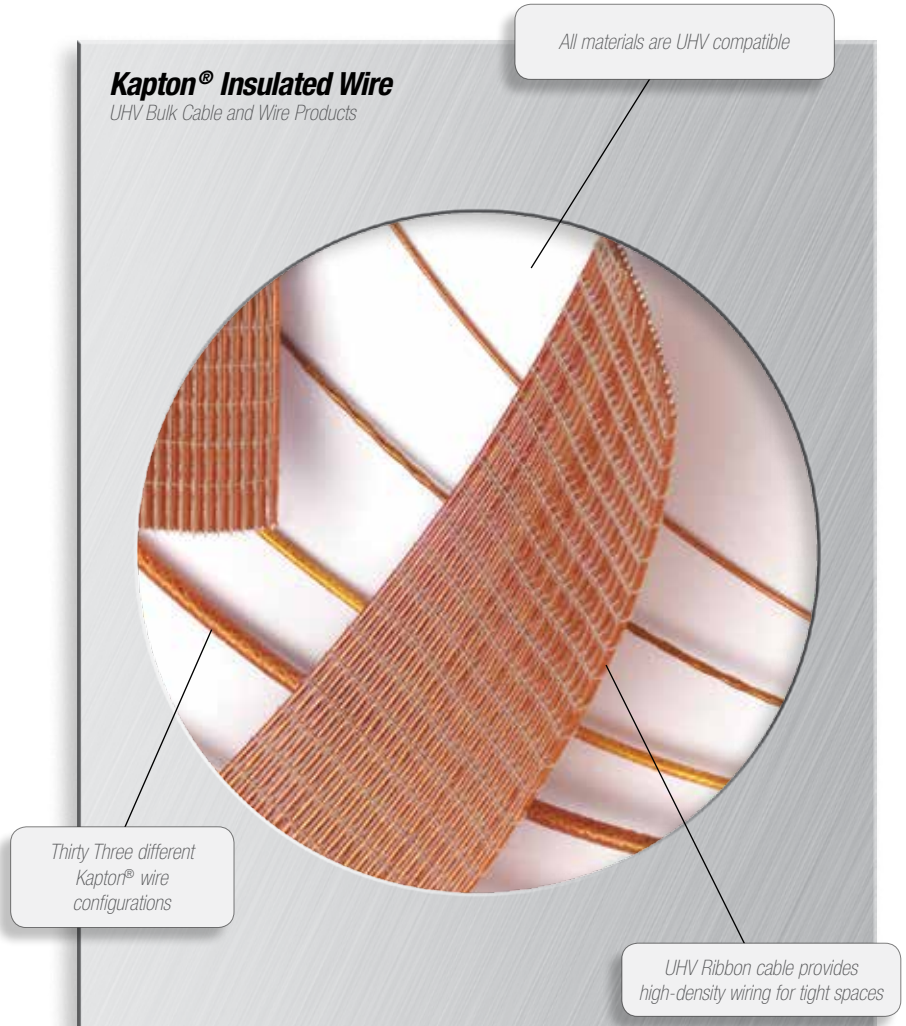


Kapton Insulated Wire

Accu-Glass UHV cable and wire are insulated using a high mechanical strength Kapton® Type-F film that is applied and heat treated to minimize trapped gases. Our in-vacuum wiring has been optimized for high and ultrahigh vacuum environments to $1x10^{-10}$ Torr and are bakeable to 250°C.

Most conductors and braided coaxial cable shielding are made from silver plated copper wire, unless stated otherwise.

Multi-conductor cables are available in either flat ribbon or circular configurations that are bundled together with a PEEK (polyether ether ketone) monofilament weave. Since there is no wire marking or coding, glass identification beads are available in six easy to distinguish colors. See page 125 for glass color coded identification beads.

Did you know — *Accu-Glass Products, Inc. is the only supplier to offer and ship Kapton® insulated wire on plastic spools instead of loose in a bag?*

Features

- UHV compatible construction
- High temperature rated to 250°C
- Kapton® Type-F Insulating film
- Silver plated Copper conductors
- Solid, stranded and coaxial wire types
- Type-K thermocouple wire
- Custom solutions on request

Specifications

Electrical [1]	
Voltage	See Tables
Current, Maximum @ 20°C	See Tables

Material	
Conductor	Ag Plated Cu
Insulation	Kapton® Type-F Film

Kapton® Properties [2]	
Dielectric Constant	2.9
Dielectric Strength (V/mm)	80,000
Dissipation Factor, 1MHz	0.002
Initial Tear (kg/mm)	13.4
Elongation	150%
Moisture Absorption (at 50% RH)	0.4%

Vacuum Range [2]	
UHV, Ultrahigh Vacuum	$1x10^{-10}$ Torr

Temperature Range [3]	
Wire Insulation	-75° to 250°C

Notes

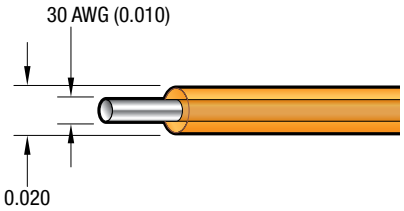
1. Electrical ratings are maximum test values. Also, see 'glow discharge' information on page 270
2. Kapton and PEEK are susceptible to water absorption with prolonged exposure to atmospheric environments, especially in regions with high relative humidity. To mitigate water absorption and improve vacuum pump-down cycles, Kapton insulated wire and cable assemblies can be preconditioned for UHV service by baking (in a vacuum furnace) to 100-150°C before installing them inside a UHV system. Conditioned wire that is not immediately used can be stored in sealed containers. Optimally stored in a container that has been backfilled with a dry inert gas, but not necessary.
3. Overall ratings must be adjusted to that of the lowest rated component.

§ Unless specified otherwise, dimensional units in all sections of this catalog are expressed in inches.

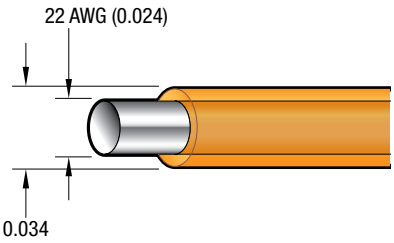
Solid Wire — Radiation Resistance to 10^9 rad / UHV to $1x10^{-10}$ Torr

Wire AWG	Wire Length	Wire Dia.	Insulation Diameter	Resistance Ω/km [1]	Current Amp	Bend Radius	Part Number	Unit Price $
Instrumentation Wire — 450VAC, 1.5kVDC / 250°C / Ag plated Cu								
34	30'	0.0055	0.0065	—	0.25	0.10	**110824**	31
Instrumentation Wire — 600VAC, 2kVDC / 250°C / Ag plated Cu								
30	30'	0.010	0.020	377	1.5	0.15	**100670**	34
28	30'	0.013	0.022	229	3	0.15	**112918**	36
26	30'	0.016	0.025	146	3.5	0.16	**112366**	37
24	30'	0.020	0.030	88.3	4	0.16	**112615**	40
22	30'	0.024	0.034	64.3	5.5	0.16	**100680**	44
20	30'	0.032	0.041	43.6	11	0.16	**100675**	46
18	15'	0.041	0.051	21.9	14	0.16	**112697**	90
Cryogenic Wire — 1kVAC, 3kVDC / Liquid Nitrogen Service to –273°C / Stainless Steel Conductor								
24	15'	0.020	0.062	3500	1	0.38	**112746**	65

1. Maximum @ 20°C



100670 / 30 AWG Solid Wire

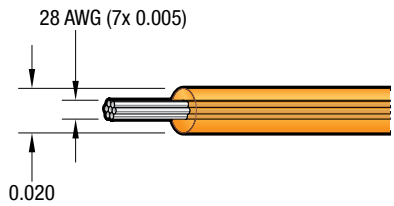


100680 / 22 AWG Solid Wire

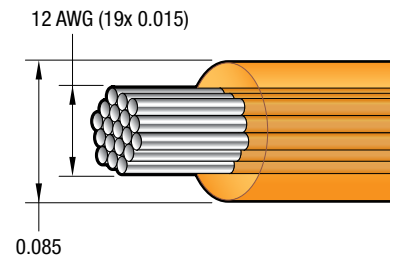
Stranded Wire [2] — 600VAC, 2kVDC / 250°C / UHV to $1x10^{-10}$ Torr / Ag plated Cu

Wire AWG	Wire Length	Strands x Dia.	Insulation Diameter	Resistance Ω/km [1]	Current Amps	Bend Radius	Part Number	Unit Price $
7 Strands								
32	30'	7x.0032	0.0195	558	1.5	0.065	**113094**	38
30	30'	7x0.004	0.023	353	2	0.07	**112739**	38
28	30'	7x0.005	0.020	244	2	0.13	**100690**	42
26	30'	7x0.006	0.025	159	3	0.13	**100685**	46
24	30'	7x0.008	0.030	88.3	4	0.28	**100693**	48
19 Strands								
22	30'	19x0.006	0.035	58.6	6	0.25	**100712**	50
20	30'	19x0.007	0.043	32.5	8	0.25	**100713**	62
18	15'	19x0.009	0.051	20.6	11	0.35	**100714**	90
16	15'	19x0.010	0.060	14.3	14	0.35	**100696**	100
14	15'	19x0.011	0.065	11.4	16	0.48	**100715**	110
12	15'	19x0.015	0.085	6.2	25	0.58	**100700**	134

1. Maximum @ 20°C 2. Flexible shielding options on page 122



100690 / 28 AWG Stranded Wire

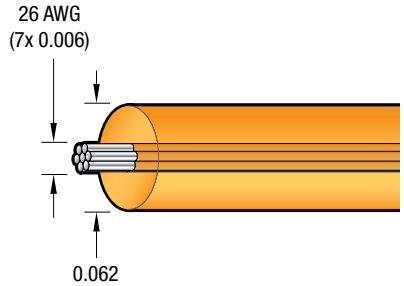


100700 / 12 AWG Stranded Wire

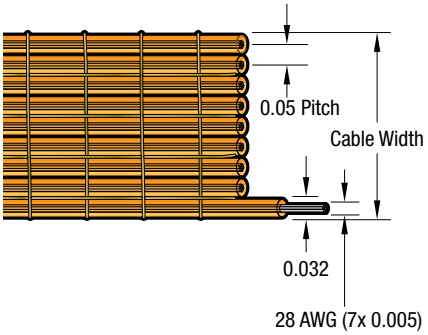
High Voltage 7 Strand Wire — 250°C / UHV or AIR to $1x10^{-10}$ Torr / Ag plated Cu

Wire AWG	Wire Length	Strands x Dia.	Insulation Diameter	Resistance Ω/km [1]	Current Amps	Bend Radius	Part Number	Unit Price $
3kVAC, 10kVDC								
26	15'	7x0.006	0.062	159	3	0.55	**100726**	75
10kVAC, 30kVDC [2]								
20	15'	7x0.013	0.090	32.18	11	0.66	**112716**	104

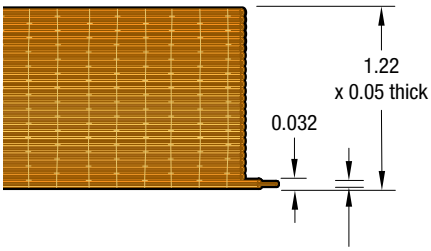
1. Maximum @ 20°C 2. 30 kVDC Silicone insulated cable on page 105



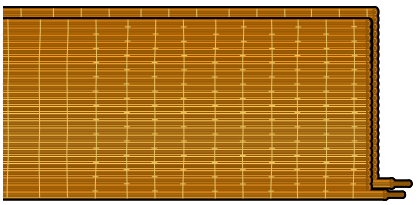
100726 / 26 AWG High Voltage Wire



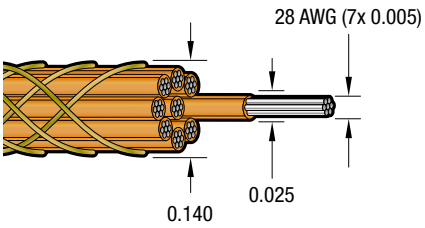
100740 / 28 AWG 9-Conductor Ribbon Cable



100760 / 28 AWG 25-Conductor Ribbon Cable



111400 / 28 AWG 50-Conductor Ribbon Cable



100730 / 28 AWG 9-Conductor Round Cable

Multi-conductor Ribbon Cable

Multi-conductor Ribbon Cable is 28 AWG Kapton® insulation wires with a PEEK weave. Nominal pitch is 0.050 inch.

Ribbon Cable — 600VAC, 2kVDC / 2A / 244Ω/km at 20°C max. / 250°C / UHV to $1x10^{-10}$ Torr

Number Wires	Cable Length	Cable Width	Cable Thickness	Insulation Diameter	Wire Diameter	Min. Bend Radius	Model Number	**Part Number**	Unit Price $
28 AWG — Stranded									
9	19	0.41	0.05	0.032	7x 0.005	0.53	KAP-R9-19	**100740**	52
9	39	0.41	0.05	0.032	7x 0.005	0.53	KAP-R9-39	**100741**	105
9	96	0.41	0.05	0.032	7x 0.005	0.53	KAP-R9-96	**100742**	261
15	19	0.74	0.05	0.032	7x 0.005	0.53	KAP-R15-19	**100750**	66
15	39	0.74	0.05	0.032	7x 0.005	0.53	KAP-R15-39	**100751**	135
15	96	0.74	0.05	0.032	7x 0.005	0.53	KAP-R15-96	**100752**	331
19	19	0.93	0.05	0.032	7x 0.005	0.53	KAP-R19-19	**104040**	75
19	39	0.93	0.05	0.032	7x 0.005	0.53	KAP-R19-39	**104041**	153
19	96	0.93	0.05	0.032	7x 0.005	0.53	KAP-R19-96	**104042**	377
25	19	1.22	0.05	0.032	7x 0.005	0.53	KAP-R25-19	**100760**	88
25	39	1.22	0.05	0.032	7x 0.005	0.53	KAP-R25-39	**100761**	180
25	96	1.22	0.05	0.032	7x 0.005	0.53	KAP-R25-96	**100762**	442
50*	19	1.22	0.10	0.032	7x 0.005	0.88	KAP-R50-19	**111400**	175
50*	39	1.22	0.10	0.032	7x 0.005	0.88	KAP-R50-39	**111401**	360
50*	96	1.22	0.10	0.032	7x 0.005	0.88	KAP-R50-96	**111402**	884

* 50 conductor ribbon cable uses 2x 25 conductor ribbon cables.

Multi-conductor Round Cable

Multi-conductor Round Cable is nine 28 AWG Kapton® insulation wires with a PEEK weave in a round design.

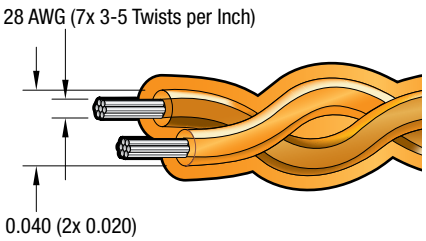
Round Cable — 600VAC, 2kVDC / 2A / 244Ω/km at 20°C max. / 250°C / UHV to $1x10^{-10}$ Torr

Number Wires	Cable Length	Jacket Diameter	Insulation Diameter	Wire Diameter	Min. Bend Radius	Model Number	**Part Number**	Unit Price $
28 AWG — Stranded								
9	19	0.140	0.025	7x 0.005	0.35	KAP-C9-19	**100730**	35
9	39	0.140	0.025	7x 0.005	0.35	KAP-C9-39	**100731**	70
9	96	0.140	0.025	7x 0.005	0.35	KAP-C9-96	**100732**	175

Twisted Pair Cable — Multi-Strand / 600VAC, 2kVDC / 250°C / UHV to $1x10^{-10}$ Torr

Wire				Current Rating Per Wire	Min. Bend Radius	Model Number	Part Number	Unit Price $
Wires	AWG	Length	Overall OD					
Twisted Pair Cable								
2	28	5-foot	0.04	2A	0.13	KAP-28AWG-TWST-5	**112676**	36
2	26	5-foot	0.05	3A	0.13	KAP-26AWG-TWST-5	**112727**	40
2	24	5-foot	0.06	4A	0.25	KAP-24AWG-TWST-5	**112677**	42
2	22	5-foot	0.07	6A	0.25	KAP-22AWG-TWST-5	**112678**	48
2	20	5-foot	0.09	11A	0.25	KAP-20AWG-TWST-5	**113240**	70
2	18	5-foot	0.10	11A	0.35	KAP-18AWG-TWST-5	**112679**	74

Silver-plated copper and stainless steel shielding options can be found on page 122. Multiple quantities will be shipped in one continuous length. Lengths over 10-foot long may delay shipment.



112676 / 28 AWG Twisted Pair

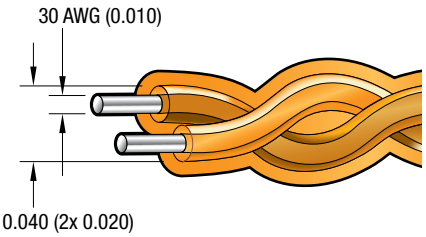
Thermocouple Wire, Type-K

Thermocouple Wire pairs consist of non-welded positive Chromel® and negative Alumel® legs. Kapton® is applied with a resin process to eliminate air pockets normally associated with Kapton® tape insulated thermocouple wire from other suppliers.

Twisted Pair Cable — Solid Core / 250°C / UHV to $1x10^{-10}$ Torr

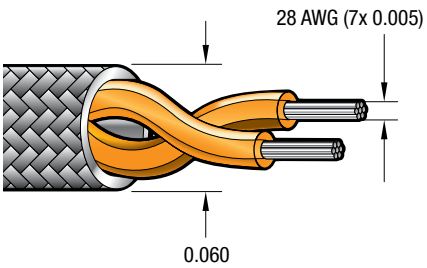
Wire				Insulation Diameter	Bend Radius	Part Number	Unit Price $
Type	AWG	Length	Diameter				
Twisted Pair Cable							
K	30	19"	2x 0.010	0.020	0.28	**100770**	23
K	30	39"	2x 0.010	0.020	0.28	**100771**	45
K	30	96"	2x 0.010	0.020	0.28	**100772**	112
K	30	30'	2x 0.010	0.020	0.28	**100773**	418
Connector to User-Specified End Options							
Fused thermocouple junction wire end				append to Part Number and Price:		**.40**	15

See pages 268 for Thermocouple Wire Reference Data, ANSI Type K.

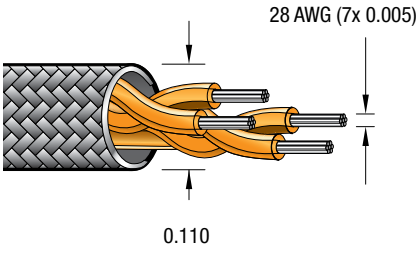


100770 / Type-K Thermocouple Pair

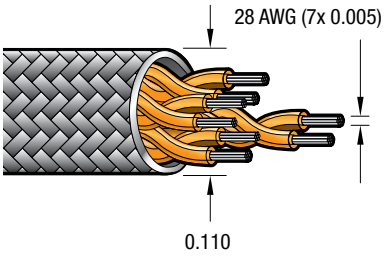
Did you know *— Accu-Glass Products, Inc. is the only supplier to offer and ship Kaptor® insulated wire on plastic spools instead of loose in a bag?*



100692 / 28 AWG Shielded Cable



112734 / 4 Twisted Pair Shielded Cable



112140 / 28 AWG Shielded Cable

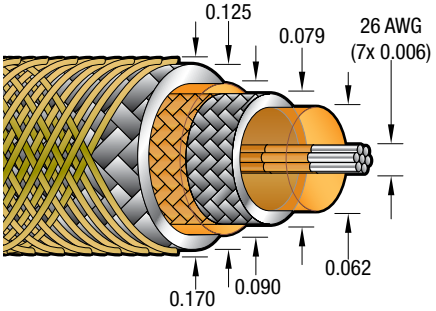
Twisted Pair Cable, Shielded

Twisted Pair – Shielded Cables *2-Conductor, 1 Twisted Pair, 8-Conductor, 4 Twisted Pair and 24-Conductor, 12 Twisted Pair* are ideally suited for use with our 9 and 25 pin Subminiature-D connectors. The shield of each of these wires can be "PINNED" and used as a separate conductor or grounding path.

Twisted Pair Cable, Shielded — Stranded / 600VAC, 2kVDC / 250°C / UHV to 1x10^{-10} Torr

Wire AWG	Wire Length	Strands x Dia.	Shield Dia.	Resistance [1] Ω/km	Current [2] Amps	Min. Bend Radius	Model Number	Part Number	Unit Price $
2-Conductor — 1 Twisted Pair									
28	15'	2x (7x0.005)	0.060	244	2	0.15	TYP3-2TW-15	**100692**	105
12	5'	2x (19x0.015)	0.20	6.2	25	0.50	TYP4-2TW-5	**112680**	125
4-Conductor — 2 Twisted Pairs									
28	19"	4x (7x0.005)	0.100	244	2	0.17	TYP3-4TW-19	**112734**	45
28	39"	4x (7x0.005)	0.100	244	2	0.17	TYP3-4TW-39	**112735**	80
28	96"	4x (7x0.005)	0.100	244	2	0.17	TYP3-4TW-96	**112736**	225
8-Conductor — 4 Twisted Pairs									
28	19"	8x (7x0.005)	0.110	244	2	0.19	TYP3-8TW-19	**112140**	55
28	39"	8x (7x0.005)	0.110	244	2	0.19	TYP3-8TW-39	**112141**	110
28	96"	8x (7x0.005)	0.110	244	2	0.19	TYP3-8TW-96	**112142**	274
12-Conductor — 6 Twisted Pairs									
28	19"	12x (7x0.005)	0.150	244	2	0.25	TYP3-6TW-19	**112738**	68
28	39"	12x (7x0.005)	0.150	244	2	0.25	TYP3-6TW-39	**112747**	140
28	96"	12x (7x0.005)	0.150	244	2	0.25	TYP3-6TW-96	**112748**	345
24-Conductor — 12 Twisted Pairs									
28	19"	24x (7x0.005)	0.184	244	2	0.43	TYP3-24TW-19	**112143**	80
28	39"	24x (7x0.005)	0.184	244	2	0.43	TYP3-24TW-39	**112144**	165
28	96"	24x (7x0.005)	0.184	244	2	0.43	TYP3-24TW-96	**112145**	405

1. Maximum @ 20°C 2. Current rating is per lead



112674 / Triaxial Cable

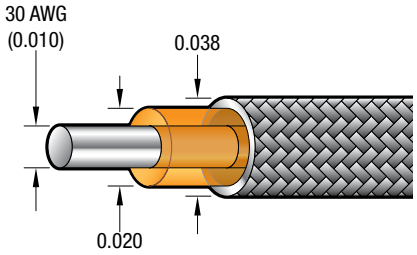
Triaxial Cable — 250°C / UHV to 1x10^{-10} Torr

Cable Length	Outer Jacket Dia.	Outer Shield Dia.	Inner Jacket Dia.	Inner Shield Dia.	Insulation Dia.	Current Amps	Min. Bend Radius	Model Number	Part Number	Unit Price $
28 AWG — Solid Core / 1kVAC, 3kVDC / Kapton Jacket										
15'	0.095	0.085	0.073	0.064	0.052	2.5	0.67	KAP28-TRIAX-15	**112745**	225
26 AWG — Stranded Core / 600VAC, 2kVDC / PEEK Jacket, Braided										
19"	0.170	0.125	0.090	0.079	0.062	3	0.60	KAP26-TRIAXp-19	**112674**	48
39"	0.170	0.125	0.090	0.079	0.062	3	0.60	KAP26-TRIAXp-39	**112675**	90

Shielded Cable[1] — 600VAC, 2kVDC / 250°C / UHV to 1x10^{-10} Torr

Cable Length	Jacket Diameter	Shield Diameter	Internal Insulation Diameter	Wire Diameter	Current Rating	Bend Radius	Part Number	Unit Price $
30 AWG — Solid / 377 Ω/km at 20°C max. / 180 pF/m								
30'	None[2]	0.038	0.020	0.010	1.5A	0.23	**100705**	90
24 AWG — Stranded / 88.3 Ω/km at 20°C max. / 300 pF/m								
15'	0.050	0.046	0.032	7x 0.008	4.5A	0.50	**100710**	75

1. Not manufactured or tested as a coaxial cable. Recommended only for use where shielding of center conductor is required.
2. Does not have Kapton® insulation jacket.

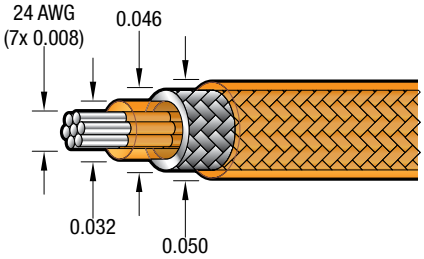


100705 / 30 AWG Coaxial Cable

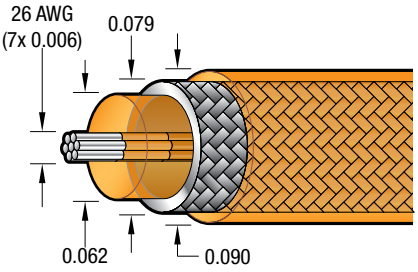
50 Ohm Coaxial Cable — Stranded / 250°C / UHV to 1x10^{-10} Torr

Cable Length	Jacket Diameter	Shield Diameter	Insulation Diameter	Strands x Dia.	Current Amps	Bend Radius	Part Number	Unit Price $
32 AWG — 600VAC, 2kVDC / 558 Ω/km at 20°C max. / 137 pF/m								
15'	0.050	0.041	0.029	7x 0.0015	0.5	0.20	**112129**	105
30 AWG — 600VAC, 2kVDC / 353 Ω/km at 20°C max. / 102 pF/m								
15'	0.067	0.058	0.047	7x 0.004	1.5	0.23	**112130**	115
26 AWG — 3kVAC, 10kVDC / 159 Ω/km at 20°C max. / 95 pF/m								
15'	0.090	0.079	0.062	7x 0.006	3	0.53	**100720**	130
20 AWG[1] — 10kVAC, 30kVDC / 32.18 Ω/km at 20°C max.								
15'	0.125	0.110	0.090	7x 0.0125	9	1.25	**112717**	215

1. No connectors offered by Accu-Glass Products Inc. fit this cable.



100710 / 24 AWG Coaxial Cable



100720 / 26 AWG 50-Ohm Coaxial Cable

50 Ohm Coaxial Cable Specifications — for Part No. 112129, 112130, 100720 and 112717

Near Frequency MHz	32 AWG **112129**	30 AWG **112130**	26 AWG **100720**	20 AWG **112717**
Attenuation — db[1]				
10	-12.79	-11.16	-8.93	—
100	-41.95	-39.42	-31.29	-26.0
200	-76.95	-59.54	-46.91	—
400	-53.05	-96.15	-62.02	—
Impedance — Ohms[1]				
200	65.40	55.07	48.31	—
400	60.58	55	47.25	—
Maximum	75.53	64.28	52.82	—
Minimum	55.65	52.52	46.61	—
Mean	62.34	55.74	48.48	37
Mutual Capacitance — nF[1]				
	8.31	10.24	11.78	14.5

1. All values are per 100 meters of cable.