



A **CARLISLE** COMPANY
INTERCONNECT TECHNOLOGIES

WIRE & CABLE CAPABILITIES



HIGH PERFORMANCE SPECIALITY WIRE & CABLE SOLUTIONS

Carlisle Interconnect Technologies/Raydex (CarlisleIT/Raydex) is at the forefront of technology in the use of high-temperature fluoropolymers in wire insulation and cable jackets.

While this technology remains the backbone of the defense and aerospace industries, it has also been successfully used in applications within telecommunications, automotive, industrial markets, OEM's and in other areas where temperature and chemical resistance are critical.

Our reputation as a provider of solutions for high performance wire and cable applications keeps us driven to continuously raise the bar on innovative designs to meet your challenges.

Whether your application is suited for a standard product or requires performance enhancements such as increased mechanical toughness, improved flexibility or resistance to extreme temperatures, CarlisleIT/Raydex will deliver the very best solution.

SERVICE LEADERSHIP

As a global leader in specialty wire and cable solutions, we offer customers direct access to a wider range of products and services than ever before. This access to global resources makes us an ideal supplier and development partner, providing you with world-class product, design and quality leadership.

Our investments in resources and technology enable us to offer:

- » A service package tailored to your needs
- » Stocking arrangements designed to meet your needs
- » Shorter lead times
- » World class logistics
- » Engineering and design expertise from around the globe

DESIGN AND ENGINEERING LEADERSHIP

CarlisleIT/Raydex has established a strong reputation for innovation and creativity. We offer our customers solutions for wire and cable systems requiring specific technical expertise or where space and weight limitations are critical. We can also provide total interconnect solutions encompassing every facet of design and production.

As a leader in specialty wire and cable solutions for challenging environments, CarlisleIT/Raydex has the ability and the experience to deliver the right solution, including custom cable designs to suit the end user and OEM applications.

QUALITY LEADERSHIP

As you would expect from a global leader, our commitment to quality and reliability is second to none. Our cables are manufactured according to the most rigorous quality processes in the industry and tested to meet the relevant European and international standards.

We have the Carlisle Operating System (COS), which is a global lean business management and performance system. COS allows us to increase our overall efficiency by eliminating waste, while reducing the impact on the environment at every level throughout CarlisleIT's operations.

All of our locations are AS9100, ISO 9001 and UL certified. All locations will be ISO 14001 certified by 2015.

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CarlisleIT/Raydex has become recognized as a world leader in the supply of speciality cables for the aerospace, defense and industrial markets supplying directly to OEM's and through distribution networks. We manufacture to a wide range of aerospace, defense and commercial approvals, standards and specifications, including:

Panavia Aerospace Specifications	Index
PAN 6411, PAN 6412, PAN 6413	Panavia
PAN 6417, PAN 6420, PAN 6421	Panavia
PAN 6423, PAN 6424, PAN 6425	Panavia
PAN 6428, PAN 6429, PAN 6476	Panavia
PAN 6481	Panavia

Defence Standard / British Standard Specifications	Index
Def. Stan. 61-12 Part 8 Issue 3	*
Def. Stan. 61-12 Part 9 Issue 5	*
Def. Stan. 61-12 Part 12 Section 3 Issue 2	*
Def. Stan. 61-12 Part 33 / 008 Issue 5	*
Def. Stan. 61-12 Part 29 Issue 1	ETFE
Def. Stan. 61-12 Part 30 Issue 1	EFGLAS
BS 2316	*
BS G 222	EFGLAS
BS 3G 210	PTFE

*Not referenced in this documentation, more details available on request.

Military Specifications **	Index
MIL-W-16878 (NEMA HP3)	PTFE
MIL-W-16878 (NEMA HP4)	FEP
MIL-W-22759	PTFE
MIL-W-22759	ETFE
MIL-C-17/93	Coaxial
MIL-C-17/94	Coaxial
MIL-C-17/95	Coaxial
MIL-C-17/110D	Coaxial
MIL-C-17/131	Coaxial
MIL-C-17/132B	Coaxial
MIL-C-17/158A	Coaxial
MIL-C-17/169	Coaxial
MIL-C-17/170	Coaxial
MIL-C-17/172	Coaxial
MIL-C-17/175	Coaxial

**With the exception of MIL-W-16878, the cables referenced in this documentation are all designed and manufactured in accordance with the quoted MIL specification.

Aircraft Engine Specifications	Index
ESW 1000, ESW 1200, ESW 1201, ESW 1202, ESW 1203	Aircraft Engine
ESW 1250, ESW 1251, ESW 1252, ESW 1253, ESW 1600	
ESW 1601, ESW 1602, ESW 01DDA, ESW 04JDA, ESW 04KDA	
ESW 058DA, ESW 11DDA, ESW 13DEA, ESW 21DDA, ESW 24LDA	
ESW 31DDA, ESW 33DEA, RTS 49891, RTS 49894, RTS 49895	
RTS 49896, RTS 49897, RTS 50634, RTS 52154-18, RTS 52155-2	
RTS 52155-3, RTS 52156-2, RTS 52156-3, RTS 64677, RTS 64678	
RTS 64720, RTS 64721, RTS 65046, RTS 65623, RTS 65778	
RTS 67263, RTS 67624, RTS 68673, RTS 77161, RTS 71380, RTS 77086	

Note: Not all of the Aircraft Specifications noted are referenced in this documentation, more details are available on request.

Underwriters Laboratory, Standard AWM Styles ***	Index
1164, 1180, 1198, 1199, 1212, 1213	PTFE
1371, 1538, 1659, 1815	PTFE
3265, 3266, 3271, 3272, 3288, 3289	ZYRAD™
1330, 1331, 1332, 1333, 10440, 10511	FEP
1709, 1710, 1726, 1727	PFA
1610, 1671, 10086	ETFE

***CarlisleIT/Raydex holds a wide range of UL AWM styles. Please contact our customer service team if the UL style required is not listed.

Canadian Standards Association	Index
CL 1251, CL 1252, CL 1502, CL 1503	ZYRAD™
AWM 300V / 600V	PTFE, FEP
C22.2 300V / 600V	PFA

A composite insulation of glass and PTFE (Polytetrafluoroethylene), EFGLAS provides extreme strength, abrasion and temperature resistance from the combination of PTFE tape and a PTFE impregnated glass yarn braid.

Key Characteristics

- » Excellent resistance to fuels, hydraulic fuel and petroleum and ester based oils
- » Operating temperature: -75°C to 260°C
- » 600V Rating
- » Nickel Plated Conductors
- » White with EFGLAS print legend for ease of identification
- » Nonflammable

Typical Applications

- » Aerospace and Aircraft Wiring
- » Industrial applications in extreme environments where high tensile strength is required

Product Data

A range of EFLGAS wires are designed, manufactured and fully released to meet the requirements of the BS G 222:1976 Specification for EFGLAS type electric cables.

AWG	Nominal Conductor OD			Overall Diameter (mm)									
	mm	mm ²	Conductor (stranding)	Efglas Unshielded		Efglasmet Shielded		Efglasmetsheath Shielded & Jacketed		Dufglasmetsheath Shielded & Jacketed		Trifglasmetsheath Shielded & Jacketed	
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
BS G 222:1976 • Nickel Plated Conductors • 600V													
22	0.70 - 0.80	0.336	19/0.150	1.65	2.05	2.15	2.55	2.60	3.30	4.50	5.90	4.90	6.25
20	0.95 - 1.05	0.597	19/0.200	1.90	2.30	2.40	2.80	2.85	3.55	5.00	6.20	5.45	6.80
18	1.20 - 1.30	0.933	19/0.250	2.15	2.55	2.65	3.05	3.10	3.80	5.50	6.70	*	*
16	1.45 - 1.55	1.340	19/0.300	2.40	2.80	2.90	3.30	3.35	4.05	6.00	7.20	*	*
14	1.68 - 1.82	1.820	37/0.250	2.65	3.10	3.15	3.60	3.60	4.35	*	*	*	*
12	2.12 - 2.28	2.890	37/0.320	3.25	3.75	3.75	4.25	4.20	5.00	*	*	*	*
10	2.70 - 2.90	4.650	37/0.400	4.25	4.75	4.75	5.25	*	*	*	*	*	*
8	4.05 - 4.40	8.410	17/7/0.300	5.75	6.25	*	*	*	*	*	*	*	*
6	5.10 - 5.45	12.850	26/7/0.300	6.30	7.30	*	*	*	*	*	*	*	*
4	6.45 - 6.94	21.780	42/7/0.300	8.45	9.15	*	*	*	*	*	*	*	*
2	8.00 - 8.54	34.490	703/0.250	10.15	10.85	*	*	*	*	*	*	*	*
1	9.00 - 9.39	41.750	851/0.250	11.20	11.90	*	*	*	*	*	*	*	*
0	10.20-10.78	52.640	1073/0.250	12.40	13.15	*	*	*	*	*	*	*	*
00	11.40-12.32	67.160	1369/0.250	13.70	14.45	*	*	*	*	*	*	*	*
000	12.90-13.68	84.780	1728/0.250	15.30	16.05	*	*	*	*	*	*	*	*
0000	14.20-15.66	107.74	2196/0.250	16.800	17.550	*	*	*	*	*	*	*	*

*Cable design not referenced by BS G 222 but available on request where compliance is not a requirement.

This range also includes flexible Uniflexefglas AWG 16 & 20 versions to Defense Standard 61-12 Part 30 Issue 1, with a grey taped PTFE jacket.

AWG	Nominal Conductor OD			Overall Diameter (mm)			
	mm	mm ²	Conductor (Rope Strand)	Uniflexefglas Unshielded		Uniflexefglasmet Shielded	
				Min	Max	Min	Max
DEF STAN 61-12 PT 30/1 • Silver Plated Conductors • 400V & 150°C Rated							
20	1.080	0.555	49/0.120	1.79	2.04	2.20	2.51
16	1.650	1.270	112/0.120	2.33	2.63	2.73	3.13

EFGLAS wires are comparable to MIL-W-22759/3 and can also be supplied to PAN6413 on request.

ETFE (Ethylene-tetrafluoroethylene) Equipment Wire & Cable

A modified co-polymer of ethylene and tetrafluoroethylene, ETFE is a highly resilient, highly flexible flame retardant fluoropolymer with excellent impact strength, particularly suitable for use in high stress applications.

Key Characteristics

- » Operating temperature: -75°C to 150°C
- » 600V Rating
- » Available with Silver-Plated or Tin-Plated Conductors
- » Range of 11 standard colors and striped color options for ease of identification
- » Radiation resistant (2 x 10⁸ RADS)
- » Good chemical and moisture resistance for optimum performance in harsh conditions
- » Excellent abrasion and impact strength for protection during and after installation
- » Can be supplied with an etched surface finish to improve adhesion with potting or encapsulation materials

Typical Applications

- » Airframe and Aircraft Wiring
- » Military Communications Systems
- » Automotive Wiring
- » Underfloor Heating

Product Data - ETFE Military of Defense Standard Styles

A range of ETFE equipment wires and designed, manufactured and fully released to meet the requirements of the DEF STAN 61-12 PT 29/1 specification for extruded insulation, types ETFE and ETFE METSHEATH.

Temperature Rating: -75°C to 150°C for Silver Plated Copper Conductors
-75°C to 135°C for Tin Plated Copper Conductors

Nominal Conductor OD				Type 1 Silver-Plated Copper		Type 2 Tin-Plated Copper		Type 3 Silver Plated High Strength Copper Alloy				
AWG	mm	mm ²	Conductor (stranding)	Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)	
					Min	Max		Min	Max		Min	Max
DEF STAN 61-12 PT 29/1 • ETFE Wires • Medium Wall Insulation • 600V												
26	0.50	0.149	19/0.100	*	*	*	*	*	*	*	*	*
24	0.60	0.215	19/0.120	0.25	1.05	1.15	0.25	1.05	1.15	0.25	1.05	1.15
22	0.75	0.336	19/0.150	0.25	1.20	1.30	0.25	1.20	1.30	0.25	1.20	1.30
20	1.00	0.597	19/0.200	0.25	1.45	1.55	0.25	1.45	1.55	*	*	*
18	1.25	0.933	19/0.250	0.30	1.80	1.90	0.30	1.80	1.90	*	*	*
16	1.50	1.343	19/0.300	0.30	2.05	2.15	0.30	2.05	2.15	*	*	*
14	1.75	1.815	37/0.250	0.30	2.30	2.46	0.30	2.30	2.46	*	*	*
12	2.24	2.974	37/0.320	0.30	2.71	2.99	0.30	2.71	2.99	*	*	*

*Cable design not referenced by DEF STAN 61-12 PT 29/1 but available on request where compliance is not a requirement.

Nominal Conductor OD				Type 1 Silver-Plated Copper			Type 2 Tin-Plated Copper			Type 3 Silver Plated High Strength Copper Alloy		
AWG	mm	mm ²	Conductor (stranding)	Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)	
					Min	Max		Min	Max		Min	Max
DEF STAN 61-12 PT 29/1 • ETFE METSHEATH Cables • Shielded • Jacketed • Medium Wall Insulation • 600V												
26	0.50	0.149	19/0.100	*	*	*	*	*	*	*	*	*
24	0.60	0.215	19/0.120	0.18	1.80	2.00	0.25	1.80	2.00	0.18	1.80	2.00
22	0.75	0.336	19/0.150	0.18	1.95	2.15	0.25	1.95	2.15	0.18	1.95	2.15
20	1.00	0.597	19/0.200	0.18	2.20	2.40	0.25	2.20	2.40	*	*	*
18	1.25	0.933	19/0.250	0.20	2.55	2.85	0.30	2.55	2.85	*	*	*
16	1.50	1.343	19/0.300	0.20	2.80	3.10	0.30	2.80	3.10	*	*	*
14	1.75	1.815	37/0.250	0.20	3.05	3.41	0.30	3.05	3.41	*	*	*
12	2.24	2.974	37/0.320	0.20	3.46	3.94	0.30	3.46	3.94	*	*	*

Nominal Conductor OD				Type 4 Silver-Plated Copper			Type 5 Tin-Plated Copper			Type 6 Silver Plated High Strength Copper Alloy		
AWG	mm	mm ²	Conductor (stranding)	Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)	
					Min	Max		Min	Max		Min	Max
DEF STAN 61-12 PT 29/1 • ETFE Wires • Thin Wall Insulation • 600V												
26	0.50	0.149	19/0.100	0.17	0.79	0.89	0.17	0.79	0.89	0.17	0.79	0.89
24	0.60	0.215	19/0.120	0.17	0.89	0.99	0.17	0.89	0.99	0.17	0.88	0.99
22	0.75	0.336	19/0.150	0.17	1.04	1.14	0.17	1.04	1.14	*	*	*
20	1.00	0.597	19/0.200	0.17	1.29	1.39	0.17	1.29	1.39	*	*	*
18	1.25	0.933	19/0.250	0.18	1.56	1.70	0.18	1.56	1.70	*	*	*
16	1.50	1.343	19/0.300	0.18	1.81	1.95	0.18	1.81	1.95	*	*	*
14	1.75	1.815	37/0.250	*	*	*	*	*	*	*	*	*
12	2.24	2.974	37/0.320	*	*	*	*	*	*	*	*	*

Nominal Conductor OD				Type 4 Silver-Plated Copper			Type 5 Tin-Plated Copper			Type 6 Silver Plated High Strength Copper Alloy		
AWG	mm	mm ²	Conductor (stranding)	Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)	
					Min	Max		Min	Max		Min	Max
DEF STAN 61-12 PT 29/1 • ETFE METSHEATH Cables • Shielded • Jacketed • Thin Wall Insulation • 600V												
26	0.50	0.149	19/0.100	0.18	1.54	1.74	0.17	1.54	1.74	0.18	1.54	1.74
24	0.60	0.215	19/0.120	0.18	1.64	1.84	0.17	1.64	1.84	0.18	1.63	1.84
22	0.75	0.336	19/0.150	0.18	1.79	1.99	0.17	1.79	1.99	*	*	*
20	1.00	0.597	19/0.200	0.18	2.04	2.24	0.17	2.04	2.24	*	*	*
18	1.25	0.933	19/0.250	0.20	2.31	2.65	0.18	2.31	2.65	*	*	*
16	1.50	1.343	19/0.300	0.20	2.563	2.90	0.18	2.56	2.90	*	*	*
14	1.75	1.815	37/0.250	*	*	*	0.18	*	*	*	*	*
12	2.24	2.974	37/0.320	*	*	*	0.18	*	*	*	*	*

*Cable design not referenced by DEF STAN 61-12 PT 29/1 but available on request where compliance is not a requirement.

Product Data - Military Specification Styles

A range of ETFE equipment wires are designed and manufactured in accordance with the requirements of the MIL-W-22759 specification.

Temperature Rating: - 65°C to 150°C for Tin-Plated Copper Conductors

Nominal Conductor OD				MIL-W-22759/18 Type ZT - 600V			MIL-W-22759/16 Type Z - 600V			Type ZZ - 1000V		
AWG	mm	mm²	Conductor (stranding)	Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)	
					Min	Max		Min	Max		Min	Max
32	0.24	0.03	07/0.079	*	0.51	0.61	0.23	0.64	0.74	*	0.91	1.11
30	0.30	0.06	07/0.102	*	0.56	0.66	0.23	0.70	0.80	*	0.97	1.17
28	0.38	0.09	07/0.127	*	0.64	0.74	0.23	0.78	0.88	*	1.04	1.24
26	0.48	0.14	07/0.160	*	0.74	0.83	0.23	0.88	0.98	*	1.14	1.35
24	0.60	0.22	07/0.203	*	0.86	0.97	0.23	1.09	1.19	*	1.27	1.47
22	0.80	0.38	19/0.160	*	1.04	1.14	0.26	1.27	1.37	*	1.42	1.63
20	1.00	0.6	19/0.203	*	1.24	1.35	0.26	1.47	1.57	*	1.63	1.83
18	1.25	0.96	19/0.254	*	1.50	1.60	0.28	1.75	1.85	*	1.88	2.13
16	1.44	1.23	19/0.287	*	1.73	1.83	0.29	1.96	2.06	*	2.11	2.41
15	1.75	1.81	37/0.250	*	*	*	0.3	2.31	2.46	*	*	*
14	1.81	1.94	19/0.361	*	2.11	2.21	0.28	2.31	2.41	*	2.46	2.86
12	2.24	2.98	37/0.320	*	2.64	2.79	0.33	2.82	2.97	*	2.91	3.31
10	2.80	4.74	37/0.404	*	3.33	3.48	0.36	3.45	3.61	*	3.48	3.89
8	4.14	8.56	133/0.287	*	*	*	0.46	4.98	5.13	*	5.05	5.56
6	5.21	13.5	133/0.361	*	*	*	0.57	6.27	6.43	*	7.26	7.64
4	6.58	21.5	133/0.454	*	*	*	0.68	7.82	8.03	*	8.86	9.37
2	8.49	33.7	665/0.254	*	*	*	0.69	9.75	9.96	*	10.03	10.54

*Cable design not referenced by MIL-W-22759 but available on request where compliance is not a requirement.

The product data tables cover single core cables. Multi-core cables with or without overall shield and jacket are also available. For more information, please refer to the Multi-Core Cable section. ETFE Wires can also be supplied to the UL Styles listed on page 3, on request.



A co-polymer of hexafluoropropylene and tetrafluoroethylene, FEP offers outstanding resistance to chemicals, oils and lubricants, retains it's flexibility at low temperatures and has good weatherability.

Key Characteristics

- » Operating temperature: -75°C to 200°C
- » 250V to 1000V Rating
- » Available with Silver-Plated or Tin-Plated Conductors
- » Range of 11 standard colors and striped color options for ease of identification
- » Superior dielectrical properties
- » Nonflammable

Typical Applications

- » Military Communications Systems
- » Aerospace and Aircraft Wiring
- » OEM Appliance Wiring
- » Electronics Wiring

Product Data - FEP UL/CSA Approved Styles

A range of FEP Insulated wires designed are manufactured and fully released to meet the requirements of UL STYLE 1330, 1331, 1332, 1333 and CSA.

Temperature Rating: -75°C to 150°C for Tin-Plated Copper Conductors
-75°C to 200°C for Silver-Plated Copper Conductors

Nominal Conductor OD				UL STYLE 1330, 1331, CSA - 600V			UL STYLE 1332, 1333, CSA - 300V		
AWG	mm	mm²	Conductor (stranding)	Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)	
					Min	Max		Min	Max
30	0.30	0.055	7/0.100	0.51	1.32	1.36	0.33	0.96	1.00
28	0.38	0.089	7/0.127	0.51	1.40	1.44	0.33	1.04	1.08
26	0.48	0.141	7/0.160	0.51	1.50	1.54	0.33	1.14	1.18
24	0.60	0.220	7/0.200	0.51	1.62	1.66	0.33	1.26	1.30
22	0.80	0.336	19/0.160	0.51	1.82	1.86	0.33	1.46	1.50
20	1.00	0.597	19/0.200	0.51	2.02	2.06	0.33	1.66	1.70
18	1.25	0.933	19/0.250	0.51	2.27	2.31	0.33	1.91	1.95
18	1.25	1.000	32/0.200	0.51	2.27	2.31	0.33	1.91	1.95
16	1.50	1.340	19/0.300	0.51	2.52	2.56	0.33	2.16	2.20
16	1.50	1.500	30/0.250	0.51	2.52	2.56	0.33	2.16	2.20
14	1.81	1.946	19/0.361	0.51	3.02	3.06	0.33	2.47	2.51
12	2.25	3.020	19/0.450	0.51	3.52	3.56	0.33	2.91	2.95
10	2.80	4.650	19/0.451	0.51	3.82	3.86	0.33	3.46	3.50

Product Data - Military Specification Styles

A range of FEP Insulated wires, designed, manufactured and fully released to meet the requirements of MIL-W-16878 (NEMA HP4).

Temperature Rating: -75°C to 150°C for Tin-Plated Copper Conductors
 -75°C to 200°C for Silver-Plated Copper Conductors

Nominal Conductor OD				Type KT - 250V			Type K - 600V			Type KK - 1000V		
AWG	mm	mm ²	Conductor (stranding)	Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)	
					Min	Max		Min	Max		Min	Max
32	0.20	0.03	01/0.203	0.15	0.41	0.56	0.25	0.61	0.81	0.38	0.86	1.06
32	0.24	0.03	07/0.079	0.15	0.51	0.61	0.25	0.66	0.86	0.38	0.91	1.11
30	0.25	0.05	01/0.254	0.15	0.51	0.61	0.25	0.66	0.86	0.38	0.91	1.12
30	0.31	0.06	07/0.102	0.15	0.56	0.66	0.25	0.71	0.91	0.38	0.97	1.17
28	0.32	0.08	01/0.320	0.15	0.58	0.69	0.25	0.74	0.94	0.38	0.99	1.19
28	0.38	0.09	07/0.127	0.15	0.64	0.74	0.25	0.79	0.99	0.38	1.04	1.24
28	0.38	0.09	19/0.079	0.15	0.64	0.74	0.25	0.79	0.99	0.38	1.04	1.24
26	0.40	0.13	01/0.404	0.15	0.66	0.76	0.25	0.81	1.02	0.38	1.07	1.27
26	0.48	0.14	07/0.160	0.15	0.74	0.83	0.25	0.89	1.09	0.38	1.14	1.35
26	0.48	0.15	19/0.102	0.15	0.74	0.84	0.25	0.89	1.09	0.38	1.14	1.35
24	0.51	0.20	01/0.511	0.15	0.76	0.86	0.25	0.91	1.12	0.38	1.17	1.37
24	0.61	0.23	07/0.203	0.15	0.86	0.97	0.25	1.02	1.22	0.38	1.27	1.47
24	0.61	0.24	19/0.127	0.15	0.86	0.97	0.25	1.02	1.22	0.38	1.27	1.47
22	0.76	0.35	07/0.254	0.15	1.02	1.12	0.25	1.17	1.37	0.38	1.42	1.63
22	0.76	0.38	19/0.160	0.15	1.02	1.12	0.25	1.17	1.37	0.38	1.42	1.63
20	0.80	0.52	01/0.813	0.15	1.07	1.17	0.25	1.22	1.42	0.38	1.47	1.68
20	0.96	0.56	07/0.320	0.15	1.22	1.32	0.25	1.37	1.57	0.38	1.63	1.83
20	0.97	0.61	19/0.203	0.15	1.22	1.32	0.25	1.37	1.57	0.38	1.63	1.83
18	1.19	0.96	19/0.254	*	*	*	0.25	1.63	1.88	0.41	1.88	2.13
16	1.35	1.23	19/0.287	*	*	*	0.29	1.85	2.21	0.41	2.11	2.41
14	1.69	1.94	19/0.361	*	*	*	0.29	2.24	2.59	0.42	2.46	2.86
12	2.14	3.07	19/0.454	*	*	*	0.29	2.72	3.07	0.42	2.91	3.31

*Cable design not referenced by MIL-W-16878 (NEMA HP4) but available on request where compliance is not a requirement.

The product data tables above cover single core cables. Multi-core cables with or without overall shield and jacket are also available. For more information, please refer to the Multi-Core Cable section. FEP Wires can also be supplied to the UL Styles listed on page 3, on request.



A semi-crystalline thermoplastic, PEEK offers excellent mechanical properties and chemical resistance coupled with outstanding thermal and combustion characteristics.

Key Characteristics

- » Operating temperature: -75°C to 200°C
- » 600V Rating
- » Available with Silver-Plated or Nickel-Plated Conductors
- » Range of 11 standard colors and striped color options for ease of identification
- » Halogen free and low toxicity
- » Toxicity index > 0.2 < 1.5 (type 2)
- » Excellent radiation resistance

Typical Applications

- » Nuclear Power Wiring
- » Chemical Processing
- » Ultrahigh vacuum (UHV) environments

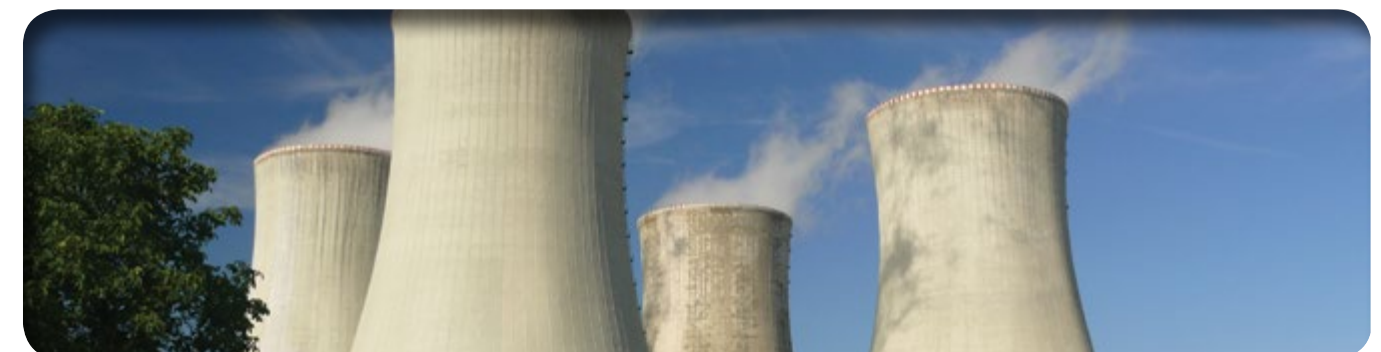
Product Data

A range of halogen free, radiation resistant PEEK insulated wires.

Temperature Rating: -75°C to 200°C for Silver-Plated Copper Conductors
 -75°C to 200°C for Nickel-Plated Copper Conductors

Nominal Conductor OD				Overall Diameter (mm)	
AWG	mm	mm ²	Conductor (stranding)	Min	Max
0.20mm nominal insulation • 600V					
23	0.60	0.283	1/0.60	0.90	1.05
19	0.90	0.636	1/0.90	1.20	1.35
26	0.50	0.149	19/0.10	0.80	0.95
24	0.60	0.215	19/0.12	0.90	1.05
22	0.75	0.336	19/0.15	1.05	1.20
20	1.00	0.597	19/0.20	1.30	1.50
18	1.25	0.933	19/0.25	1.55	1.75
16	1.50	1.343	19/0.30	1.80	2.00
14	1.75	1.815	37/0.25	2.15	2.35
12	2.10	2.614	37/0.30	2.50	2.70

The product data tables above cover single core cables. Multi-core cables with or without overall shield and jacket are also available. For more information, please refer to the Multi-Core Cable section.



PFA (Perfluoroalkoxy) Equipment Wire & Cable

A fluoropolymer which displays similar properties to PTFE with outstanding resistance to chemicals, oils, lubricants, temperature extremes, displays superior flexibility and improved dielectric strength.

Key Characteristics

- » Operating temperature: -75°C to 260°C
- » 300V, 600V or 1000V Rating
- » Available with Silver-Plated or Nickel-Plated Conductors
- » Range of 11 standard colors and striped color options for ease of identification
- » Compact and lightweight for space and weight saving
- » Superior dielectric properties
- » Good flexibility

Typical Applications

- » Military Communications and Avionics
- » High Intensity Lighting
- » OEM Appliance Wiring

Product Data

A range of PFA Insulated wires are designed and offered as an alternative to Types A, B and C referenced in the BS 3G 210:1996 specification for PTFE insulated equipment wires and cables.

Nominal Conductor OD				Type A - 300V			Type B - 600V			Type C - 1000V		
AWG	mm	mm ²	Conductor (stranding)	Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)	
					Min	Max		Min	Max		Min	Max
32	0.20	0.03	01/0.200	0.15	0.45	0.55	0.25	0.60	0.80	0.40	0.9	1.1
32	0.24	0.04	07/0.080	0.15	0.49	0.59	0.25	0.64	0.84	0.40	0.9	1.16
30	0.25	0.05	01/0.250	0.15	0.45	0.60	0.25	0.65	0.85	0.40	0.95	1.2
30	0.30	0.06	07/0.100	0.15	0.50	0.65	0.25	0.70	0.90	0.40	0.96	1.22
28	0.32	0.08	01/0.320	0.15	0.52	0.67	0.25	0.72	0.92	0.40	1.02	1.25
28	0.36	0.08	07/0.120	0.15	0.56	0.71	0.25	0.76	0.96	0.40	1.02	1.28
26	0.40	0.13	01/0.400	0.15	0.60	0.75	0.25	0.80	1.00	0.40	1.1	1.35
26	0.45	0.12	07/0.150	0.15	0.65	0.80	0.25	0.85	1.05	0.40	1.11	1.37
26	0.50	0.15	19/0.100	0.15	0.70	0.85	0.25	0.90	1.10	0.40	1.16	1.42
24	0.60	0.22	07/0.200	0.15	0.80	0.95	0.25	1.00	1.20	0.40	1.26	1.52
24	0.60	0.22	19/0.120	0.15	0.80	0.95	0.25	1.00	1.20	0.40	1.26	1.52
22	0.60	0.28	01/0.600	0.15	0.80	0.95	0.25	1.00	1.20	0.40	1.26	1.52
22	0.75	0.34	19/0.150	0.15	0.95	1.10	0.25	1.15	1.35	0.40	1.41	1.67
20	1.00	0.6	19/0.200	0.15	1.20	1.32	0.25	1.40	1.60	0.40	1.66	1.92
19	0.90	0.64	01/0.900	*	*	*	0.25	1.30	1.50	0.40	1.6	1.9
18	1.25	0.93	19/0.250	*	*	*	0.25	1.65	1.85	0.40	1.91	2.17
16	1.50	1.34	19/0.300	*	*	*	*	*	*	0.40	2.16	2.46
14	1.68	1.68	19/0.335	*	*	*	*	*	*	0.40	2.34	2.74
12	2.25	3.02	19/0.450	*	*	*	*	*	*	0.40	2.91	3.31
10	2.80	4.65	37/0.400	*	*	*	*	*	*	0.43	3.46	3.86

*Cable design not referenced by specification but available on request where compliance is not a requirement.

Product Data - PFA UL/CSA Approved Styles

A range of PFA Insulated wires are designed, manufactured and fully released to meet the requirements of UL STYLE 1709, 1710, 1726 & 1727 or CSA Standard C22.2 No. 210 (2a7.8).

- » Operating temperature: -75°C to 250°C – UL1726 & 1727
- » Operating temperature: -75°C to 200°C – UL1709 & 1710

Nominal Conductor OD				UL STYLE 1710, 1727, CSA - 600V			UL STYLE 1709, 1726, CSA - 300V		
AWG	mm	mm ²	Conductor (stranding)	Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)	
					Min	Nom		Min	Nom
30	0.30	0.055	7/0.100	0.51	1.32	1.36	0.33	0.96	1.00
28	0.38	0.089	7/0.127	0.51	1.40	1.44	0.33	1.04	1.08
26	0.48	0.141	7/0.160	0.51	1.50	1.54	0.33	1.14	1.18
24	0.60	0.220	7/0.200	0.51	1.62	1.66	0.33	1.26	1.30
22	0.80	0.336	19/0.160	0.51	1.82	1.86	0.33	1.46	1.50
20	1.00	0.597	19/0.200	0.51	2.02	2.06	0.33	1.66	1.70
18	1.25	0.933	19/0.250	0.51	2.27	2.31	0.33	1.91	1.95
18	1.25	1.000	32/0.200	0.51	2.27	2.31	0.33	1.91	1.95
16	1.50	1.340	19/0.300	0.51	2.52	2.56	0.33	2.16	2.20
16	1.50	1.500	30/0.250	0.51	2.52	2.56	0.33	2.16	2.20
14	1.81	1.946	19/0.361	0.51	3.02	3.06	0.33	2.47	2.51
12	2.25	3.020	19/0.450	0.51	3.52	3.56	0.33	2.91	2.95
10	2.80	4.650	19/0.451	0.51	3.82	3.86	0.33	3.46	3.50

The product data tables above cover single core cables. Multi-core cables with or without overall shield and jacket are also available. For more information, please refer to the Multi-Core Cable section.



POLYIMIDE Equipment Wire & Cable

A compact, lightweight and mechanically tough polymer with good flexibility, heat and chemical resistance.

Key Characteristics

- » Operating temperature: -75 °C to 200 °C
- » 250V to 1000V Rating
- » Available with Silver-Plated or Tin-Plated Conductors
- » Range of 11 standard colors and striped color options for ease of identification
- » Compact and lightweight
- » Low smoke and low toxicity properties
- » Excellent radiation resistance

Typical Applications

- » Airframe and Aircraft Wiring
- » Military Communications and Avionics
- » Automotive Wiring
- » Nuclear Power Installations

Product Data

A range of Polyimide equipment wires are designed and manufactured for high temperature, high voltage and lightweight, small diameter applications.

Nominal Conductor OD					Type 1 - 250V Unshielded		Type 1S - 250V Shielded		Type 1SM - 250V Shielded and Jacketed	
AWG	mm	mm ²	Conductor (stranding)	Nominal Insulation (mm)	Overall Diameter (mm)		Overall Diameter (mm)		Overall Diameter (mm)	
					Min	Max	Min	Max	Min	Max
32	0.20	0.031	1/0.200	0.06	0.29	0.35	*	*	*	*
30	0.25	0.049	1/0.250	0.06	0.34	0.40	*	*	*	*
28	0.32	0.080	1/0.320	0.06	0.41	0.47	*	*	*	*
26	0.40	0.126	1/0.400	0.06	0.49	0.55	0.84	0.99	1.02	1.22
22	0.60	0.283	1/0.600	0.06	0.69	0.75	1.04	1.19	1.22	1.42
19	0.90	0.636	1/0.900	0.06	0.99	1.05	1.34	1.49	1.52	1.72
32	0.24	0.035	7/0.080	0.06	0.33	0.39	0.68	0.83	0.86	1.06
30	0.30	0.055	7/0.100	0.06	0.39	0.45	0.74	0.89	0.92	1.12
28	0.36	0.079	7/0.120	0.06	0.45	0.51	0.80	0.95	0.98	1.18
26	0.45	0.124	7/0.150	0.06	0.56	0.62	0.91	1.06	1.09	1.29
24	0.60	0.220	7/0.200	0.06	0.69	0.75	1.04	1.19	1.22	1.42
26	0.50	0.149	19/0.100	0.06	0.57	0.67	0.92	1.12	1.15	1.35
22	0.75	0.336	19/0.150	0.06	0.82	0.92	1.17	1.37	1.40	1.60
20	1.00	0.597	19/0.200	0.06	1.07	1.17	1.42	1.62	1.65	1.85

*Cable design not referenced by specification but available on request where compliance is not a requirement.

Nominal Conductor OD					Type 2 - 600V Unshielded		Type 2SS - 600V Shielded		Type 2SM - 600V Shielded and Jacketed	
AWG	mm	mm ²	Conductor (stranding)	Nominal Insulation (mm)	Overall Diameter (mm)		Overall Diameter (mm)		Overall Diameter (mm)	
					Min	Max	Min	Max	Min	Max
32	0.20	0.031	1/0.200	0.12	0.38	0.50	*	*	*	*
30	0.25	0.049	1/0.250	0.12	0.43	0.55	0.79	0.91	0.97	1.09
28	0.32	0.080	1/0.320	0.12	0.50	0.62	0.86	0.98	1.04	1.16
26	0.40	0.126	1/0.400	0.12	0.58	0.70	1.03	1.15	1.21	1.33
22	0.60	0.283	1/0.600	0.12	0.78	0.90	1.23	1.35	1.41	1.53
19	0.90	0.636	1/0.900	0.12	1.08	1.20	1.53	1.65	1.71	1.83
32	0.24	0.035	7/0.080	0.12	0.42	0.54	0.87	0.99	1.05	1.17
30	0.30	0.055	7/0.100	0.12	0.48	0.60	0.93	1.05	1.11	1.23
28	0.36	0.079	7/0.120	0.12	0.54	0.66	0.99	1.11	1.17	1.29
26	0.45	0.124	7/0.150	0.12	0.63	0.75	1.08	1.20	1.26	1.38
24	0.60	0.220	7/0.200	0.12	0.78	0.90	1.23	1.35	1.41	1.53
26	0.50	0.149	19/0.100	0.12	0.68	0.80	1.13	1.25	1.31	1.43
22	0.75	0.336	19/0.150	0.12	0.93	1.05	1.38	1.50	1.56	1.68
20	1.00	0.597	19/0.200	0.12	1.18	1.30	1.63	1.75	1.81	1.93
18	1.25	0.933	19/0.250	0.12	1.43	1.55	1.88	2.00	2.06	2.18
16	1.50	1.343	19/0.300	0.12	1.68	1.80	2.13	2.25	2.31	2.43
14	1.68	1.675	19/0.335	0.12	1.86	1.98	2.31	2.43	2.49	2.61
12	2.25	3.022	19/0.450	0.12	2.43	2.55	2.88	3.00	3.06	3.18
10	2.80	4.650	37/0.400	0.12	2.98	3.10	3.43	3.55	3.61	3.73

Nominal Conductor OD					Type 3 - 1000V Unshielded		Type 3S - 1000V Shielded		Type 3SM - 1000V Shielded and Jacketed	
AWG	mm	mm ²	Conductor (stranding)	Nominal Insulation (mm)	Overall Diameter (mm)		Overall Diameter (mm)		Overall Diameter (mm)	
					Min	Max	Min	Max	Min	Max
30	0.25	0.049	1/0.250	0.18	0.52	0.70	0.97	0.91	1.15	1.09
28	0.32	0.080	1/0.320	0.18	0.59	0.77	1.04	0.98	1.22	1.16
26	0.40	0.126	1/0.400	0.18	0.67	0.85	1.12	1.26	1.30	1.44
22	0.60	0.283	1/0.600	0.18	0.87	1.05	1.32	1.46	1.50	1.64
19	0.90	0.636	1/0.900	0.18	1.17	1.35	1.62	1.76	1.80	1.94
32	0.24	0.035	7/0.080	0.18	0.51	0.69	0.96	1.10	1.14	1.28
30	0.30	0.055	7/0.100	0.18	0.57	0.75	1.02	1.16	1.20	1.34
28	0.36	0.079	7/0.120	0.18	0.63	0.81	1.08	1.22	1.26	1.40
26	0.45	0.124	7/0.150	0.18	0.72	0.90	1.17	1.31	1.35	1.49
24	0.60	0.220	7/0.200	0.18	0.87	1.05	1.32	1.46	1.50	1.64
26	0.50	0.149	19/0.100	0.18	0.77	0.95	1.22	1.36	1.40	1.54
22	0.75	0.336	19/0.150	0.18	1.02	1.20	1.47	1.61	1.65	1.79
20	1.00	0.597	19/0.200	0.18	1.27	1.45	1.72	1.86	1.90	2.04
18	1.25	0.933	19/0.250	0.18	1.52	1.70	1.97	2.15	2.15	2.33
16	1.50	1.343	19/0.300	0.18	1.77	1.95	2.22	2.40	2.40	2.58
14	1.68	1.675	19/0.335	0.18	1.95	2.13	2.40	2.58	2.58	2.76
12	2.25	3.022	19/0.450	0.18	2.52	2.70	2.97	3.15	3.15	3.33
10	2.80	4.650	37/0.400	0.18	3.07	3.25	3.52	3.70	3.70	3.88

*Cable design not referenced by specification but available on request where compliance is not a requirement.

The product data tables above cover single core cables, multi-core cables with or without overall shield and jacket are also available. For more information, please refer to the Multi-Core Cable section.

Product Data

Polyimide Radiation Resistant Equipment Wire is a hybrid construction utilizing nickel-plated copper wire, polyimide films and a polyimide enamel topcoat. This construction is suitable in environments with radiation levels of 1×10^9 RADS and has a maximum operating temperature of 300°C.

Nominal Conductor OD					Type 2 - 600 V Unshielded	
AWG	mm	mm ²	Conductor (stranding)	Nominal Insulation (mm)	Overall Diameter (mm)	
					Min	Max
26	0.40	0.126	1/0.400	0.13	0.59	0.71
22	0.60	0.283	1/0.600	0.13	0.79	0.91
19	0.90	0.636	1/0.900	0.13	1.09	1.21
30	0.30	0.055	7/0.100	0.13	0.49	0.61
28	0.36	0.079	7/0.120	0.13	0.55	0.67
26	0.45	0.124	7/0.150	0.13	0.64	0.76
24	0.60	0.220	7/0.200	0.13	0.79	0.91
26	0.50	0.149	19/0.100	0.13	0.69	0.81
22	0.75	0.336	19/0.150	0.13	0.94	1.06
20	1.00	0.597	19/0.200	0.13	1.19	1.31
18	1.25	0.933	19/0.250	0.13	1.44	1.56
16	1.50	1.343	19/0.300	0.13	1.69	1.81
14	1.68	1.675	19/0.335	0.13	1.87	1.99
12	2.25	3.022	19/0.450	0.13	2.44	2.56

The product data tables cover single core cables, multi-core cables with or without overall shield and jacket are also available. For more information, please refer to the Multi-Core Cable section.



A synthetic fluoropolymer of tetrafluoroethylene, PTFE offers outstanding resistance to chemicals, oils, lubricants, temperature extremes and particularly suitable for use in severe environments.

Key Characteristics

- » Operating temperature: -75°C to 260°C
- » 300V to 1000V Rating
- » Available with Silver-Plated or Nickel-Plated Conductors
- » Range of 11 standard colors and striped color options for ease of identification
- » Superior dielectric properties
- » Nonflammable
- » Can be supplied with an etched surface finish to improve adhesion with potting or encapsulation materials

Typical Applications

- » Military Communications and Avionics
- » Aerospace and Aircraft Wire Harnessing
- » Automotive Sensor Systems
- » OEM Appliance Wiring

Product Data - PTFE BS 3G 210:1996

A range of PTFE Equipment wires and designed, manufactured and fully released to meet the requirements of the BS 3G 210:1996, specification for PTFE insulated equipment wire and cable.

Temperature Rating: -75°C to 190°C for Silver Plated Copper Conductors
-75°C to 260°C for Nickel Plated Copper Conductors

Nominal Conductor OD				Overall Diameter (mm)			
AWG	mm	mm ²	Conductor (stranding)	Type A Unshielded		Type AS Shielded	
				Min	Max	Min	Max
BS 3G 210:1996 Type A / Type AS (0.15mm nominal insulation) • 300V							
30	0.25	0.049	01/0.250	0.45	0.60	*	*
28	0.32	0.080	01/0.320	0.52	0.67	*	*
26	0.40	0.126	01/0.400	0.60	0.75	*	*
32	0.24	0.035	07/0.080	0.44	0.59	0.89	1.04
30	0.30	0.055	07/0.100	0.50	0.65	0.95	1.10
28	0.36	0.079	07/0.120	0.56	0.71	1.01	1.16
26	0.45	0.124	07/0.150	0.65	0.80	1.10	1.25
24	0.60	0.220	07/0.200	0.80	0.95	1.25	1.40
26	0.50	0.149	19/0.100	0.70	0.85	1.15	1.30
24	0.60	0.215	19/0.120	0.80	0.95	1.25	1.40
22	0.75	0.336	19/0.150	0.95	1.10	1.40	1.55
20	1.00	0.597	19/0.200	1.20	1.35	1.65	1.80

*Cable design not referenced by BS 3G 210:1996 but available on request where compliance is not a requirement.

PTFE Equipment Wire & Cable (Continued)

Nominal Conductor OD				Overall Diameter (mm)					
AWG	mm	mm ²	Conductor (stranding)	Type B Unshielded		Type BS Shielded		Type BSM Shielded and Jacketed	
				Min	Max	Min	Max	Min	Max
BS 3G 210:1996 Type B / Type BS / Type BSM (0.25mm nominal insulation) • 600V									
26	0.40	0.126	01/0.400	0.80	1.00	*	*	*	*
22	0.60	0.283	01/0.600	1.00	1.20	*	*	*	*
32	0.24	0.035	07/0.080	0.65	0.84	1.09	1.29	1.49	1.89
30	0.30	0.055	07/0.100	0.70	0.90	1.15	1.35	1.55	1.95
28	0.36	0.079	07/0.120	0.76	0.96	1.21	1.41	1.61	2.01
26	0.45	0.124	07/0.150	0.85	1.05	1.30	1.50	1.70	2.10
24	0.60	0.220	07/0.200	1.00	1.20	1.45	1.65	1.85	2.25
26	0.50	0.149	19/0.100	0.90	1.10	1.35	1.55	1.75	2.15
24	0.60	0.215	19/0.120	1.00	1.20	1.45	1.65	1.85	2.25
22	0.75	0.336	19/0.150	1.15	1.35	1.60	1.80	2.00	2.40
20	1.00	0.597	19/0.200	1.40	1.60	1.85	2.05	2.25	2.65
18	1.25	0.933	19/0.250	1.65	1.85	2.10	2.35	2.50	2.90

Nominal Conductor OD				Overall Diameter (mm)					
AWG	mm	mm ²	Conductor (stranding)	Type C Unshielded		Type CS Shielded		Type CSM Shielded and Jacketed	
				Min	Max	Min	Max	Min	Max
BS 3G 210:1996 Type C / Type CS / Type CSM (0.40mm nominal insulation) • 1000V									
19	0.90	0.636	01/0.900	1.56	1.82	2.01	2.27	*	*
32	0.24	0.035	07/0.080	0.90	1.16	1.35	1.61	1.75	2.21
30	0.30	0.055	07/0.100	0.96	1.22	1.41	1.67	1.81	2.27
28	0.36	0.079	07/0.120	1.02	1.28	1.47	1.73	1.87	2.33
26	0.45	0.124	07/0.150	1.11	1.37	1.56	1.82	1.96	2.42
24	0.60	0.220	07/0.200	1.26	1.52	1.71	1.97	2.11	2.57
26	0.50	0.149	19/0.100	1.16	1.42	1.61	1.87	2.01	2.47
24	0.60	0.215	19/0.120	1.26	1.52	1.71	1.97	2.11	2.57
22	0.75	0.336	19/0.150	1.41	1.67	1.86	2.12	2.26	2.72
20	1.00	0.597	19/0.200	1.66	1.92	2.11	2.37	2.51	2.97
18	1.25	0.933	19/0.250	1.91	2.17	2.36	2.62	2.76	3.22
16	1.50	1.343	19/0.300	2.16	2.46	2.61	2.91	3.01	3.51
14	1.68	1.675	19/0.335	2.34	2.74	2.79	3.19	3.19	3.79
12	2.25	3.022	19/0.450	2.91	3.31	3.36	3.76	3.76	4.36
10	2.80	4.650	37/0.400	3.46	3.86	3.91	4.31	4.31	4.91

*Cable design not referenced by BS 3G 210:1996 but available on request where compliance is not a requirement.

Product Data - PTFE UL/CSA Approved Styles

A range of PTFE equipment wires are designed, manufactured and fully released to meet the requirements of UL AWM & CSA styles, specifications for PTFE insulated equipment wire and cable.

Temperature Rating: -75°C to 150°C for UL Style 1164, 1198
-75°C to 200°C for UL Styles 1180, 1199 and CSA AWM

Nominal Conductor OD				Overall Diameter (mm)	
AWG	mm	mm ²	Conductor (stranding)	Min	Max
UL Style 1164 / UL Style 1180 (0.35mm nominal insulation) • Silver-Plated Conductors • 300V					
32	0.24	0.034	07/0.079	0.90	0.94
30	0.30	0.055	07/0.102	0.96	1.00
28	0.38	0.089	07/0.127	1.04	1.08
26	0.48	0.141	07/0.160	1.14	1.18
24	0.60	0.220	07/0.203	1.26	1.30
22	0.80	0.336	19/0.160	1.46	1.50
20	1.00	0.597	19/0.203	1.66	1.70
18	1.25	0.933	19/0.254	1.91	1.95
16	1.43	1.230	19/0.287	2.09	2.13
14	1.81	1.946	19/0.361	2.47	2.51
12	2.25	3.020	19/0.454	2.91	2.95
10	2.80	4.650	37/0.404	3.46	3.50

Nominal Conductor OD				Overall Diameter (mm)	
AWG	mm	mm ²	Conductor (stranding)	Min	Max
UL Style 1199 (0.53mm nominal insulation) • Silver-Plated Conductors • 600V					
30	0.30	0.055	07/0.100	1.32	1.36
28	0.38	0.089	07/0.127	1.40	1.44
26	0.48	0.141	07/0.160	1.50	1.54
24	0.60	0.220	07/0.200	1.62	1.66
24	0.62	0.241	19/0.127	1.64	1.68
22	0.80	0.336	19/0.160	1.82	1.86
20	1.00	0.597	19/0.200	2.02	2.06
18	1.25	0.933	19/0.250	2.27	2.31
16	1.43	1.230	19/0.287	2.46	2.50
14	1.81	1.946	19/0.361	2.83	2.87
12	2.25	3.020	19/0.450	3.27	3.31
10	2.80	4.650	37/0.400	3.82	3.86

PTFE Equipment Wire & Cable (Continued)

Nominal Conductor OD				Overall Diameter (mm)	
AWG	mm	mm ²	Conductor (stranding)	Min	Max
UL Style 1198 (0.53mm nominal insulation) • Silver-Plated Conductors • 600V					
30	0.30	0.055	07/0.100	1.32	1.36
28	0.38	0.089	07/0.120	1.38	1.42
26	0.48	0.141	07/0.150	1.47	1.51
24	0.60	0.220	07/0.200	1.62	1.66
22	0.80	0.336	19/0.150	1.77	1.81
20	1.00	0.597	19/0.200	2.02	2.06
18	1.25	0.933	19/0.250	2.27	2.31
16	1.43	1.229	19/0.287	2.46	2.50
14	1.81	1.946	19/0.361	2.83	2.87
12	2.25	3.020	19/0.450	3.27	3.31
10	2.80	4.650	37/0.400	3.82	3.86

PTFE Wires can also be supplied to the UL Styles listed on page 3, on request.



Product Data - PTFE Military Specification Styles

A range of PTFE equipment wires and designed and manufactured in accordance with the requirements of the MIL-W-16878 (NEMA HP4) specification.

Temperature Rating: -65°C to 200°C for Silver-Plated Copper Conductors
-65°C to 260°C for Nickel-Plated Copper Conductors

Nominal Conductor OD				MIL-W-16878 Type ET 250V		MIL-W-16878 Type E 600V		MIL-W-16878 Type EE 1000V				
AWG	mm	mm ²	Conductor (stranding)	Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)		Nominal Insulation (mm)	Overall Diameter (mm)	
					Min	Max		Min	Max		Min	Max
32	0.20	0.03	01/0.203	0.15	0.41	0.56	0.25	0.64	0.84	0.38	0.87	1.07
32	0.24	0.03	07/0.079	0.15	0.51	0.61	0.25	0.66	0.86	0.38	0.91	1.12
30	0.25	0.05	01/0.254	0.15	0.51	0.61	0.25	0.66	0.86	0.38	0.91	1.12
30	0.31	0.06	07/0.102	0.15	0.56	0.66	0.25	0.71	0.91	0.38	0.97	1.17
28	0.32	0.08	01/0.320	0.15	0.58	0.69	0.25	0.74	0.94	0.38	0.99	1.19
28	0.38	0.09	07/0.127	0.15	0.64	0.74	0.25	0.79	0.99	0.38	1.04	1.24
28	0.38	0.09	19/0.079	0.15	0.64	0.74	0.25	0.79	0.99	0.38	1.04	1.24
26	0.40	0.13	01/0.404	0.15	0.66	0.76	0.25	0.81	1.02	0.38	1.04	1.27
26	0.48	0.14	07/0.160	0.15	0.74	0.83	0.25	0.89	1.09	0.38	1.14	1.35
26	0.48	0.15	19/0.102	0.15	0.74	0.84	0.25	0.89	1.09	0.38	1.14	1.35
24	0.51	0.20	01/0.511	0.15	0.76	0.86	0.25	0.91	1.12	0.38	1.17	1.37
24	0.61	0.23	07/0.203	0.15	0.86	0.97	0.25	1.02	1.22	0.38	1.27	1.47
24	0.61	0.24	19/0.127	0.15	0.86	0.97	0.25	1.02	1.22	0.38	1.27	1.47
22	0.76	0.35	07/0.254	0.15	1.02	1.12	0.25	1.17	1.37	0.38	1.42	1.63
22	0.76	0.38	19/0.160	0.15	1.02	1.12	0.25	1.17	1.37	0.38	1.42	1.63
20	0.80	0.52	01/0.813	0.15	1.07	1.17	0.25	1.22	1.42	0.38	1.47	1.68
20	0.96	0.56	07/0.320	0.15	1.22	1.32	0.25	1.37	1.57	0.38	1.63	1.83
20	0.97	0.61	19/0.203	0.15	1.22	1.32	0.25	1.37	1.57	0.38	1.63	1.83
18	1.19	0.96	19/0.254	0.15	*	*	0.25	1.63	1.88	0.41	1.88	2.13
16	1.35	1.23	19/0.287	0.15	*	*	0.29	1.85	2.21	0.41	2.11	2.41
14	1.70	1.94	19/0.361	0.15	*	*	0.29	2.24	2.59	0.42	2.46	2.86
12	2.13	3.07	19/0.454	0.15	*	*	0.29	2.72	3.07	0.42	2.91	3.38

PTFE wires can also be supplied in accordance with MIL-W-22759, 600V and 1000V on request.

The product data tables cover single core cables. Multi-core cables with or without overall shield and jacket are also available. For more information, please refer to the Multi-Core Cable section.

*Cable design not referenced by specification but available on request where compliance is not a requirement.

Cross Linked Polyolefin Equipment Wire & Cable

Modified polyolefin insulations, cross linked by electron beam, ZYRAD™ and TRAKRAD™ cables provide excellent resistance to abrasion and mechanical damage and have good flame retardant properties.

Key Characteristics

- » Operating temperature: -65°C to 155°C
- » 600V to 1000V Rating
- » Tin-Plated Conductors
- » Range of 11 standard colors and striped color options for ease of identification
- » Flame Retardant
- » Low Smoke Halogen Free versions available

Typical Applications

- » Motors and Transformers
- » Brake Sensors, Catalytic Convertors and Gearbox Systems
- » Domestic Appliances
- » Rapid Transit Railway Wiring
- » Lighting

Product Data - ZYRAD™ 500 Industrial Cable

Designed, manufactured and fully released to meet the requirement of the UL AWM Styles 3288, 3289 and CSA CL 1503 Specifications.

Nominal Conductor OD				Nominal Insulation (mm)	Nominal Overall Diameter (mm)
AWG	mm	mm ²	Conductor (stranding)		
UL AWM 3288 / 3289 • Tin-Plated Conductors • 600V • 150°C *					
24	0.60	0.22	07/0.200	0.80	2.20
24	0.65	0.25	19/0.130	0.80	2.25
22	0.75	0.34	19/0.150	0.80	2.36
22	0.93	0.50	16/0.200	0.80	2.53
20	1.14	0.75	24/0.200	0.80	2.74
18	1.32	1.00	32/0.200	0.80	2.92
16	1.60	1.50	30/0.250	0.80	3.20
14	2.07	2.50	50/0.250	0.80	3.67
12	2.60	4.00	56/0.300	0.80	4.20
10	3.19	6.00	84/0.300	0.80	4.79
8	4.20	10.00	80/0.400	1.20	6.60
6	5.70	16.00	126/0.400	1.60	8.90
4	7.10	25.00	196/0.400	1.60	10.30
2	8.50	35.00	278/0.400	1.60	11.70
1/0	10.30	50.00	399/0.400	2.00	14.30
2/0	12.40	70.00	361/0.500	2.00	16.40
3/0	14.50	95.00	475/0.500	2.00	18.50
4/0	16.00	120.00	608/0.500	2.00	20.00

*Will withstand varnish bake temperatures of 190°C and short term exposure at 250°C

Product Data - ZYRAD™ 555 Industrial Cable

Meets Thermal/Insulation Class "F" for use in generators, electric motors and transformers.

Nominal Conductor OD				Nominal Insulation (mm)	Nominal Overall Diameter (mm)
AWG	mm	mm ²	Conductor (stranding)		
Tin-Plated Conductors • 600V • 155°C * • Class "F"					
24	0.65	0.25	19/0.130	0.40	1.45
22	0.90	0.50	19/0.180	0.43	1.75
20	1.14	0.75	24/0.200	0.55	2.24
18	1.32	1.00	32/0.200	0.60	2.52
16	1.60	1.50	30/0.250	0.60	2.80
14	2.07	2.50	50/0.250	0.60	3.20
12	2.60	4.00	56/0.300	0.65	3.90
10	3.19	6.00	84/0.300	0.70	4.59
8	4.20	10.00	80/0.400	1.00	6.20
6	5.70	16.00	126/0.400	1.10	7.90
4	7.10	25.00	196/0.400	1.20	9.50
2	8.50	35.00	278/0.400	1.30	11.10
1	10.30	50.00	399/0.400	1.50	13.30
0	12.40	70.00	361/0.500	1.60	15.60
3/0	14.50	95.00	475/0.500	1.80	18.10
4/0	16.00	120.00	608/0.500	1.80	19.60

*Will withstand varnish bake temperatures of +190°C and short term exposure at +250°C

Product Data - ZYRAD™ 400 Industrial Cable

Designed, manufactured and fully released to meet the requirement of the UL AWM Style 3266 and CSA CL 1252 Specifications.

Nominal Conductor OD				Nominal Insulation (mm)	Nominal Overall Diameter (mm)
AWG	mm	mm ²	Conductor (stranding)		
Tin-Plated Conductors • 300V • 125°C • Thin Wall Insulation					
24	0.60	0.21	19/0.120	0.40	1.40*
24	0.64	0.24	19/0.127	0.40	1.44*
22	0.75	0.33	19/0.150	0.40	1.55
20	1.00	0.60	19/0.200	0.40	1.80
18	1.25	0.93	19/0.250	0.40	2.05
16	1.50	1.34	19/0.300	0.40	2.30
14	1.75	1.82	37/0.250	0.40	2.55*
12	2.24	2.97	37/0.320	0.40	3.04*
10	2.80	4.65	37/0.400	0.40	3.60*

*These sizes are not referenced by CSA CL 1252

Cross Linked Polyolefin Equipment Wire & Cable (Continued)

Product Data - ZYRAD™ 700 Industrial Cable

Halogen free with low toxicity and low smoke emissions for assured safety and security in industrial applications.

Nominal Conductor OD				600V		1000V	
AWG	mm	mm ²	Conductor (stranding)	Nominal Insulation (mm)	Nominal Overall Diameter (mm)	Nominal Insulation (mm)	Nominal Overall Diameter (mm)
Halogen Free • Tin-Plated Conductors • 150°C							
24	0.62	0.25	19/0.130	0.40	1.42	0.80	2.22
22	0.87	0.50	16/0.200	0.43	1.73	0.80	2.47
20	1.08	0.75	24/0.200	0.55	2.18	0.80	2.68
18	1.22	1.00	32/0.200	0.60	2.42	0.80	2.82
16	1.50	1.50	30/0.250	0.60	2.70	0.80	3.10
14	1.94	2.50	50/0.250	0.60	3.14	0.80	3.54
12	2.46	4.00	56/0.300	0.65	3.76	0.80	4.06
10	2.92	6.00	84/0.300	0.70	4.32	0.80	4.52
8	3.95	10.00	80/0.400	1.00	5.95	1.20	6.35
6	5.70	16.00	126/0.400	1.10	7.90	1.60	8.90
4	7.20	25.00	196/0.400	1.20	9.60	1.60	10.40
2	8.50	35.00	278/0.400	1.30	11.10	1.60	11.70
1	10.30	50.00	399/0.400	1.50	13.30	2.00	14.30
0	12.50	70.00	361/0.500	1.60	15.70	2.00	16.50
3/0	14.30	95.00	475/0.500	1.80	17.90	2.00	18.30
4/0	16.00	120.00	608/0.500	1.80	19.60	2.00	20.00



Product Data - TRAKRAD™ Industrial Cable

Designed to provide excellent oil resistance, manufactured and fully released to meet the requirement of the British Rail TDE 76/P/16 Specification.

Nominal Conductor OD				Nominal Insulation (mm)	Nominal Overall Diameter (mm)
AWG	mm	mm ²	Conductor (stranding)		
Tin-Plated Conductors • 1900 / 3300V • Grey • 90°C * (TDE 76/P/16)					
22	0.87	0.50	16/0.200	0.8	2.59
20	1.08	0.75	24/0.200	0.8	2.82
18	1.22	1.00	32/0.200	0.8	2.92
16	1.40	1.16	37/0.200	0.8	3.00
14	1.50	1.50	30/0.250	0.8	3.32
12	1.75	1.80	37/0.250	0.8	3.50
10	1.94	2.50	50/0.250	0.8	3.76
8	2.10	2.60	37/0.300	0.8	3.90
6	2.47	4.00	56/0.300	0.8	4.29
4	2.80	4.70	37/0.400	1.00	4.80
2	2.93	6.00	84/0.300	1.20	5.67
1	3.60	7.70	61/0.400	1.20	6.00
0	4.60	10.00	80/0.400	1.20	7.00
3/0	5.70	16.00	126/0.400	1.20	8.10
4/0	7.10	25.00	196/0.400	1.60	10.3
2	8.50	35.00	276/0.400	1.60	11.7
1/0	10.30	50.00	396/0.400	1.70	13.7
2/0	12.40	70.00	360/0.500	1.80	16.0
3/0	14.50	95.00	475/0.500	2.00	18.5
4/0	16.00	120.00	608/0.500	2.20	20.4
300,000cmil	18.00	150.00	756/0.500	2.30	22.6
350,000cmil	20.00	185.00	925/0.500	2.40	24.8
450,000cmil	23.00	240.00	1221/0.500	2.40	27.8
600,000cmil	26.00	300.00	1525/0.500	3.00	32.0
800,000cmil	30.00	400.00	2013/0.500	3.00	36.0

*Insulation rated -25°C to 90°C as per the TDE specification, but actual rating to 125°C

Insulation and Jacket Material Typical Characteristics:

Characteristic	EFGLAS	ETFE	FEP	PEEK	PFA	POLYIMIDE	PTFE
Tensile Strength (N/mm ²)	N/A	45	21	70	25	135	25
Elongation (%)	N/A	200	250	150	350	70	350
Hardness (Shore D)	N/A	D75	D55	D85	D55	D90	D55
Service Temperature Max (°C)	+ 260	+ 150	+ 200	+ 200	+ 260	+ 200	+ 260
Service Temperature Min (°C)	- 75	- 75	- 75	- 75	- 75	- 75	- 75
Dielectric Constant	N/A	2.6	2.1	3.4	2.1	2.7	2.1
Flame Retardance	E	E	E	G	E	E	E
Radiation Resistance (RADS)	2 x 10 ⁶	2 x 10 ⁹	2 x 10 ⁶	2 x 10 ⁹	2 x 10 ⁶	1 x 10 ⁷	2 x 10 ⁶
Water Absorption (20°C %)	0.00	0.03	0.01	0.03	0.00	1.3	0.00
Abrasion Resistance	G	G	F	G	F	E	F
Chemical Resistance	E	E	E	G	E	G	E
Oil Resistance	E	E	E	G	E	E	E

Characteristic	PVDF	ZYRAD™ 400	ZYRAD™ 500	ZYRAD™ 555	ZYRAD™ 700	TRAKRAD
Tensile Strength (N/mm ²)	42	12	14	14	11	10
Elongation (%)	650	200	225	225	180	200
Hardness (Shore D)	D65	D38	D34	D34	D32	D32
Service Temperature Max (°C)	+ 130	+ 125	+ 150	+ 155	+ 150	+ 125
Service Temperature Min (°C)	-75	- 65	- 65	- 65	- 25	- 25
Dielectric Constant	8.0	2.72	2.55	2.55	2.7	2.65
Flame Retardance	G	G	G	G	G	G
Radiation Resistance (RADS)	1 x 10 ⁹	2 x 10 ⁹	2 x 10 ⁹	2 x 10 ⁹	2 x 10 ⁹	2 x 10 ⁹
Water Absorption (20°C %)	0.03	<1.0	<1.0	<1.0	<1.0	<1.0
Abrasion Resistance	G	E	E	E	F	F
Chemical Resistance	G	G	G	G	G	G
Oil Resistance	G	P	P	P	F	G

E (Excellent) G (Good) F (Fair) P (Poor)

Note: The ratings and values quoted above are based on average performance to assist users with their choice of material and should not be used for the purpose of specification.

Cross Linked Polyolefin: Current Ratings

Where a number of conductors are together, the appropriate derating factor must be applied:

Number of Conductors	Derating Factor
2-3	0.70
4-6	0.56
7-24	0.45
25-42	0.39
42 or more	0.32

Customized design solutions are available to suit the specific needs of individual applications and specifications such as temperature performance, chemical resistance and voltage rating.

Product Data

Cables can be designed from the individual components below to form multi-core cables up to a maximum of 61 twisted pairs. Composite constructions using different conductor sizes and insulations are also available.

Component	Options
Conductor Alloy	Silver-Plated Copper
	Nickel-Plated Copper
	Tin-Plated Copper
	Thermocouple
Conductor Type	Solid
	Stranded
Conductor Size	AWG 32 to AWG 10
Insulation / Jacket	ETFE
	FEP
	PEEK
	PFA
	Polyimide
	PTFE
	PVDF
	Cross Linked Polyolefin
Shield	Tin-plated copper braid
	Silver-plated copper braid
	Nickel-plated copper braid
	Aluminium tape
Armor	Stainless steel braid
	Galvanised steel braid

Our experienced design team are available to assist with cable designs for applications with specific requirements.



Aircraft Engine Cables

A range of high temperature, fire proof and fire-resistant single and multi-core cables, incorporating PTFE and Polyimide, specifically designed for use in fire zone areas of the aircraft engine.

Key Characteristics

- » Fire-resistant, PTFE and Polyimide insulations
- » Nickel-Plated Copper and Nickel-Plated Copper Alloy Conductors
- » Operating temperature: -75°C to 260°C
- » Lightweight and space saving
- » Excellent resistance to hydraulic fuel, petroleum and ester based oils
- » Distinctive Red/White stripe or Red/Green stripe on jacketed versions

Typical Applications

- » Aircraft engine wiring

Product Data

Reference *	Core Type	Shielding	Jacket Type
Fire Resistant Cable • 600V • AWG 16 to 22			
ESW-1200-010	Single Core	Unshielded	Unjacketed
ESW-1201-010	Single Core	Unshielded	Unjacketed
ESW-1202-012	Single Core	Nickel-Plated Copper	PTFE
ESW-1202-022	Multi-Core (2)	Nickel-Plated Copper	PTFE
ESW-1202-032	Multi-Core (3)	Nickel-Plated Copper	PTFE
ESW-1202-042	Multi-Core (4)	Nickel-Plated Copper	PTFE
ESW-1203-012	Single Core	Nickel-Plated Copper	PTFE
ESW-1203-022	Multi-Core (2)	Nickel-Plated Copper	PTFE
ESW-1203-032	Multi-Core (3)	Nickel-Plated Copper	PTFE
ESW-1203-042	Multi-Core (4)	Nickel-Plated Copper	PTFE
Fire Resistant Thermocouple Cable • 600V • AWG 10 to 20			
ESW-1600-010	Single Core (NiCr)	Unshielded	Unjacketed
ESW-1601-010	Single Core (Al-Ni)	Unshielded	Unjacketed
ESW-1602-010	Multi-Core (2)	Nickel-Plated Copper	PTFE

Reference *	Core Type	Shielding	Jacket Type
Fire Proof Cable • 600V • AWG 16 to 24			
ESW-1250-010	Single Core	Unshielded	Unjacketed
ESW-1251-010	Single Core	Unshielded	Unjacketed
ESW-1252-012	Single Core	Nickel-Plated Copper	PTFE
ESW-1252-022	Multi-Core (2)	Nickel-Plated Copper	PTFE
ESW-1252-032	Multi-Core (3)	Nickel-Plated Copper	PTFE
ESW-1252-042	Multi-Core (4)	Nickel-Plated Copper	PTFE
ESW-1253-012	Single Core	Nickel-Plated Copper	PTFE
ESW-1253-022	Multi-Core (2)	Nickel-Plated Copper	PTFE
ESW-1253-032	Multi-Core (3)	Nickel-Plated Copper	PTFE
ESW-1253-042	Multi-Core (4)	Nickel-Plated Copper	PTFE
ESW-1254-010	Single Core	Unshielded	Unjacketed
ESW-1254-022	Multi-Core (2)	Nickel-Plated Copper	PTFE
ESW-1254-032	Multi-Core (3)	Nickel-Plated Copper	PTFE

*The cables listed are those specifically used in the fire zone area of the engine. Other cable constructions to ESW specifications are available on request.

Coaxial Cables

A combination of PTFE (Polytetrafluoroethylene) and FEP (Fluorinated ethylene propylene) for superior dielectric properties, outstanding resistance to chemicals, oils, lubricants and a high shield coverage to enhance strength, electromagnetic interference (EMI) performance and maintain signal integrity.

Key Characteristics

- » Operating temperature: -55°C to 200°C
- » 750V to 1700V Rating
- » Impedance to 50, 75 or 95 Ohms
- » Available with Silver-Plated Copper or Silver-Plated Copper Covered Steel Conductors
- » Superior dielectrical properties
- » Available with Single or Double Silver-Plated Copper Shield
- » Brown as standard, but other colors available on request
- » Can be supplied with an etched surface finish to improve adhesion with potting or encapsulation materials

Typical Applications

- » General Military Communications, Base Stations, Antennas
- » Radar Systems
- » Transmitters and Receivers

Product Data

A range of PTFE/FEP Coaxial cables are designed, manufactured and fully released to meet the requirements of the MIL-C-17 specification.

RG Part Reference	Comparable MIL Part Reference	Nominal Impedance (Ohms)	Maximum Voltage	Nominal Conductor OD			Nominal Insulation (mm)	Nominal Single Shield Coverage	Nominal Double Shield Coverage	Nominal Overall Diameter (mm)
				mm	mm ²	Conductor (stranding)				
PTFE Insulation • FEP Jacket • Silver-Plated Copper Covered Steel Conductor • Single Shield										
RG178 B/U	MIL-C-17/93	50	750	0.31	0.057	07/0.102	0.25	> 95%	-	1.80
RG179 B/U	MIL-C-17/94	75	900	0.31	0.057	07/0.102	0.65	> 93%	-	2.54
RG180 B/U	MIL-C-17/95	95	1100	0.31	0.057	07/0.102	1.14	> 91%	-	3.58
RG302 / U	MIL-C-17/110D	75	1700	0.64	0.322	01/0.640	1.53	> 88%	-	5.13
RG316 / U	MIL-C-17/172	50	900	0.51	0.159	07/0.170	0.51	> 95%	-	2.49
RG303 / U	MIL-C-17/170	50	1400	0.94	0.694	01/0.940	1.00	> 95%	-	4.32
RG188 A/U	MIL-C-17/172	50	900	0.51	0.159	07/0.170	0.50	> 95%	-	2.49
PTFE Insulation • FEP Jacket • Silver-Plated Copper Covered Steel Conductor • Double Shield										
RG142 B/U	MIL-C-17/158A	50	1400	0.94	0.694	01/0.940	1.00	> 95%	> 93%	4.95
RG179 B/U	MIL-C-17/94	75	900	0.31	0.057	07/0.102	0.65	> 93%	> 93%	3.00
RG316 / U	MIL-C-17/172	50	900	0.51	0.159	07/0.170	0.51	> 95%	> 95%	2.90
PTFE Insulation • FEP Jacket • Silver-Plated Copper Conductor • Double Shield										
RG400 / U	MIL-C-17/175	50	1400	0.98	0.597	19/0.203	0.97	> 95%	> 94%	4.95
PTFE Insulation • PTFE Taped Jacket • Silver-Plated Copper Covered Steel Conductor • Single & Double Shield										
RG196 A/U	MIL-C-17/169	50	750	0.31	0.057	07/0.102	0.25	> 95%	-	1.90
RG403 / U	MIL-C-17/131	50	750	0.31	0.057	07/0.102	0.25	> 95%	> 95%	2.94
RG404 / U	MIL-C-17/132B	50	500	0.31	0.057	07/0.102	0.25	> 95%	-	1.85

RG Designators: Standard types of coaxial cables were specified for military uses, in the form "RG-#" or "RG-#/U" (RG from radio guide, /U indicates multiple use). These references go back to World War II and were published in MIL-HDBK-216 (1962). These designations are now obsolete. Currently the military standard is MIL-SPEC MIL-C-17. Numbers, such as M17/75-RG214, are given for military cables and manufacturers' catalog numbers for civilian applications. However, the RG-series designations were so common for generations that they are still used. Please be aware that since the handbook has been withdrawn there is no standard to guarantee the electrical and physical characteristics of a cable described as "RG-# type". The RG designators are mostly used to identify compatible connectors that fit the inner conductor, dielectric and jacket dimensions of the old RG-series cables.

Tie Cords & Lacing Tapes

Individually PTFE (Polytetrafluoroethylene) coated strands of glass yarn braided together provide superior strength, flex life and temperature resistance. Particularly suitable in severe environments to ease and secure installation and repairs.

Key Characteristics

- » Operating temperature: -75°C to 300°C
- » Available with circular or flat cross section
- » White as standard, other colors available on request
- » Outstanding chemical and moisture resistance for optimum performance in harsh conditions
- » Superior tensile strength for assurance and reliability during and after installation
- » Nonflammable

Typical Applications

- » Aerospace harness tying
- » Suspension of objects during electroplating, impregnation and encapsulation processing
- » General wire bundling and tying applications in hazardous environments

Product Data

Product Reference	Nominal OD	Nominal Yield	Nominal Tensile Strength	Nominal Weight
Cord (C) / Tape (T)	mm	mt / kg	kg	kg / km
Tie Cords • Circular Cross Section				
C037	0.90	1075	13	0.930
C045	1.10	725	22	1.380
C085	2.00 *	205	80	4.870
* Centre strengthening cord included in the cord construction				
Lacing Tapes • Flat Cross Section				
T070	1.78	1042	16	0.960
T085	2.16	1031	20	0.970
T100	2.60	952	20	1.050
T120	3.05	654	24	1.530



Anode Cables for Cathodic Protection

Specifically for the cathodic protection industry, available with PVDF (Polyvinylidene Fluoride) or ECTFE (Ethylene Chlorotrifluoroethylene) primary insulations and a HMWPE (High Molecular Weight Polyethylene) outer jacket secondary insulation for assured performance in application.

Key Characteristics

- » Operating temperature: -40°C to 80°C
- » 600V Rating
- » Tinned, annealed copper conductors
- » Inert to all acids and alkalis found in groundbeds including Cl₂, HCl, SO₄, H₂S and nascent chlorine
- » Outer jacket protects cable from damage during installation and is resistant to sea water
- » Black as standard, but other colors available on request

Typical Applications

- » Used in the protection of underground storage tank systems, pipelines and other buried or submerged metallic structures
- » Connecting anodes, power supplies and structures
- » Especially suitable for use in deep well installations where nascent chlorine is present

Product Data

Primary Insulation Options:

- » ECTFE (Ethylene Chlorotrifluoroethylene)
- » Irradiated PVDF (Polyvinylidene Fluoride)
- » Non-Irradiated PVDF (Polyvinylidene Fluoride)

Secondary Insulation:

- » HMWPE (High Molecular Weight Polyethylene)

Approx. AWG	Nominal Conductor OD			Nominal Primary Insulation (mm)	Nominal Secondary Insulation (mm)	Nominal Overall Diameter (mm)
	mm	mm ²	Conductor (stranding)			
12	2.55	4.00	7 / 0.85	0.51	1.65	6.87
10	3.12	6.00	7 / 1.04	0.51	1.65	7.44
8	4.05	10.0	7 / 1.35	0.51	1.65	8.37
6	5.10	16.0	7 / 1.70	0.51	1.65	9.42
4	6.75	25.0	19 / 1.35	0.51	1.65	11.07
2	7.65	35.0	19 / 1.53	0.51	1.65	11.97
1	8.90	50.0	19 / 1.78	0.51	1.65	13.22
2/0	10.64	70.0	37 / 1.52	0.76	1.65	15.46



Thermocouple Cables

A broad range of thermocouple cable types are specifically designed for accurate measurement and control in a variety of applications, particularly suitable for hazardous environments.

Key Characteristics

- » Dissimilar conductors within a single cable
- » PTFE, FEP, PFA or Polyimide Insulations
- » Available as twisted pair, multi-conductor, flat twin or single shot design
- » Color coded insulation for ease of identification
- » Excellent resistance to chemicals, oils and lubricants
- » Wide temperature performance

Typical Applications

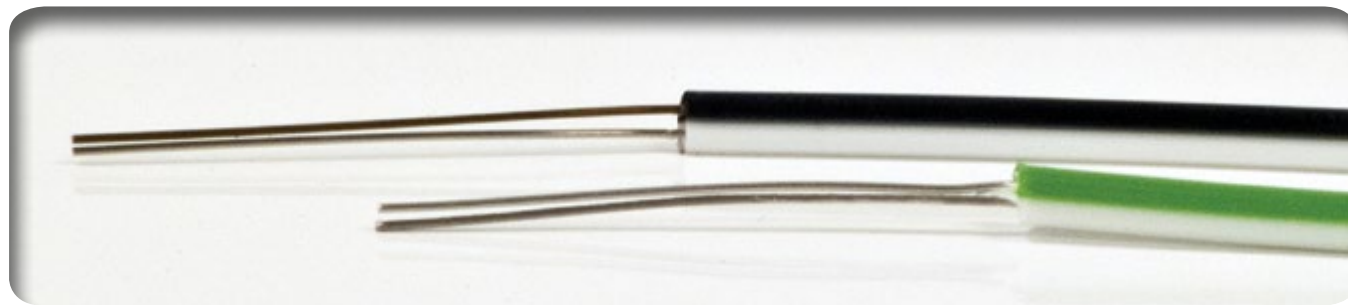
- » Connecting sensors to devices
- » Instrumentation and control
- » Temperature measurement

Product Data

A range of different Thermocouple cable types to suit different applications are designed and manufactured to meet the requirements of BS EN 60584-2, BS 4937-30.

Thermocouple Cable Type	Extension and Compensating		Conductor Alloy		Colour Code BS4937-30 / IEC 60584-3		
	Extension Cable	Compensating Cable	Positive	Negative	Insulation Positive	Insulation Negative	Cable Jacket
E	EX	-	Nickel Chromium	Constantan	Violet	White	Violet
J	JX	-	Iron	Constantan	Black	White	Black
K	KX	-	Nickel Chromium	Nickel Aluminium	Green	White	Green
K	-	KCB (V)	Copper	Constantan	Green	White	Green
N	NX	NC	Nicrosil	Nisil	Pink	White	Pink
T	TX	-	Copper	Constantan	Brown	White	Brown
R	-	RCA RCB	Copper	Cupronic	Orange	White	Orange
S	-	SCA SCB	Copper	Cupronic	Orange	White	Orange
B	-	BC	Copper	Copper	Grey	White	Grey

The standard color coding is to the European standard IEC 60584, as stated above. Additional color combinations according to regional regulations such as American ANSI MC96.1 and ASTM E230, German DIN, French NFC, Japan JIS or British BS1843 are also available on request.



Panavia Aerospace Cables

A range of single and multi-core cables are designed, manufactured and fully released to meet the requirements of the Panavia specifications below.

Product Data

Panavia Reference	Core Design	Conductor Type	Insulation Type	Shielded	Cable Jacket Type	Temperature Range	Voltage
PAN 6411	Single	NPC	Polyimide / PTFE	No	N/A	-75°C to +260°C	600V
Range DP 002 to DP 030							
PAN 6412	Single or Multi-Core PANG411	NPC	Polyimide / PTFE	Yes	Polyimide / PTFE	-75°C to +260°C	600V
SP, TP, UP, VP							
PAN 6413	Single	NPC	EFGLAS	No	N/A	-75°C to +260°C	600V
Range DA 050 to DA680							
PAN 6417	Multi-Core PANG411	NPC	Polyimide / PTFE	No	Polyimide / PTFE	-75°C to +260°C	600V
PA, QA, RA							
PAN 6420	Thermocouple	Chromel vs Alumel	Polyimide / PTFE	No	Polyimide / PTFE	-75°C to +260°C	600V
Range YR 004 to YR 006							
PAN 6421	Multi-Core Data Bus	SPCA	Polyimide	Yes	FEP	-65°C to +150°C	600V
ZA 002							
PAN 6423	Single Core	SPC	Polyimide	No	N/A	-65°C to +150°C	600V
Range AP 002 to AP 030							
PAN 6424	Multi-Core PANG423	SPC	Polyimide	No	FEP	-65°C to +150°C	600V
PB, QB, RB							
PAN 6425	Single or Multi-Core PANG423	SPC	Polyimide	Yes	FEP	-65°C to +150°C	600V
SS, TS, US, VS							
PAN 6428	Multi-Core Low Noise	NPC	Polyimide + Enamel + PTFE/Glass braid	Yes	Polyimide + Enamel + PTFE/Glass braid	-65°C to +260°C	300V
Range TU 004 to TU 006							
PAN 6429	Single Core	SPC	PTFE	No	N/A	-75°C to +200°C	600V
Range BE 002 to BE 006							
PAN 6476	Multi-Core H.V.	SPC	PTFE	Yes	PTFE	-50°C to +200°C	1000V
TH 004							
PAN 6481	PTFE coated strands of glass yarn braided - please see Lacing Tapes Section						
A 07, A 09, A 12							

Note: NPC (Nickel-Plated Copper)
SPC (Silver-Plated Copper)

An extruded PTFE insulation to provide excellent temperature, chemical and electrical performance. The nickel-plated conductor offers additional protection against corrosion.

Key Characteristics

- » Operating temperature: -75°C to 250°C
- » 15 and 25 Kv (DC) Rating
- » Nickel-Plated Conductors
- » Available in natural color as standard, but colored tints are available on request
- » Nonflammable

Typical Applications

- » Gas ignition systems, internal wiring in boilers, cookers and fires

Product Data

A range of single core insulated wires with stranded conductors are designed and manufactured in accordance with UL Style 1911. Based on British Gas Spec. WH77/16.

Nominal Conductor OD				Nominal Insulation (mm)	Overall Diameter (mm)		Maximum Conductor Resistance (Ω/km @ 20°C)	Voltage Rating (Kv D.C.)
AWG	mm	mm ²	Conductor (stranding)		Min	Max		
24	0.60	0.220	07/0.200	0.53	1.58	1.74	91.2	15
24	0.60	0.220	07/0.200	0.70	1.90	2.10	91.2	25
22	0.70	0.343	07/0.250	0.53	1.71	1.91	57.6	15
22	0.70	0.343	07/0.250	0.70	2.05	2.25	57.6	25
20	0.90	0.563	07/0.320	0.53	1.92	2.12	34.1	15
20	0.90	0.563	07/0.320	0.70	2.26	2.46	34.1	25
20	1.00	0.600	19/0.200	0.53	1.96	2.16	33.6	15
20	1.00	0.600	19/0.200	0.70	2.30	2.50	33.6	25



Assemblies

- Avionics RF Assemblies**
 - » Leaky Feeder Assemblies
 - » Low PIM Assemblies
 - » Radio Altimeter Cable Assemblies
 - » TCAS Cable Sets
- Data Bus, Power & Video Assemblies**
 - » HDMI, DVI and Coax Digital Video Assemblies
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- RF/Microwave Assemblies**
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 - » Conformable - Semi-Flex®
 - » Semi-Rigid
 - » WorkHorse® Test Assemblies

Connectors

- Avionics RF Connectors**
- Backshells**
 - » Compact D-Sub Backshells
 - » EN4165/BACC65 Series
 - » Flexible Backshells
 - » Multi-Exit Angle
 - » Straight Exit Angle
 - » Universal Spring Latches
- Data Bus Connectors**
 - » Octax™ In-Line
 - » Octax™ Ganged, EPX, 38999 & EN4165
- EMI Protection & Transient Voltage Suppression**
 - » Circular Filtered
 - » D-Sub and Micro-D Filter Connectors
 - » EPX Filter Connectors
 - » Rectangular Filtered
 - » TVS - Transient Voltage Suppression Connectors
- FlightGear™ Blind Mate Antenna Connector**
- High Density Connectors**
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 - » HDSI®
- RF/Microwave Connectors**
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 - » Phase Adjusters
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- Specialty Connectors**
 - » CB/CBX All Plastic Connectors
 - » CBC Galley Connectors
 - » CLP/CLPP Circular Connectors
 - » CQ Connectors
 - » Terminal & Grounding Blocks

Contacts

- Coaxial Contacts**
- Crimp Contacts**

- Custom Designed Contacts**
- PC Tail Contacts**
- Solder Cup & Wire Wrap Contacts**
- Thermocouple Contacts**

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 - » Sensors
 - » Stand-Offs

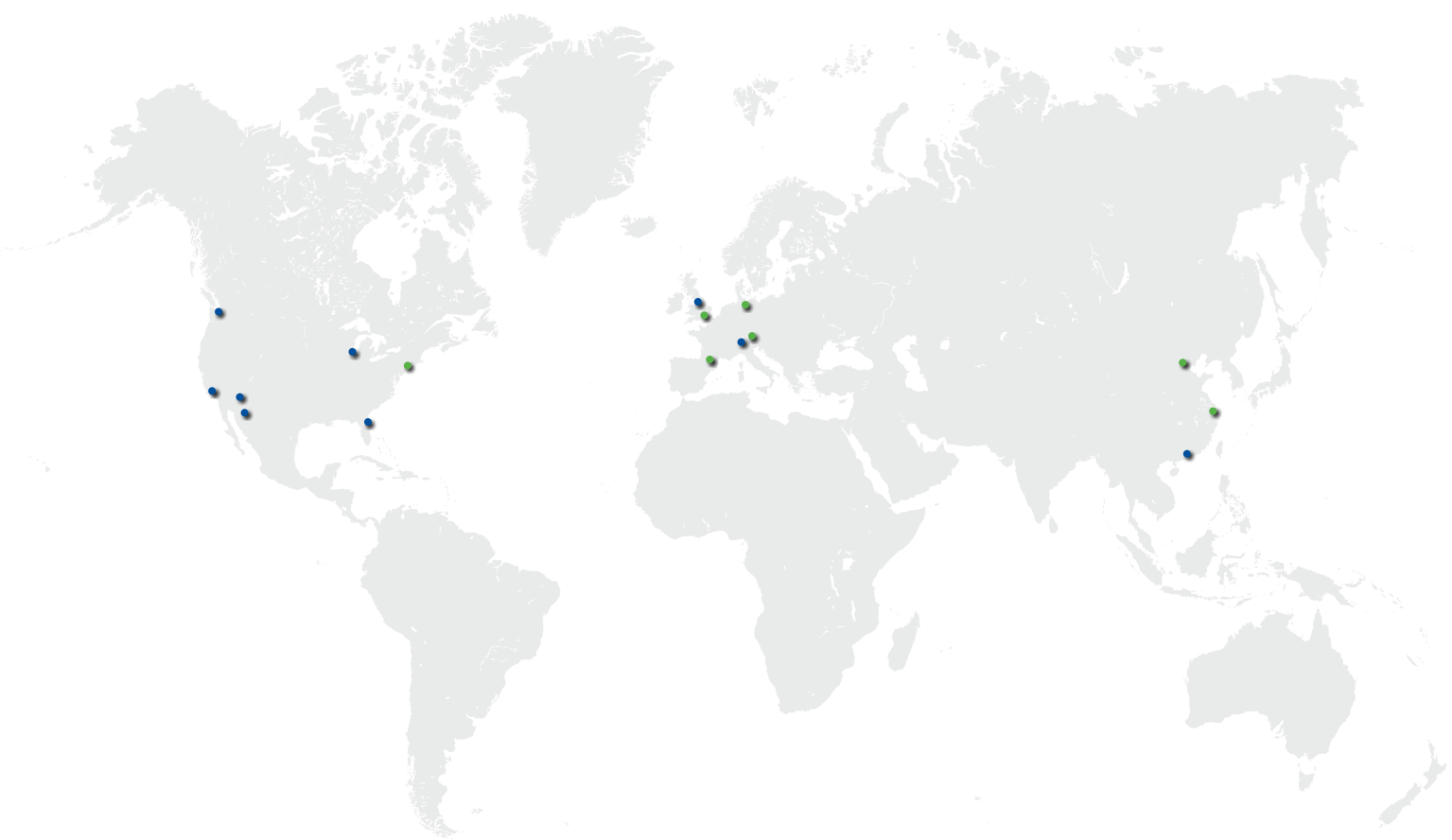
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 - » EZMount® Tablet Cradle
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- » FlightGear™ USB Power Port
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 - » Heatless Crimp Splices
 - » Tie Cords & Lacing Tapes
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- Composite Aerospace Wire**
 - » BMS 13-60
 - » Seamless™ AS22759/80-/92
 - » Seamless-T™ AS22759/180-/192
 - » Tufflite® Enhanced Normal Weight - ST
 - » Tufflite® European Metric - TLR
- Fiber Optic Cable**
 - » LITEflight® EP
 - » LITEflight® HD
 - » Fiber Optic Test & Inspection Kits
- Harsh Environment, Engine, Firezone & SWAMP**
 - » BMS 13-55
 - » BMS 13-58
 - » EFGLAS Equipment Wire & Cable
 - » ESW Firezone Specifications
 - » MIL-W-25038 Wire
- High Performance Coax**
 - » AccuPhase® Low Loss Coaxial Cable
 - » Avionics RF Cable
 - » BMS 13-65
 - » MaxForm® Formable Coaxial Cable
 - » MIL-C-17 Coaxial Cable
 - » TMaxx™ Low Loss Coaxial Cable
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 - » Gigabit Ethernet Series
 - » Maxflite® Cables
 - » Netflight® Cables
- Industrial Wire & Cable**
 - » Anode Cables for Cathodic Protection
 - » PEEK Equipment Wire & Cable
 - » Polyimide Equipment Wire & Cable
 - » Thermocouple Cables
 - » Zyrad™ and Trakrad™ Wire
- Mil-Spec Hookup Wire**
 - » AS22759 Wire
 - » MIL-C-17 Coaxial Cable
 - » MIL-DTL-27500 Cable
 - » MIL-W-16878 Wire (NEMA HP3, HP4)
 - » MIL-W-25038 Wire
 - » MIL-W-81381 Wire
 - » MIL-W-81822 Wire
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 - » Low-Noise Cable



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