

**Medical Micro-Coaxial & Ultra-High-Vacuum Cables**

310-PEEK50-TRIAX

PEEK-Insulated UHV Triaxial Cable

UHV $\leq 10^{-10}$ mbar · $50 \Omega \pm 3 \Omega$ · $\varnothing$ 2.95 mm · Ag-Cu center · Virgin PEEK · Driven guard +



UHV $\leq 10^{-10}$ mbar Triax

PEEK · $> 10^{14} \Omega$ Isolation

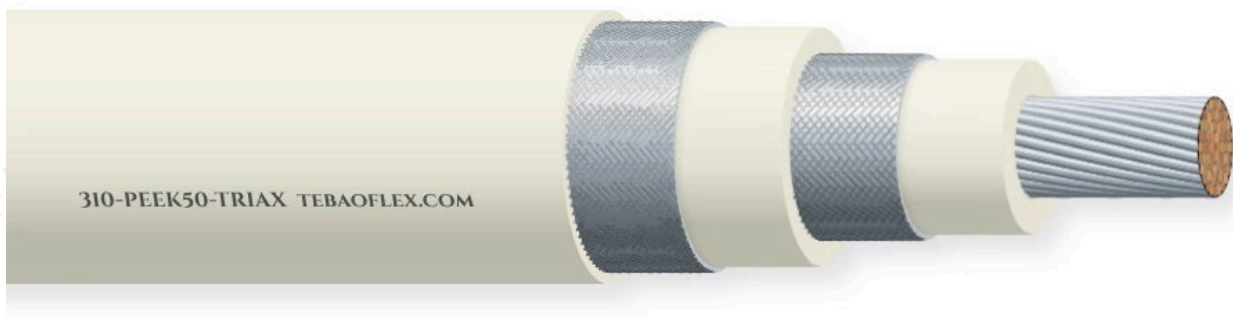
fA / pA Electrometer Guard

Application

310-PEEK50-TRIAX is a 50Ω ultra-high-vacuum (UHV $\leq 10^{-10}$ mbar), radiation-hard (10^7 Gy / 10 MGy), and ultra-high-insulation-resistance ($> 10^{14}$ – $10^{15} \Omega$) miniature triaxial cable insulated with virgin polyetheretherketone (PEEK) for femtoampere/picoampere

Typical uses: Synchrotron X-Ray Beam Position Monitors, Femtoampere / Picoampere Electrometers, Faraday Cups & Ionization Chambers, Nuclear & Particle Accelerator Detectors, UHV Scanning Electron & Ion Microscopes

Construction



Cross-section, not to scale

- 1 Stranded Ag-OFC center conductor (26)
- 2 Virgin PEEK core dielectric
- 3 Inner driven-guard braid (Screen 1)
- 4 Virgin PEEK inter-shield isolation wall
- 5 Outer EMC & chamber ground braid
- 6 Virgin PEEK UHV outer jacket

Technical data

Typical values

Characteristic impedance Z_0	50 $\Omega \pm 3 \Omega$ (center to inner guard)	Capacitance (center to inner guard)	102.0 pF/m (31.1 pF/ft)
Velocity of propagation (VoP)	66.0 %	Volume resistivity (PEEK dielectric)	$> 10^{15} \Omega\text{-cm}$ (insulation $R > 10^{14} \Omega\text{-m}$)
Max. operating voltage (core-guard)	1,000 V DC / 750 V rms AC	Guard-to-outer shield voltage	500 V DC (1.5 kV rms test)
Operating temperature range	-65 °C to +250 °C continuous	PEEK crystalline melting point	+343 °C (glass transition T_g +143 °C)
UHV bakeout temperature	+200 °C to +250 °C continuous	Outgassing (ASTM E595 / ECSS)	TML < 0.15 % · CVCM < 0.01 %
UHV pressure rating	$\leq 1 \times 10^{-10}$ mbar	Flammability rating	UL 94 V-0 self-extinguishing without halogens
Center conductor stranding	19 $\times$ 0.10 mm Ag-OFC (26 AWG, $\varnothing$ 0.48 mm)	Inner dielectric diameter	1.45 mm $\pm$ 0.05 mm
Outer jacket diameter	2.95 mm $\pm$ 0.10 mm (0.116 in)	Min. bend radius (fixed / dynamic)	18 mm (6 $\times$ D) / 30 mm (10 $\times$ D)
Nominal cable weight	19.5 kg/km	Connector compatibility	UHV 3-lug TRB, LEMO 00/0S Triax, Sub-Triax
Ionizing radiation resistance	Up to 10^7 Gy (10 MGy) without embrittlement	Halogen & fluorine content	0.00 % (eliminates HF/F ₂ beamline corrosion)
Chemical & solvent resistance	Inert to almost all organic/inorganic	Water absorption	< 0.1 % (5 $\times$ lower than polyimide in humid)
Wear & cut-through resistance	High-strength semi-crystalline PEEK	RoHS / REACH status	RoHS 3 compliant
Standards	ASTM E595 / ECSS-Q-ST-70-02		

Sizes

4 standard constructions

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

Order designation	Construction / Variant	Conductor	Outer $\varnothing \approx$ mm	Metal kg/km	Weight $\approx$ kg/km	Min. bend R fixed mm
Standard 310-PEEK50-TRIAx variants 4 sizes						
☐ 310-PEEK50-TRIAx Virgin PEEK UHV Triax	50 Ω Dual Ag-Cu Braids (PEEK)	26 AWG (19 $\times$ 0.10 Ag-Cu)	2.95	11.5	19.5	18
☐ 310-PEEK50-TRIAx-S With 316L SS Overbraid	50 Ω Dual Braids + PEEK + 316L SS	26 AWG (19 $\times$ 0.10 Ag-Cu)	3.25	11.5	27.0	20
☐ 301-KAP50 Polyimide UHV Coaxial ($\varnothing$ 1.95 mm)	50 Ω Single Ag-Cu Braid (Polyimide)	24 AWG (19 $\times$ 0.12 Ag-Cu)	1.95	6.2	10.5	12
☐ 301-KAP50-S Polyimide + 316L SS Coaxial	50 Ω Ag-Cu Braid + 316L SS Overbraid	24 AWG (19 $\times$ 0.12 Ag-Cu)	2.25	6.2	16.8	14

– Dimensions and weights are nominal production values subject to manufacturing tolerances per UHV Triaxial Spec ($\leq 10^{-10}$ mbar) / IEC 61196-1.

Attenuation & RF power handling

6 sizes

Frequency	Nominal attenuation dB / 100 m	Nominal attenuation dB / 100 ft	Max. CW RF power W (@ 40 °C)	Impedance $Z_0 \Omega$	Velocity VoP %
DC – 1 kHz (fA/pA Electrometer)	0.1	0.03	350	50	66.0
10 MHz (BPM Baseband)	7.2	2.19	160	50	66.0
100 MHz (RF Bunch Pickup)	23.0	7.01	52	50	66.0
500 MHz (Synchrotron RF)	52.0	15.85	23	50	66.0
1000 MHz (1 GHz Beam Diagnostics)	76.0	23.16	16	50	66.0
3000 MHz (3 GHz Wideband Pickup)	142.0	43.28	8	50	66.0

– Attenuation values apply at +20 °C ambient into a matched 50 Ω load; CW power ratings assume VSWR 1.0:1 at +40 °C ambient.

Standards and approvals

- ✓ UHV $\leq 10^{-10}$ mbar Certified
- ✓ $> 10^{14} \Omega$ Electrometer Grade
- ✓ 10 MGy Radiation-Hard

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/310-peek50-triax-peek-insulated-uhv-triaxial-cable



Typical values for this cable type, based on UHV Triaxial Spec ($\leq 10^{-10}$ mbar) / IEC 61196-1. Values for your order are confirmed in the quotation. Subject to change without notice. Jiangsu Tebaoflex Special Cable Co., Ltd., Taicang, Jiangsu, China.