



instrumentation cable series

MI Coaxial Signal Cable

Inconel 600 / AISI 304L MgO/SiO₂ mineral-insulated coaxial neutron & RF signal cable



Inconel 600 / 316L MIMS

+600 °C to +1,000 °C

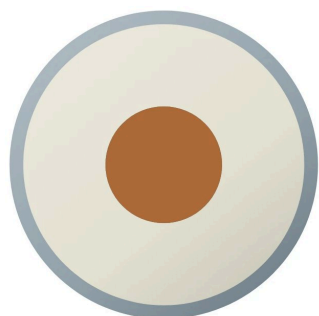
 $\geq 10^{12} \Omega \cdot m \cdot 10^{10} \text{ Gy Immune}$

Application

MI Coaxial Signal Cable (Mineral-Insulated Metal-Sheathed, MIMS) engineered with an Inconel 600 or AISI 304L/316L seamless tubular sheath, high-purity compacted MgO or SiO₂ mineral dielectric ($\geq 10^{12} \Omega \cdot m$), and copper, nickel or.

Typical uses: Nuclear In-Core & Ex-Core Neutron Flux Detectors, Tokamak / Fusion Vacuum-Vessel RF & Magnetic Probes, Aero-Derivative Gas Turbine Dynamic Pressure (Piezo), Liquid-Sodium / Molten-Salt Fast Reactor Sensors, High-Energy Particle Accelerator Beamline Monitors

Construction



Cross-section, not to scale

- 1 Solid metal centre conductor (Cu / Ni / Inconel)
- 2 High-purity compacted MgO or SiO₂ mineral dielectric
- 3 Seamless drawn Inconel 600 or AISI 304L/316L metal sheath

Technical data

Typical values

Characteristic impedance	50 ± 3 Ω (or high-Z low-capacitance charge-transfer geometries)	Insulation resistivity	≥ 10 ¹² Ω·m (@ 20 °C) · ≥ 10 ⁸ Ω·m (@ +600 °C)
Capacitance @ 1 kHz	95 to 155 pF/m (50 Ω MgO) · 75 to 110 pF/m (SiO ₂)	Dielectric breakdown	1,000 V to 2,500 V AC rms (depending on outer diameter)
Continuous operating temp.	-269 °C (4 K) to +600 °C (up to +1,000 °C for Inconel 600)	Thermal shock resistance	Quench from +600 °C to +20 °C water without sheath cracking
Vacuum outgassing	Zero organic volatiles; UHV bakeable to +600 °C (< 10 ⁻¹¹ mbar)	Min. bend radius	3 × OD (annealed cold-forming) · 5 × OD (repeated re-bending)
External pressure rating	Up to 25 MPa (250 bar) at +350 °C (PWR primary loop)	Helium leak tightness	< 1 × 10 ⁻⁹ mbar·L/s (100 % mass-spectrometer tested)
Neutron & gamma fluence	> 10 ¹⁰ Gy gamma and > 10 ²² n/cm ² thermal/fast neutron fluence	Low cobalt impurity	Co ≤ 0.05 % (500 ppm) option to minimize ⁶⁰ Co activation
Fire behaviour	100 % non-combustible (A1 inorganic metal + oxide)	Standards	ASTM E844 & IEC 60702-1 / IEC 61515

Sizes

6 standard constructions

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

Order designation	Sheath / Dielectric / Core	Outer Ø mm	Weight ≈ kg/km	Capacitance pF/m	Test V V AC
Mineral-Insulated Metal-Sheathed (MIMS) Coaxial Cables 6 sizes					
☐ MI-COAX-1.5-INC	Inconel 600 / MgO / Inconel 600	1.50	11	150	1,000
☐ MI-COAX-2.2-316L	AISI 316L / SiO ₂ / OFHC Cu (50 Ω)	2.20	22	95	1,200
☐ MI-COAX-3.0-INC	Inconel 600 / MgO / Nickel 200	3.00	42	135	1,500
☐ MI-COAX-3.58-304L (.141")	AISI 304L / SiO ₂ / OFHC Cu (50 Ω)	3.58	58	92	1,800
☐ MI-COAX-4.76-INC (.188")	Inconel 600 / MgO / OFHC Cu (50 Ω)	4.76	102	125	2,000
☐ MI-COAX-6.35-INC (.250")	Inconel 600 / MgO / OFHC Cu (50 Ω)	6.35	178	120	2,500

- Can be supplied as bulk hermetically sealed coils or terminated with ceramic-to-metal HN, BNC, SMA or triaxial nuclear connectors.

Standards and approvals

- ✓ ASTM E844 Nuclear MIMS
- ✓ IEC 60702-1 Compliant
- ✓ ISO 19443 / ASME NQA-1 QA

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

+86 185 9591 3361

Email

info@tebaoflex.com

Web

tebaoflex.com/cables/mineral-insulated-metal-sheathed-high-temperature-coaxial-neutron-rf-signal-cable



Typical values for this cable type, based on IEC 60702-1 / ASTM E844 / IEEE 323. Values for your order are confirmed in the quotation. Subject to change without notice. Jiangsu Tebaoflex Special Cable Co., Ltd., Taicang, Jiangsu, China.