters from 0.25 mm to 10.8 mm and heavy-wall (15 % OD) petrochemical grades are manufactured to order.

IEC 60584-1 Class 1 tolerances & sheath selection guide

5 sizes

Thermocouple type	IEC Class 1 tolerance	Recommended sheath alloy	Optimal furnace atmosphere
Type K (NiCr / NiAl)	$\pm 1.5^{\circ}\text{C}$ ($-40\dots+375^{\circ}\text{C}$) or $\pm 0.004\cdot t $ ($+375\dots+1000^{\circ}\text{C}$)	Alloy 600 or AISI 310	Oxidising or inert (avoid sulphur $> +550^{\circ}\text{C}$ on Alloy 600)
Type N (NiCrSi / NiSi)	$\pm 1.5^{\circ}\text{C}$ ($-40\dots+375^{\circ}\text{C}$) or $\pm 0.004\cdot t $ ($+375\dots+1000^{\circ}\text{C}$)	NiCrSi sheath or Alloy 600	High-stability oxidising, vacuum & AMS 2750 pyrometry to $+1250^{\circ}\text{C}$
Type J (Fe / CuNi)	$\pm 1.5^{\circ}\text{C}$ ($-40\dots+375^{\circ}\text{C}$) or $\pm 0.004\cdot t $ ($+375\dots+750^{\circ}\text{C}$)	AISI 316L or AISI 321	Reducing, vacuum, plastics extrusion & inert to $+750^{\circ}\text{C}$
Type T (Cu / CuNi)	$\pm 0.5^{\circ}\text{C}$ ($-40\dots+125^{\circ}\text{C}$) or $\pm 0.004\cdot t $ ($+125\dots+350^{\circ}\text{C}$)	AISI 316L	Cryogenic (-200°C), pharmaceutical autoclaves & food to $+400^{\circ}\text{C}$
Type E (NiCr / CuNi)	$\pm 1.5^{\circ}\text{C}$ ($-40\dots+375^{\circ}\text{C}$) or $\pm 0.004\cdot t $ ($+375\dots+800^{\circ}\text{C}$)	AISI 316L or Alloy 600	High-EMF cryogenic, power generation & oxidising to $+850^{\circ}\text{C}$

– All MIMS coils are delivered hermetically sealed at both ends to prevent hygroscopic MgO moisture absorption during storage.

Standards and approvals

- ✓ IEC 61515 & ASTM E585 Certified
- ✓ IEC 60584-1 Class 1 & AMS 2750 Compliant
- ✓ EN 10204 3.1 Material & Calibration Cert.

Certifications



Management systems: ISO 9001, ISO 14001, ISO 45001

Request a quotation

Send the size, length and destination. An application engineer replies within 2 business hours.

WhatsApp / phone

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Email

info@tebaoflex.com

Web

tebaoflex.com/cables/mineral-insulated-thermocouple-cable



Typical values for this cable type, based on IEC 61515 / ASTM E585 / AMS 2750. Values for your order are confirmed in the quotation. Subject to change without notice. Jiangsu Tebaoflex Special Cable Co., Ltd., Taicang, Jiangsu, China.