



High-temperature wire

311-KAP / 301-KAPM

Polyimide UHV Single-Core Wire

10⁻¹¹ mbar UHV polyimide single-core wire in solid (311-KAP) & stranded (301-KAPM)



10⁻¹¹ mbar UHV Single-Core

-269 °C to +250 °C

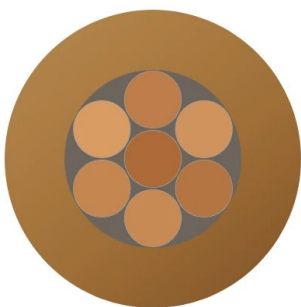
Solid 311-KAP & Stranded 301-KAPM

Application

311-KAP (solid) and 301-KAPM (19-strand flexible) ultra-high-vacuum single-core hook-up wires featuring silver-plated OFHC copper and ultra-thin wrapped aromatic polyimide insulation for 10⁻¹¹ mbar vacuum, 4 K (-269 °C) cryogenics, and +250 °C bakeout.

Typical uses: UHV Surface Science (XPS / STM), Cryogenic & 4 K Quantum Systems, Synchrotron Beamline Detectors, Semiconductor EUV Lithography, Space Thermal-Vacuum Chambers

Construction



Cross-section, not to scale

- 1 Solid or 19-strand Ag-OFHC conductor
- 2 Lapped aromatic polyimide film
- 3 Amber polyimide outer seal

Technical data

Typical values

Rated working voltage	600 V DC / 300 V AC rms	Dielectric withstand test	2,000 V AC rms (spark tested)
Dielectric strength (film)	≥ 180 kV/mm per ASTM D149	In-vacuum current rating	1.5 A (Ø 0.25 mm) to 14 A (Ø 1.50 mm)
Continuous temperature range	-269 °C (4 K) to +250 °C	Short-term bakeout peak	+300 °C in ultra-high vacuum
Cryogenic cycling stability	No cracking from 4 K to +250 °C	Solid conductor diameters	Ø 0.25, 0.50, 0.75, 1.00, 1.50 mm (311-KAP)
Stranded conductor diameters	Ø 0.25, 0.35, 0.50, 0.60, 0.75, 1.00 mm (301-KAPM)	Min. bending radius	3 × OD (301-KAPM) · 5 × OD (311-KAP)
Vacuum pressure rating	≤ 1 × 10 ⁻¹¹ mbar (UHV / XHV)	Radiation resistance	Up to 10 ⁷ Gy (10 ⁹ rad) ionizing dose
Flame & halogen rating	Non-flammable in air · halogen-free	Standards	ASTM E595 / ECSS-Q-ST-70-02C

Sizes

10 standard constructions

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

Order designation	Cross-section / size	Conductor build	Wall ≈ mm	Outer Ø ≈ mm	Metal kg/km	Weight ≈ kg/km	Min. bend R fixed mm
Standard 311-KAP / 301-KAPM configurations 10 sizes							
☐ 311-KAP-025 (Solid Ø 0.25)	0.049 mm ² (30 AWG)	1×0.25 mm Solid Ag-OFC	0.05	0.35	0.5	0.6	2
☐ 311-KAP-050 (Solid Ø 0.50)	0.196 mm ² (24 AWG)	1×0.50 mm Solid Ag-OFC	0.06	0.62	1.8	2.2	3
☐ 311-KAP-075 (Solid Ø 0.75)	0.442 mm ² (21 AWG)	1×0.75 mm Solid Ag-OFC	0.06	0.87	4.0	4.7	5
☐ 311-KAP-100 (Solid Ø 1.00)	0.785 mm ² (18 AWG)	1×1.00 mm Solid Ag-OFC	0.07	1.14	7.2	8.1	6
☐ 311-KAP-150 (Solid Ø 1.50)	1.767 mm ² (15 AWG)	1×1.50 mm Solid Ag-OFC	0.08	1.66	16.2	17.8	9
☐ 301-KAPM-025 (Stranded Ø 0.25)	0.055 mm ² (30 AWG)	7×0.10 mm Ag-OFC	0.05	0.36	0.5	0.7	2
☐ 301-KAPM-035 (Stranded Ø 0.35)	0.073 mm ² (28 AWG)	19×0.07 mm Ag-OFC	0.06	0.47	0.7	0.9	2
☐ 301-KAPM-050 (Stranded Ø 0.50)	0.15 mm ² (26 AWG)	19×0.10 mm Ag-OFC	0.06	0.62	1.4	1.8	3
☐ 301-KAPM-060 (Stranded Ø 0.60)	0.22 mm ² (24 AWG)	19×0.12 mm Ag-OFC	0.06	0.72	2.0	2.5	3
☐ 301-KAPM-100 (Stranded Ø 1.00)	0.60 mm ² (20 AWG)	19×0.20 mm Ag-OFC	0.07	1.14	5.7	6.5	5

– Outer diameters and weights are nominal engineering values for 311-KAP / 301-KAPM subject to standard manufacturing tolerances per ASTM E595 UHV Outgassing & MIL-DTL-81381 Polyimide Hook-Up Wire.

Electrical & rating data

10 sizes

Configuration	Max. DC R @ 20 °C Ω/km	Primary rating (A or kV)	Derated / AC rating	Dielectric test V AC rms
311-KAP-025 (Solid Ø 0.25) (0.049 mm ² (30 AWG))	350.00	1.5	0.9	2,000
311-KAP-050 (Solid Ø 0.50) (0.196 mm ² (24 AWG))	88.00	5.0	3.0	2,000
311-KAP-075 (Solid Ø 0.75) (0.442 mm ² (21 AWG))	39.00	8.5	5.2	2,000
311-KAP-100 (Solid Ø 1.00) (0.785 mm ² (18 AWG))	22.00	13.0	8.0	2,000
311-KAP-150 (Solid Ø 1.50) (1.767 mm ² (15 AWG))	9.80	22.0	14.0	2,000
301-KAPM-025 (Stranded Ø 0.25) (0.055 mm ² (30 AWG))	330.00	1.5	0.9	2,000
301-KAPM-035 (Stranded Ø 0.35) (0.073 mm ² (28 AWG))	238.00	2.5	1.5	2,000
301-KAPM-050 (Stranded Ø 0.50) (0.15 mm ² (26 AWG))	122.00	4.2	2.5	2,000
301-KAPM-060 (Stranded Ø 0.60) (0.22 mm ² (24 AWG))	84.00	5.5	3.3	2,000
301-KAPM-100 (Stranded Ø 1.00) (0.60 mm ² (20 AWG))	30.50	11.5	7.0	2,000

– Electrical resistance at +20 °C and dielectric withstand voltages verified per ASTM E595 UHV Outgassing & MIL-DTL-81381 Polyimide Hook-Up Wire.

Standards and approvals

- ✓ ASTM E595 UHV Outgassing & MIL-DTL-81381 Polyimide Hook-Up Wire
- ✓ CE (2014/35/EU) & RoHS 3 (2015/863/EU) Compliant
- ✓ REACH SVHC & Halogen/Asbestos Compliance Verified

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/311-kap-301-kapm-polyimide-uhv-single-core-wire



Typical values for this cable type, based on ASTM E595 UHV Outgassing & MIL-DTL-81381 Polyimide Hook-Up Wire. Values for your order are confirmed in the quotation. Subject to change without notice. Jiangsu Tebaoflex Special Cable Co., Ltd., Taicang, Jiangsu, China.