

INTRODUCTION

High Performance Wire and Cable

1 Complete range of WIRE, COAXIAL, DATA, MULTI-CORE and CUSTOMISED CABLES.

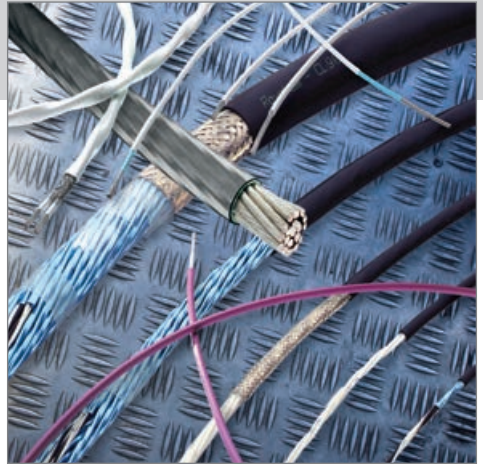
High performance wire and cable for many applications

An extensive portfolio of wire and cable products are available in a wide range of conductor sizes, constructions and colours. The product range covers primary wire, screened and jacketed multi-core, airframe, coaxial, miniature and custom cables. Typical characteristics include chemical and fluid resistance, lightweight, highly flexible and excellent electrical and mechanical performance. Temperature capabilities range from -65°C to +260°C allowing products to be used in a wide variety of markets and applications. The current stock profile also contains a large selection of Aerospace wire and cables, including XLETFE, XLPE/XLPVDF and Hybrid constructions for use in the majority of today's commercial and military aircraft fleets.

Typical Features & Benefits

- Chemical resistance
- Electrical insulation
- Fluid & solvent resistance
- Flexibility
- Flame-retardant, Low Smoke
- Lightweight
- Extreme temperature performance
- Materials available to suit a wide range of markets and applications

We are committed to supplying an extensive range of wire and cable products using the latest insulation technologies, with a wide choice of constructions, conductor sizes and colours.



XLPE/XLPVDF (Spec 44 wire)

- Low smoke and corrosive gas generation
- Small size, lightweight dual wall construction
- Excellent chemical resistance
- Resistant to electrical arc tracking
- Operating temperature -65°C to +150°C

XLETFE (Spec 55 wire)

- Single and dual wall constructions
- Small size, lightweight and high strength
- Exceptional chemical and fluid resistance
- Resistant to electrical arc tracking
- Meets FAR25 flame test
- Operating temperature -65°C up to +200°C

XL Modified Polyester (Spec 99 wire)

- Low smoke generation
- Low flammability and low toxicity
- Operating temperature -55°C up to +120°C

HYBRID (ASN-E, ACT & KP)

- Low smoke generation
- Excellent chemical resistance
- Small size and ultra lightweight construction
- Resistant to wet arc tracking
- Temperature range from -65°C up to +260°C

PTFE Wire

- Excellent chemical resistance and very high dielectric performance
- Silver and Nickel plated conductors
- Mechanically tough and flexible
- Non-flammable
- Operating temperature -75°C up to +260°C

HIGH PERFORMANCE

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LOW FIRE HAZARD

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TAPED AIRFRAME WIRE

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EQUIPMENT WIRE and CABLING

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HIGH SPEED, LIGHTWEIGHT WIRE and CABLE

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44 Wire

Dual Wall 150°C rated, XLPVDF
High performance wire and cable

44 wire has a dual wall construction that combines the outstanding physical and electrical characteristics of radiation cross-linked polyalkene with the excellent mechanical and chemical properties of radiation cross-linked polyvinylidene fluoride (PVDF).

44 wire is used extensively throughout industry, applications include commercial wiring, avionics, satellites, aircraft, helicopters, ships, trains, offshore platforms and high performance military and motorsport electronics or wherever there is a demand for reliable performance under extreme conditions.

Features & Benefits

- Dual wall construction
- 600,1000 & 2500 voltage ratings
- Small, lightweight and flexible
- Low smoke and low corrosive gas generation
- Resistance to most chemicals and electrical arc tracking

Operating Temperature

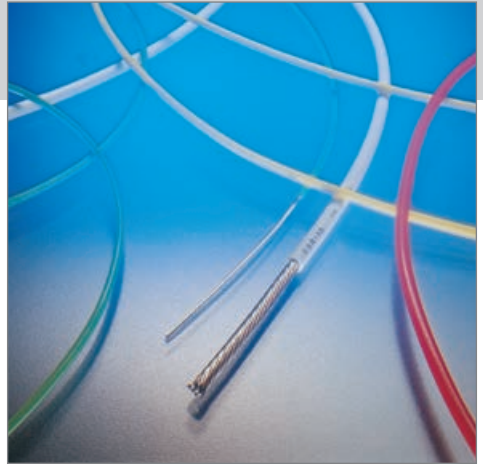
- -65°C to +150°C

Specifications/Approvals

- SAE AS81044 (wires)
- NEMA-WC-27500 (cables)
- Def Stan 61-12, Part 18 (maintenance)
- Def Stan 61-12, Part 26
- VG 95218
- NATO stock numbers available for standard constructions

Airframe Application

In airframe applications 44 wire constructions can offer a modern dimensional alternative to MINYVIN and NYVIN (PVC, Nylon and glass braid type wire and cables).



Spec 44 Wire Construction

A wide range of Spec 44 wire constructions are available, the most commonly used are:

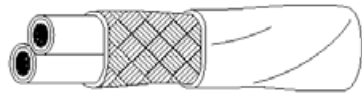
Primary Wire - Dual Wall Single Core



Twisted Single Cores



Screened & Jacketed Twisted Pair



Note

44 Wire is available in an extensive variety of constructions, voltage ratings, sizes and colours. For further assistance regarding your specific wire and cable requirements, please contact us.

	Product Characteristics	Product Performance
Physical	Operating temperature	-65°C to +150°C
	Tensile strength (primary insulation)	30N/mm ² (3500psi)
	Ultimate elongation	230% (min)
	Accelerated ageing 6hrs @ +300°C	Passes mandrel wrap and Dielectric test as per SAE AS81044
	Electrical arc tracking	Tested to ASTM-D-3032
	Solder iron resistance at +370°C for 1 minute	Pass
	Notch propagation, 0.05mm notch	Pass
	Shrinkage @ +300°C	<1%
	Low temperature bend	-65°C
	Fuels, oils & solvents resistance	Pass
Electrical	Voltage rating	600V, 1000V and 2500V
	Insulation resistance (min)	1500MΩ/km (5000MΩ/1000ft)
	Voltage withstand	2500V, 3000V and 5000V for 5 minutes, 50 - 60Hz
Flammability	Federal aviation reg. FAR-25	Pass
	SAE AS81044	Pass
	BS EN 50265 Vertical Flammability	Pass
	S-424 14751 (Swedish chimney)	Pass
	NFC-32070 (2) (French chimney)	Pass
	IEC-332 Part 3 (cable ladder)	Pass
Smoke/Toxicity	Smoke index, Def Stan 61-12 Part 18	6.0 units per metre of wire
	Toxicity index, Def Stan 61-12 Part 18	0.8 units per metre of wire
	BS EN 150-4589 pt2 / pt3	>30% Oxygen
	Temperature index, NES 715	>300°C

44 Wire

Dual Wall 150°C rated, XLPVDF

High performance wire and cable

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600V Primary Wire Dimensions (all dimensions are in mm)

Conductor Size	Stranding No/mm	Nominal CSA (mm ²)	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
30	7/0.102	0.06	0.69	1.06	44A0111-30-X
28	7/0.127	0.09	0.76	1.48	44A0111-28-X
26	19/0.102	0.15	0.86	2.08	44A0111-26-X
24	19/0.127	0.25	1.02	2.98	44A0111-24-X
22	19/0.16	0.40	1.19	4.46	44A0111-22-X
20	19/0.203	0.60	1.40	6.70	44A0111-20-X
18	19/0.254	1.00	1.65	10.12	44A0111-18-X
16	19/0.287	1.25	1.83	12.80	44A0111-16-X
14	19/0.361	2.00	2.26	19.64	44A0111-14-X
12	37/0.32	3.00	2.75	30.06	44A0111-12-X

1000V Primary Wire Dimensions (all dimensions are in mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
26	19/0.010	1.02	2.38	44A0211-26-X
24	19/0.127	1.17	3.57	44A0211-24-X
22	19/0.16	1.37	5.21	44A0211-22-X
20	19/0.203	1.57	7.54	44A0211-20-X
18	19/0.254	1.85	11.46	44A0211-18-X
16	19/0.287	2.06	14.58	44A0211-16-X
14	19/0.361	2.49	21.88	44A0211-14-X
12	37/0.32	2.97	32.89	44A0211-12-X

600V Single Core Screened & Jacketed Cable Dimensions (all dimensions are in mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
30	7/0.102	1.40	4.18	44A1111-30-X-X
28	7/0.127	1.47	4.92	44A1111-28-X-X
26	19/0.102	1.57	5.83	44A1111-26-X-X
24	19/0.127	1.83	8.20	44A1111-24-X-X
22	19/0.16	2.00	10.30	44A1111-22-X-X
20	19/0.203	2.26	14.02	44A1111-20-X-X
18	19/0.254	2.62	19.70	44A1111-18-X-X
16	19/0.287	2.79	23.40	44A1111-16-X-X
14	19/0.361	3.22	32.50	44A1111-14-X-X
12	37/0.32	3.70	45.67	44A1111-12-X-X

44 Wire

Dual Wall 150°C rated, XLPVDF
High performance wire and cable

600V Twisted Pair Primary Wire Dimensions (all dimensions are in mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
30	7/0.102	1.37	2.38	44A0121-30-X/X
28	7/0.127	1.52	3.13	44A0121-28-X/X
26	19/0.102	1.73	4.38	44A0121-26-X/X
24	19/0.127	2.03	6.26	44A0121-24-X/X
22	19/0.16	2.38	9.37	44A0121-22-X/X
20	19/0.203	2.79	14.07	44A0121-20-X/X
18	19/0.254	3.30	21.25	44A0121-18-X/X
16	19/0.287	3.65	26.88	44A0121-16-X/X
14	19/0.361	4.52	41.24	44A0121-14-X/X
12	37/0.32	5.48	63.13	44A0121-12-X/X

600V 2-Core Screened & Jacketed Cable Dimensions (all dimensions are in mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
30	7/0.10	2.23	8.74	44A1121-30-X/X-X
28	7/0.127	2.38	10.10	44A1121-28-X/X-X
26	19/0.102	2.59	11.49	44A1121-26-X/X-X
24	19/0.127	2.99	16.12	44A1121-24-X/X-X
22	19/0.16	3.35	20.59	44A1121-22-X/X-X
20	19/0.203	3.76	26.71	44A1121-20-X/X-X
18	19/0.254	4.32	36.56	44A1121-18-X/X-X
16	19/0.287	4.67	42.98	44A1121-16-X/X-X
14	19/0.361	5.53	61.34	44A1121-14-X/X-X

600V 3-Core Screened & Jacketed Cable Dimensions (all dimensions are in mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
28	7/0.127	3.14	13.26	44A1131-28-X/X/X-X
26	19/0.102	3.45	18.85	44A1131-26-X/X/X-X
24	19/0.127	3.91	24.66	44A1131-24-X/X/X-X
22	19/0.16	4.29	32.14	44A1131-22-X/X/X-X
20	19/0.203	4.63	40.78	44A1131-20-X/X/X-X
18	19/0.254	5.20	53.02	44A1131-18-X/X/X-X
16	19/0.287	5.57	67.31	44A1131-16-X/X/X-X
14	19/0.361	6.41	85.88	44A1131-14-X/X/X-X

Note: X = Colour (please refer to the following page for the range of colours available).

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44 Wire

Ordering

High performance wire and cable

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Ordering Information

Colours:

0 = Black	5 = Green
1 = Brown	6 = Blue
2 = Red	7 = Violet
2L = Pink	8 = Grey
3 = Orange	9 = White
4 = Yellow	45 = Yellow/Green

Stripes are also available on request and are indicated by additional insulation colour numbers
e.g. 92 = White with Red stripe

Standard packaging:

300m reels for "standard" items

If the product is a non-stock item a Minimum Order Quantity (MOQ) may apply.

Ordering Description:

Follow steps 1 to 6.

- 1 Select the type of wire required
- 2 Select the number of conductors required
- 3 Select the type of conductor required
- 4 Select the wire conductor) size required
- 5 Select the primary wire insulation colour(s) required
- 6 Select the outer jacket colour required

Ordering Examples:

- Where a single 22awg 600V white primary wire is required the part number is **44A0111-22-9**
- Single 16awg 600V white primary wire, with shield and an outer white jacket is required the part number is **44A1111-16-9-9**
- Where two core 600V cable with an overall shield and an outer jacket and a conductor size of 18awg, with core insulation colours red and blue. The outer jacket is white with a red stripe the part number is **44A1121-18-2/6-92**
- Three core 600V cable with an overall shield and an outer jacket with conductor size for each of the primary cores is 24awg, with core insulation colours red, yellow and blue and outer jacket is white. The part number is **44A1131-24-2/4/6-9**

Additional Information

The opposite page illustrates how to build your own part number. For further information or assistance please contact us.

44 A 1 1 2 1 - 22 - 0/9 - 9

PART NUMBER EXAMPLE

JACKET COLOUR

See colour codes below

WIRE INSULATION COLOUR CODE

0	Black	6	Blue
1	Brown	7	Violet
2	Red	8	Grey
2L	Pink	9	White
3	Orange	45	Yellow/Green
4	Yellow		
5	Green		

CONDUCTOR SIZE

30 to 0000 AWG

CONDUCTOR TYPE

- 1 = Tin plated copper
- 2 = Silver plated copper
- 3 = Nickel plated copper
- 4 = Silver plated high strength Cu alloy (SPHSCA)
- 6 = Nickel plated high strength Cu alloy (NPHSCA)

NUMBER of CONDUCTORS

1 through 9

VOLTAGE

- 1 = 600V wire
- 2 = 1000V wire
- 3 = 2500V wire
- 8 = 600V Airframe wire

CONSTRUCTION

- 0 = Primary wire
- 1 = Round braid shielded and jacketed
- 2 = Flat braid shielded and jacketed
- 3 = Round braid shielded NO jacket
- 4 = Jacketed NO shield (*2 core or more only*)
- 6-9 = Special constructions

TYPE

- A = AWG
- D = Def Stan 61-12 pt 26
- / = Special constructions

BASIC SPECIFICATION

Spec 44 - High performance wire and cable

55 Wire

Single or Dual Wall 200°C rated, XLETFE
High performance wire and cable

55 wire is insulated with modified radiation cross-linked ETFE polymer and combines the easy handling of a flexible thin wall wire, with excellent scrape abrasion and cut-through characteristics. The single wall construction is currently used extensively throughout industry, applications include commercial wiring, avionics, satellites, aircraft, helicopters and high performance military and motorsport electronics or wherever there is a demand for reliable performance under extreme conditions. The dual wall airframe construction is commonly used on numerous commercial and military aircraft programmes throughout the world.

Features & Benefits

- Resistant to electrical arc tracking in wet or dry conditions
- Single or dual wall construction
- Small size, ultra light weight
- Exceptional chemical resistance

Operating Temperature

- -65°C to +150°C
(Tin plated conductors - standard)
- -65°C to +200°C
(Silver/Nickel plated conductors)

Specifications/Approvals

- SAE AS22759/32-35 & 41-46 (wires)
- NEMA-WC-27500 (cables)
- Def Stan 61-12, Part 33
- VG95218 Part 20, Type 21, Type A; Part 22, Type A; Part 23, Type A; Part 1001 & 1002
- VDE 9426, 9427, 9428
- British Standards 3G233
- Boeing BMS 13-48
- Airbus ABS 0820 to 0826
- NASA preferred product list
- European Space Agency 3901/012, 3901/020 and 3901/022



Spec 55 Wire Construction

A wide range of 55 spec wire constructions are available, the most commonly used are:

Equipment Wire - Single Wall



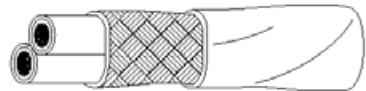
Airframe Wire - Dual Wall (light blue inner wall)



Twisted Single Cores



Screened & Jacketed Twisted Pair



Note

55 Wire is available in an extensive variety of constructions, sizes and colours. For further assistance regarding your specific wire and cable requirements, please contact us.

	Product Characteristics	Product Performance
Physical	Operating temperature (Tin plated conductor)	-65°C to +150°C
	Operating temperature (Silver or nickel plated conductor)	-65°C to +200°C
	Thermal endurance	200°C for 10,000 hours
	Scrape abrasion (BS3G 233)	>100 cycles at +150°C
	Flexible endurance (Boeing BSS 7324)	>1000 cycles
	Tensile strength + core elongation	(Airframe wire only) 35 N/mm ² , 125%
	Tensile strength + total elongation	(All primary wire) 35 N/mm ² , 75%
	Notch propagation BS3G 230 0.05mm notch	Pass
	Solder iron resistance (370°C, 1 minute)	Pass
	Solderability, tin plated copper conductor BS3G 233 conditions	<0.8 secs to wet
	Shrinkage @ +200°C	<1%
	Water absorption	<0.03%
	Permittivity 1 KHz (ASTM D150)	2.7
	Dissipation factor (ASTM D150)	0.001
	Electrical	Voltage rating
Vertical Flammability	After burn	0 secs
	Burn length	57mm
60° Flammability	FAA FAR 25 APP.F	Pass
Smoke/Toxicity	Oxygen index	>40%

Wire and Cable

55 Wire

Single or Dual Wall 200°C rated, XLETFE

High performance wire and cable

600V Primary Wire, Equipment/Interconnect Dimensions (all dimensions are in mm)

Conductor Size	Stranding No/mm	Nominal CSA (mm ²)	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
30	7/0.10	0.06	0.61	0.98	55A0111-30-X
28	7/0.13	0.09	0.69	1.35	55A0111-28-X
26	19/0.10	0.16	0.81	2.08	55A0111-26-X
24	19/0.13	0.24	0.94	2.98	55A0111-24-X
22	19/0.16	0.38	1.09	4.17	55A0111-22-X
20	19/0.20	0.62	1.29	6.4	55A0111-20-X
18	19/0.25	0.96	1.55	9.67	55A0111-18-X
16	19/0.29	1.23	1.75	12.35	55A0111-16-X
14	19/0.36	1.94	2.18	19.34	55A0111-14-X
12	37/0.32	2.97	2.64	29.32	55A0111-12-X

600V Primary Wire, Airframe Dimensions (all dimensions are in mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
26*	19/0.10	1.02	2.53	55A0814-26-X
24*	19/0.13	1.14	3.42	55A0814-24-X
22	19/0.16	1.27	4.76	55A0811-22-X
20	19/0.20	1.47	6.99	55A0811-20-X
18	19/0.25	1.78	10.71	55A0811-18-X
16	19/0.29	1.96	13.39	55A0811-16-X
14	19/0.36	2.39	20.54	55A0811-14-X
12	37/0.32	2.82	30.51	55A0811-12-X
10	37/0.40	3.40	48.22	55A0811-10-X

Note*: Conductor type Silver plated high strength copper alloy (SPHSCA).

450V Primary Wire, Light Weight Equipment Dimensions (all dimensions are in mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
30	7/0.10	0.51	0.87	55M0414-30-X
28	7/0.12	0.58	1.19	55M0414-28-X
26	19/0.10	0.69	1.80	55M0414-26-X
24	19/0.12	0.81	2.68	55M0414-24-X

Note: 55M0414 constructions are ideally suited for the performance demands of the Motorsport industry.

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55 Wire

Single or Dual Wall 200°C rated, XLETFE

High performance wire and cable

600V Twisted Pair, Equipment/Interconnect Dimensions (all dimensions are in mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
30	7/0.10	1.22	1.94	55A0121-30-X/X
28	7/0.13	1.37	2.68	55A0121-28-X/X
26	19/0.10	1.62	4.32	55A0121-26-X/X
24	19/0.13	1.87	6.11	55A0121-24-X/X
22	19/0.16	2.18	8.64	55A0121-22-X/X
20	19/0.20	2.59	13.38	55A0121-20-X/X
18	19/0.25	3.09	20.20	55A0121-18-X/X
16	19/0.29	3.50	25.80	55A0121-16-X/X
14	19/0.36	4.37	39.67	55A0121-14-X/X
12	37/0.32	5.28	60.10	55A0121-12-X/X

600V Twisted Pair, Airframe Dimensions (all dimensions are in mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
26*	19/0.10	2.03	5.29	55A0824-26-X/X
24*	19/0.13	2.28	6.30	55A0824-24-X/X
22	19/0.16	2.59	10.08	55A0821-22-X/X
20	19/0.20	3.00	14.40	55A0821-20-X/X
18	19/0.25	3.55	22.76	55A0821-18-X/X
16	19/0.29	3.96	31.44	55A0821-16-X/X
14	19/0.36	4.83	43.22	55A0821-14-X/X
12	37/0.32	5.69	61.24	55A0821-12-X/X
10	37/0.40	6.80	96.94	55A0821-10-X/X

Note*: Conductor type Silver plated high strength copper alloy (SPHSCA).

450V Twisted Pair, Light Weight Equipment Dimensions (all dimensions are in mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
30	7/0.10	1.06	1.85	55M0424-30-X/X
28	7/0.12	1.22	2.54	55M0424-28-X/X
26	19/0.10	1.42	3.96	55M0424-26-X/X
24	19/0.12	1.68	5.86	55M0424-24-X/X

Note: X = Colour (please refer to **Part Numbering Guide** for the range of colours available). 55M0424 constructions are ideally suited for the performance demands of the Motorsport industry. 55 Wire is available in an extensive variety of constructions, sizes and colours, for further assistance regarding your specific wire and cable requirements, please contact us.

55 Wire

Single or Dual Wall 200°C rated, XLETFE

High performance wire and cable

600V Single Core Screened & Jacketed, Equipment/Interconnect Dimensions (mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
30	7/0.10	1.45	5.06	55A1111-30-X-X
28	7/0.13	1.52	5.80	55A1111-28-X-X
26	19/0.10	1.65	6.84	55A1111-26-X-X
24	19/0.13	1.78	8.20	55A1111-24-X-X
22	19/0.16	1.93	10.33	55A1111-22-X-X
20	19/0.20	2.14	13.40	55A1111-20-X-X
18	19/0.25	2.39	17.86	55A1111-18-X-X
16	19/0.29	2.59	21.73	55A1111-16-X-X
14	19/0.36	3.02	30.36	55A1111-14-X-X
12	37/0.32	3.48	42.41	55A1111-12-X-X

600V Single Core Screened & Jacketed, Airframe Dimensions (mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
26*	19/0.10	1.85	7.88	55A1814-26-X-X
24*	19/0.13	1.98	9.37	55A1814-24-X-X
22	19/0.16	2.13	11.75	55A1811-22-X-X
20	19/0.20	2.33	14.88	55A1811-20-X-X
18	19/0.25	2.61	19.79	55A1811-18-X-X
16	19/0.29	2.82	23.81	55A1811-16-X-X

Note: Conductor type Silver plated high strength copper alloy (SPHSCA).

450V Single Core Screened & Jacketed, Light Weight Equipment Dimensions (mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
30	7/0.10	1.18	3.61	55M1414-30-X-X
28	7/0.12	1.26	4.12	55M1414-28-X-X
26	19/0.10	1.35	4.92	55M1414-26-X-X
24	19/0.12	1.49	6.50	55M1414-24-X-X

Note: 55M1414 constructions are ideally suited for the performance demands of the Motorsport industry.

55 Wire

Single or Dual Wall 200°C rated, XLETFE
High performance wire and cable

600V 2-Core Screened & Jacketed, Equipment/Interconnect Dimensions (mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
30	7/0.10	2.06	8.03	55A1121-30-X/X-X
28	7/0.13	2.21	9.37	55A1121-28-X/X-X
26	19/0.10	2.46	11.75	55A1121-26-X/X-X
24	19/0.13	2.72	14.58	55A1121-24-X/X-X
22	19/0.16	3.02	18.15	55A1121-22-X/X-X
20	19/0.20	3.43	24.10	55A1121-20-X/X-X
18	19/0.25	3.94	32.63	55A1121-18-X/X-X
16	19/0.29	4.34	39.73	55A1121-16-X/X-X
14	19/0.36	5.21	57.13	55A1121-14-X/X-X
12	37/0.32	6.17	81.98	55A1121-12-X/X-X

600V 2-Core Screened & Jacketed, Airframe Dimensions (mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
26*	19/0.10	2.87	14.28	55A1824-26-X/X-X
24*	19/0.13	3.12	16.36	55A1824-24-X/X-X
22	19/0.16	3.43	20.68	55A1821-22-X/X-X
20	19/0.20	3.85	27.08	55A1821-20-X/X-X
18	19/0.25	4.39	36.45	55A1821-18-X/X-X
16	19/0.29	4.80	42.85	55A1821-16-X/X-X

Note*: Conductor type Silver plated high strength copper alloy (SPHSCA).

450V 2-Core Screened & Jacketed, Light Weight Equipment Dimensions (mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
30	7/0.10	1.75	5.51	55M1424-30-X/X-X
28	7/0.12	1.87	6.72	55M1424-28-X/X-X
26	19/0.10	2.07	8.93	55M1424-26-X/X-X
24	19/0.12	2.33	11.54	55M1424-24-X/X-X

Note: X = Colour (please refer to **Part Numbering Guide** for the range of colours available). 55M1424 constructions are ideally suited for the performance demands of the Motorsport industry. 55 Wire is available in an extensive variety of constructions, sizes and colours, for further assistance regarding your specific wire and cable requirements, please contact us.

Wire and Cable

55 Wire

Single or Dual Wall 200°C rated, XLETFF

High performance wire and cable

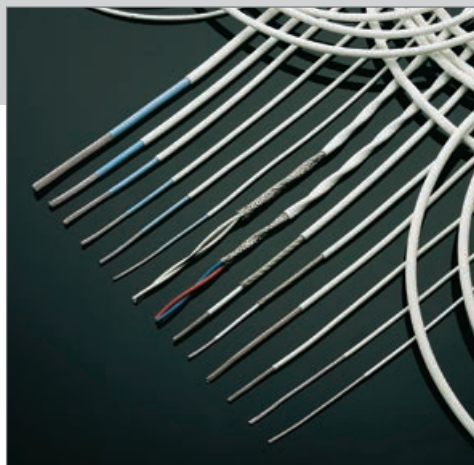
600V Three Core Screened & Jacketed, Equipment/Interconnect Dimensions (mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
30	7/0.10	2.16	9.54	55A1131-30-X/X/X-X
28	7/0.13	2.31	11.33	55A1131-28-X/X/X-X
26	19/0.10	2.59	14.47	55A1131-26-X/X/X-X
24	19/0.13	2.87	18.34	55A1131-24-X/X/X-X
22	19/0.16	3.20	23.71	55A1131-22-X/X/X-X
20	19/0.20	3.63	32.36	55A1131-20-X/X/X-X
18	19/0.25	4.19	45.34	55A1131-18-X/X/X-X
16	19/0.29	4.62	55.78	55A1131-16-X/X/X-X
14	19/0.36	5.61	80.53	55A1131-14-X/X/X-X
12	37/0.32	6.60	115.58	55A1131-12-X/X/X-X

Note: X = Colour (please refer to **Part Numbering Guide** for the range of colours available). 55M1424 constructions are ideally suited for the performance demands of the Motorsport industry. 55 Wire is available in an extensive variety of constructions, sizes and colours, for further assistance regarding your specific wire and cable requirements, please contact us.

55 Wire

Defence Standard 61-12 Part 33/001
High performance wire and cable



55D wire is an Aerospace wire, a range of which is held in stock by IS-Rayfast to service the needs of the UK Aerospace Defence Market

These products are manufactured and released in accordance with the latest Defence Standard 61-12 part 33/001 with a temperature rating of -65°C up to +150°C.

***Note:** The 135°C rated single wire without screen or jacket is no longer in the Defence Standard for sizes 001 and 002. For these constructions use the 150°C rated construction **55D0110-24-9** with copper alloy conductor.

Primary Equipment Wire

Part Number	NATO Stock Number	Defence Reference
55D0110-24-9*	6145-99-038-4091	DSP33/001-1S-002-1U
55D0111-22-9	6145-99-038-3954	DSP33/001-1T-004-1U
55D0111-20-9	6145-99-038-3955	DSP33/001-1T-006-1U

Primary Airframe Wire

Part Number	NATO Stock Number	Defence Reference
55D0214-24-9	6145-99-038-3911	DSP33/001-2P-002-1U
55D0211-22-9	6145-99-038-3912	DSP33/001-2T-004-1U
55D0211-20-9	6145-99-038-3913	DSP33/001-2T-006-1U

Single Screened & Jacketed Airframe Cable

Part Number	NATO Stock Number	Defence Reference
55D1114-24-9-9	6145-99-038-4017	DSP33/001-1P-002-1SJ
55D1111-22-9-9	6145-99-038-4018	DSP33/001-1T-004-1SJ
55D1111-20-9-9	6145-99-038-4019	DSP33/001-1T-006-1SJ

Twisted Pair Screened & Jacketed Airframe Cable

Part Number	NATO Stock Number	Defence Reference
55D1121-22-2/6-9	6145-99-038-4026	DSP33/001-1T-004-2SJ
55D1121-20-2/6-9	6145-99-038-4027	DSP33/001-1T-006-2SJ
55D1124-24-2/6-9	6145-99-038-4025	DSP33/001-1P-002-2SJ

55 Wire

Ordering

High performance wire and cable

1

Ordering Information

Colours:

0 = Black	5 = Green
1 = Brown	6 = Blue
2 = Red	7 = Violet
2L = Pink	8 = Grey
3 = Orange	9 = White
4 = Yellow	45 = Yellow/Green

Stripes are also available on request and are indicated by additional insulation colour numbers
e.g. 92 = White with Red stripe

Standard packaging:

300m reels for "standard" items

If the product is a non-stock item a Minimum Order Quantity (MOQ) will apply.

Ordering Description:

Follow steps 1 to 6.

- 1 Select the type of wire required
- 2 Select the number of conductors required
- 3 Select the type of conductor required
- 4 Select the wire gauge size required
- 5 Select the primary wire insulation colour(s) required
- 6 Select the outer jacket colour required

Ordering Examples:

- Where a single 26awg 600V white primary wire is required. The part number is **55A0111-26-9**
- Where a single 20awg 600V white primary wire, with shield and an outer white jacket is required. The part number is **55A1111-20-9-9**
- Where a two core 450V cable with an overall shield and an outer jacket is required. The gauge size for each of the primary wires is 24awg, each with a separate coloured insulation e.g. red and blue. The outer jacket required is white. The part number is **55M1424-24-2/6-9**
- Where a three core 600V cable with an overall shield and an outer jacket is required. The gauge size for each of the primary wires is 18awg, each with separate core colours e.g. red, blue and white. The outer jacket required is white. The part number is **55A1131-18-2/6/9-9**

Additional Information

The opposite page illustrates how to build your own part number. For further information or assistance please contact us.

55 Wire

Building your part number

High performance wire and cable

55 A 1 1 2 1 - 20 - 2/6 - 9

PART NUMBER EXAMPLE

JACKET COLOUR

See colour codes below

WIRE INSULATION COLOUR CODE

0	Black	5	Green
1	Brown	6	Blue
2	Red	7	Violet
2L	Pink	8	Grey
3	Orange	9	White
4	Yellow	45	Yellow/Green

CONDUCTOR SIZE

30 to 0000 AWG

CONDUCTOR TYPE

- 0 = Copper alloy
- 1 = Tin plated copper (standard)
- 2 = Silver plated copper
- 3 = Nickel plated copper
- 4 = Silver plated high strength Cu alloy (SPHSCA)
- 6 = Nickel plated high strength Cu alloy (NPHSCA)

NUMBER of CONDUCTORS

1 through 9

VOLTAGE - 55 Wire

- 1 = 600V Single wall equipment wire
- 2 = 600V Dual wall airframe wire, light weight
- 4 = 450V Single wall equipment wire (55M AWG 24-30 only).
- 7 = 1000V Dual wall airframe wire, heavy duty.
- 8 = 600V Dual wall airframe wire, normal weight

CONSTRUCTION

- 0 = Primary wire
- 1 = Round braid shielded and jacketed
- 2 = Flat braid shielded and jacketed
- 3 = Round braid shielded NO jacket
- 4 = Jacketed NO shield (2 core or more only)
- 5-9 = Special constructions

TYPE

- A = AWG
- D = Def Stan 61-12 pt 33
- M = Metric Conductor
- / = Special constructions

BASIC SPECIFICATION

Spec 55 - High performance wire and cable

Wire and Cable

99 Wire

Dual Wall 120°C rated, Modified Polyester
Low fire hazard wire and cable

99 wire has a dual wall construction of radiation cross-linked modified polyester. This combines excellent mechanical performance and chemical resistance with a range of enhanced fire hazard properties. 99 wire is also designed to meet the stringent low fire hazard regulations that feature in markets such as naval, mass transit and industrial control panel wiring.

Features & Benefits

- Low flammability
- Low smoke generation
- Low toxicity index
- Low generation of corrosive gases
- Small size, lightweight

Operating Temperature

- -55°C to +120°C

Specifications/Approvals

- Def Stan 61-12, Part 18, issue 5
- Raychem WCD 281



Spec 99 Wire Construction

A wide range of 99 spec wire constructions are available, the most commonly used are:

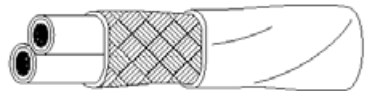
Dual Wall Single Core



Twisted Single Cores



Screened & Jacketed Twisted Pair



Note

99 Wire is available in a variety of constructions, voltage ratings, sizes and colours. For further assistance regarding your specific wire and cable requirements, please contact us.

Product Characteristics		Product Performance	
Physical	Test	Method	Typical Value
	Temperature rating	BS G230	+120°C
	Tensile strength	-	>30 MPa
	Elongation at break	-	>250%
	Notch propagation (0.05 mm notch)	BS G230	Pass
	Shrinkage 150°C	BS G230	<1%
	Low temperature bend	BS G230	-55°C
	Voltage withstand	BS G230	2.5 kV
	Insulation resistance (20°C)	BS G230	1000 MΩ km (min)
	Pliability rating	Def Stan 61-12 (18)	Pliable
Fluid Resistance	Fuels - aircraft	Def Stan 61-12 (18)	Pass +100°C/72 hours
	Oils - ASTM No.3	Def Stan 61-12 (18)	Pass +50°C/7 days
Electrical	Voltage rating	-	600V (0.2mm wall thickness)
	Voltage rating	-	1000V (0.3mm wall thickness)
Fire Hazard Properties	Flammability	IEC 332 Part 3	Pass
	Toxicity index	Def Stan 61-12 (18)	0.1 per metre of wire
	Smoke index	Def Stan 61-12 (18)	8 per metre of wire
	Acid gas equivalent	TDE 76/P/76	<1.5%

99 Wire

Dual Wall 120°C rated, Modified Polyester

Low fire hazard wire and cable

600V Primary Wire Dimensions (all dimensions are in mm)

Conductor Size	Stranding No/mm	Nominal CSA (mm ²)	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
28	7/0.12	0.09	0.72	1.50	99M0111-28-0
26	19/0.10	0.15	0.90	2.18	99M0111-26-0
24	19/0.12	0.25	0.98	3.45	99M0111-24-0
22	19/0.15	0.40	1.13	4.90	99M0111-22-0
20	19/0.20	0.60	1.40	7.56	99M0111-20-0
18	19/0.25	1.00	1.65	10.40	99M0111-18-0
16	19/0.30	1.25	1.90	16.50	99M0111-16-0
14	37/0.25	2.00	2.25	20.70	99M0111-14-0
12	37/0.30	3.00	2.60	27.10	99M0111-12-0

600V Single Core Screened & Jacketed Dimensions (all dimensions are in mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
26	19/0.10	1.80	8.29	99M1111-26-X-0
24	19/0.12	1.90	9.80	99M1111-24-X-0
22	19/0.15	2.05	12.00	99M1111-22-X-0
20	19/0.20	2.30	16.00	99M1111-20-X-0
18	19/0.25	2.55	21.30	99M1111-18-X-0
16	19/0.30	2.95	29.20	99M1111-16-X-0
14	37/0.25	3.13	34.80	99M1111-14-X-0
12	37/0.30	3.48	43.10	99M1111-12-X-0

Note: X = Colour (please refer to the **Part Numbering Guide** for the range of colours available). The standard jacket colour for 99M wire is -0 (Black). For further assistance please contact us.

600V 2-Core Screened & Jacketed Dimensions (all dimensions are in mm)

Conductor Size	Stranding No/mm	Nominal Dia. (mm)	Max Weight (g/m)	Ordering Description
28	7/0.10	2.55	11.66	99M1121-28-X/X-0
26	19/0.10	2.91	15.82	99M1121-26-X/X-0
24	19/0.12	3.20	17.82	99M1121-24-X/X-0
22	19/0.15	3.52	22.11	99M1121-22-X/X-0
20	19/0.20	4.02	30.04	99M1121-20-X/X-0
18	19/0.25	4.57	38.14	99M1121-18-X/X-0
16	19/0.30	5.13	52.91	99M1121-16-X/X-0
14	37/0.25	5.72	64.86	99M1121-14-X/X-0
12	37/0.30	6.42	81.38	99M1121-12-X/X-0

99 Wire

Ordering

Low fire hazard wire and cable

1

Ordering Information

Colours:

0 = Black	5 = Green
1 = Brown	6 = Blue
2 = Red	7 = Violet
2L = Pink	8 = Grey
3 = Orange	9 = White
4 = Yellow	45 = Yellow/Green

Stripes are also available on request and are indicated by additional insulation colour numbers
e.g. 92 = White with Red stripe

Standard packaging:

99 Wire is supplied on a range of reel sizes, dependent on gauge size. If the product is a non stock item a Minimum Order Quantity (MOQ) will apply.

Ordering Description:

Follow steps 1 to 6.

- 1 Select the type of wire required
- 2 Select the number of conductors required
- 3 Select the type of conductor required
- 4 Select the wire gauge size required
- 5 Select the primary wire insulation colour(s) required
- 6 Select the outer jacket colour required

Ordering Examples:

- Where a single 22awg 600V white primary wire is required the part number is **99M0111-22-9**
- Where a single 20awg 600V black primary wire, with shield and an outer black jacket is required the part number is **99M1111-20-0-0**
- Where a two core cable with an overall shield and jacket is required. Gauge size for each of the wires is 24awg, in colours of black & white with a black outer jacket colour, the part number is **99M1121-24-0/9-0**
- Where a three core cable with an overall shield and an outer jacket is required and the gauge size for each of the primary wires is 24awg, each with a separate coloured insulation red, blue and white. The outer jacket required is black. The part number is **99M1131-24-2/6/9-0**

Additional Information

The opposite page illustrates how to build your own part number. For further information or assistance please contact us.

99 M 1 1 2 1 - 18 - 2/6 - 0

PART NUMBER EXAMPLE

JACKET COLOUR

0 = Black, supplied as standard

WIRE INSULATION COLOUR CODE

0	Black	6	Blue
1	Brown	7	Violet
2	Red	8	Grey
2L	Pink	9	White
3	Orange	45	Yellow/Green
4	Yellow		
5	Green		

CONDUCTOR SIZE

28 to 12 AWG

CONDUCTOR TYPE

1 = Tin plated copper (standard)
9 = Bare copper

NUMBER of CONDUCTORS

1 through 9

VOLTAGE

1 = 600V Lightweight equipment wire

CONSTRUCTION

0 = Primary wire
1 = Round braid shielded and jacketed

TYPE

M = Military wire

BASIC SPECIFICATION

Spec 99 - LFH High performance wire and cable

ASN-E Wire

Taped, 260°C rated

Airframe wire and cable

1 Effective cables for challenging and hazardous environments. Used predominantly throughout the aerospace industry. Additional applications include communications, automotive, mass transit, defence / marine, oil, gas and petrochemical plants. Construction: Nickel or Silver plated Copper wire.

Specifications

Includes AIRBUS ASN-E

Features & Benefits

- Low weight/volume
- Resistance to oils and solvents
- High and low temperature capabilities
- Excellent fire resistance
- Low smoke and fume properties
- Excellent physical performance and aging properties

Operating Temperature

- ASN-E 0261/0260 = -55°C to +200°C
- ASN-E 0262 to 0275 = -65°C to +260°C

Voltage Rating

- 600 volts rms at 2000Hz

Specifications/Approvals

Single Core

- ASN-E 0260 Type BF (PTFE insulation)
- ASN-E 0261 Type CF Fuselage
- ASN-E 0262 Type DK Wings

Twisted Single Cores

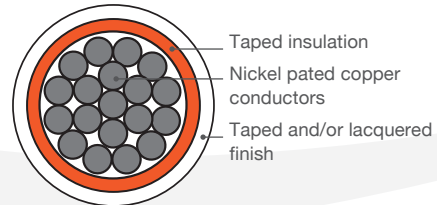
- ASN-E 0264 Type PF
- ASN-E 0266 Type QF
- ASN-E 0268 Type RF
- ASN-E 0265 Type PG
- ASN-E 0267 Type QG
- ASN-E 0269 Type RH

Screened and Jacketed

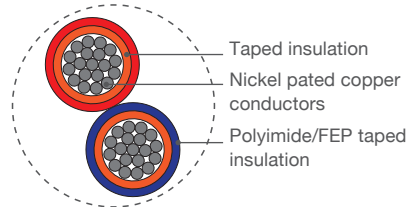
- ASN-E 0270 Type SJ
- ASN-E 0272 Type TK
- ASN-E 0274 Type UD
- ASN-E 0271 Type ST
- ASN-E 0273 Type TT
- ASN-E 0275 Type UE



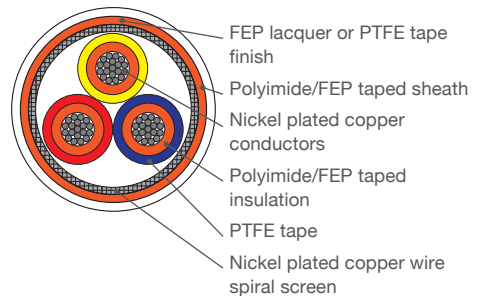
Single Core Types DK, CF, BF



Twisted Pair Types PF, QF, RF, PG, QG, RH



Screened & Jacketed Types PF, QF, RF, PG, QG, RH



Note

For further information, technical data or assistance with your specific ASN-E wire and cable requirements please contact us.

Single Core					
Part Number	Wire Type	Description	Gauge AWG	Max Weight kg/km	Colours White unless stated
ASN-E 0260	BF	PTFE taped insulated primary wire	18 - 26	11.52 - 2.9	22 = Light green 20 = Light blue
ASN-E 0261	CF	Polyimide/FEP tape insulated primary wire with FEP lacquer	10 - 26	48.3 - 2.0	22 = Light green
ASN-E 0262	DK	Polyimide/FEP tape and PTFE taped insulated primary wire	6 - 26	143 - 2.8	22 = Light green

Twisted Single Cores					
Part Number	Wire Type	Description	Gauge AWG	Max Weight kg/km	Colours
ASN-E 0264	PF	2-Core light weight cable using 2 ASN-E 0261(CF) primary wires	10 - 26	99.5 - 4.12	Red & Blue for all gauge sizes
ASN-E 0266	QF	3-Core light weight cable using 3 ASN-E 0261(CF) primary wires	10 - 26	149.25 - 6.2	Red, Blue & Yellow for all gauge sizes
ASN-E 0268	RF	4-Core light weight cable using 4 ASN-E 0261(CF) primary wires	10 - 26	199 - 8.24	Red, Blue, Yellow & Green for all gauges
ASN-E 0265	PG	2-Core medium weight cable using 2 ASN-E 0262(DK).	6 - 26	294.6 - 5.8	Red & Blue for all gauge sizes
ASN-E 0267	QG	3-Core medium weight cable using 3 ASN-E 0262(DK).	6 - 26	441.9 - 8.65	Red, Blue & Yellow for all gauge sizes
ASN-E 0269	RH	4-Core medium weight cable using 4 ASN-E 0262(DK).	6 - 26	589.2 - 11.54	Red, Blue, Yellow & Green for all gauges

Screened and Jacketed*					
Part Number	Wire Type	Description	Gauge AWG	Max Weight kg/km	Colours
ASN-E 0270	SJ	1-Core light weight cable using an ASN-E 0261(CF) primary wire	14 - 26	24.8 - 4.3	22 = Light green All other sizes white
ASN-E 0272	TK	2-Core light weight cable using 2 ASN-E 0261(CF) primary wires	12 - 26	75 - 7.6	Red & Blue for all gauge sizes
ASN-E 0274	UD	3-Core light weight cable using 3 ASN-E 0261(CF) primary wires	14 - 26	72.6 - 10.5	Red, Blue & Yellow for all gauge sizes
ASN-E 0271	ST	1-Core medium weight cable using an ASN-E 0262(DK).	16 - 26	23.8 - 6	22 = Light green All other sizes white
ASN-E 0273	TT	2-Core medium weight cable using 2 ASN-E 0262(DK).	14 - 26	61.7 - 11	Red & Blue for all gauge sizes
ASN-E 0275	UE	3-Core medium weight cable using 3 ASN-E 0262(DK).	16 - 26	67.5 - 14.6	Red, Blue & Yellow for all gauge sizes

Note: ASN-E 0270 to 0275. Jacket colours for AWG 24, 20 & 16 = Light Blue. All other sizes = White

Wire and Cable

ACT150 Wire

Taped, 150°C rated

Airframe wire and interconnect cables



1

Effective cables for challenging and hazardous environments. Used predominantly throughout the aerospace industry. Additional applications include communications, automotive, mass transit, defence / marine, oil, gas and petrochemical plants.

Features & Benefits

- Low weight/volume
- Resistance to oils and solvents
- High and low temperature capabilities
- Excellent fire resistance
- Low smoke and fume properties
- Excellent physical performance and aging properties

Performance

- Meet requirements of BSG230 Test 42 (Resistant to arc tracking)

Operating Temperature

- -65°C to +150°C

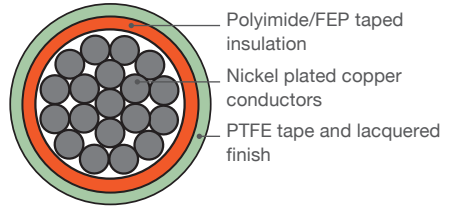
Voltage Rating

- 600 volts rms at 2000Hz

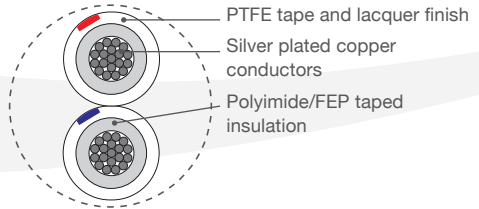
Specifications

- ACT150 Type 01
- ACT150 Type 02
- ACT150 Type 03
- ACT150 Type 04
- ACT150 Type 05
- ACT150 Type 06

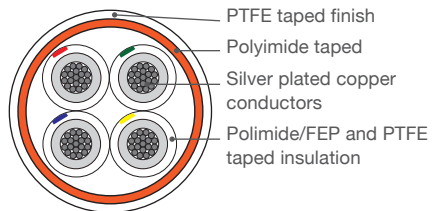
Single Core



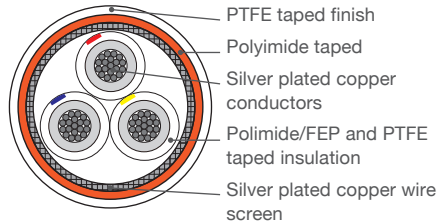
Twisted Pair



Jacketed



Screened & Jacketed



Note

For further information, technical data or assistance with your specific ACT150 wire and cable requirements please contact us.

Single Core

Part Number	Wire Type	Description	Gauge AWG	Max Weight kg/km	Colours
ACT150	01	Single core interconnect wire	16 - 24	14.11 - 2.7	See note below
ACT150	02	Single core airframe wire	12 - 24	30.1 - 2.96	See note below

Note: All colours are Pastel shades.

Size 24 = Blue, Size 22 = Green, Size 20 = Red, Size 18 = White, Size 16 = Blue, Size 14 = Green, Size 12 = Yellow.

Twisted Single Cores

Part Number	Wire Type	Description	Gauge AWG	Max Weight kg/km	Colours
ACT150	01	Twisted pair interconnect wire	16 - 24	29.1 - 5.5	See note below
ACT150	01	Twisted triple interconnect wire	16 - 24	43.6 - 8.24	See note below
ACT150	01	Twisted triple interconnect wire	16 - 24	58.13 - 11	See note below
ACT150	02	Twisted pair airframe wire	12 - 24	61.9 - 6.11	See note below
ACT150	02	Twisted triple airframe wire	12 - 24	92.9 - 9.2	See note below
ACT150	02	Twisted quad airframe wire	12 - 24	123.9 - 12.22	See note below

Note: All colours are Pastel shades with spiral stripe.

Size 24 = Blue, Size 22 = Green, Size 20 = Red, Size 18 = White, Size 16 = Blue, Size 14 = Green, Size 12 = Yellow.

Stripes: Twisted pair = red & blue, twisted triple = red, blue & yellow, twisted quad = red, blue, yellow & green.

Jacketed*

Part Number	Wire Type	Description	Gauge AWG	Max Weight kg/km	Colours
ACT150	03	2-Core interconnect cable	16 - 24	30.2 - 6.1	See note below
ACT150	03	3-Core interconnect cable	16 - 24	44.9 - 8.9	See note below
ACT150	03	4-Core interconnect cable	16 - 24	59.6 - 11.7	See note below
ACT150	04	2-Core airframe cable	12 - 24	63.6 - 6.75	See note below
ACT150	04	3-Core airframe cable	12 - 24	94.8 - 9.9	See note below
ACT150	04	4-Core airframe cable	12 - 24	125.9 - 13	See note below

Screened & Jacketed*

Part Number	Wire Type	Description	Gauge AWG	Max Weight kg/km	Colours
ACT150	05	Single Core interconnect cable	16 - 24	22.3 - 7.2	See note below
ACT150	05	2-Core interconnect cable	16 - 24	41.8 - 12.2	See note below
ACT150	05	3-Core interconnect cable	16 - 24	58.8 - 16	See note below
ACT150	05	4-Core interconnect cable	16 - 24	74 - 19	See note below
ACT150	06	Single Core airframe cable	12 - 24	41.7 - 7.99	See note below
ACT150	06	2-Core airframe cable	12 - 24	80.5 - 13.6	See note below
ACT150	06	3-Core airframe cable	12 - 24	115.2 - 17.9	See note below
ACT150	06	4-Core airframe cable	12 - 24	147.4 - 21.2	See note below

***Note:** All colours are Pastel shades with spiral stripe and outer jacket is white.

Size 24 = Blue, Size 22 = Green, Size 20 = Red, Size 18 = White, Size 16 = Blue, Size 14 = Green, Size 12 = Yellow.

Stripes: 2-Core = red & blue, 3-core = red, blue & yellow, 4-Core = red, blue, yellow & green.

ACT260 Wire

Taped, 260°C rated

Airframe wire and interconnect cables



1

Effective cables for challenging and hazardous environments. Used predominantly throughout the aerospace industry. Additional applications include communications, automotive, mass transit, defence/marine, oil, gas and petrochemical plants.

Features & Benefits

- Low weight/volume
- Resistance to oils and solvents
- High and low temperature capabilities
- Excellent fire resistance
- Low smoke and fume properties
- Excellent physical performance and aging properties

Performance

- Meet requirements of BSG230 Test 42 (Resistant to arc tracking)

Operating Temperature

- -65°C to +260°C (on all ACT260 types)

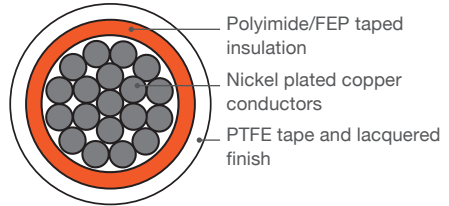
Voltage Rating

- 600 volts rms at 2000Hz (on all ACT260 types)

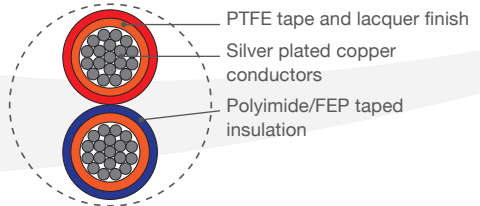
Specifications

- ACT260 Type 01
- ACT260 Type 02
- ACT260 Type 03
- ACT260 Type 04
- ACT260 Type 05
- ACT260 Type 06

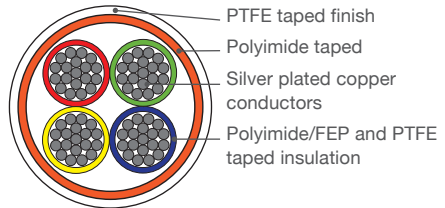
Single Core



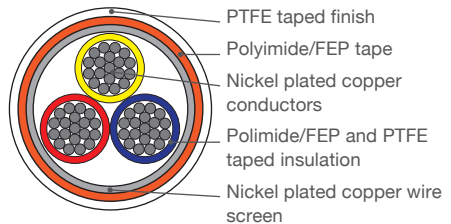
Twisted Pair



Jacketed



Screened & Jacketed



Note

For further information, technical data or assistance with your specific ACT260 wire and cable requirements please contact us.

Single Core

Part Number	Wire Type	Description	Gauge AWG	Max Weight kg/km	Colours
ACT260	01	Single core interconnect wire	16 - 24	14.11 - 2.7	White
ACT260	02	Single core airframe wire	12 - 24	30.1 - 2.96	White

Twisted Single Cores

Part Number	Wire Type	Description	Gauge AWG	Max Weight kg/km	Colours
ACT260	01	Twisted pair interconnect wire	16 - 24	29.1 - 5.5	Red & Blue
ACT260	01	Twisted triple interconnect wire	16 - 24	43.6 - 8.24	Red, Blue & Yellow
ACT260	01	Twisted quad interconnect wire	16 - 24	58.13 - 11	Red, Blue, Yellow & Green
ACT260	02	Twisted pair airframe wire	12 - 24	61.9 - 6.11	Red & Blue
ACT260	02	Twisted triple airframe wire	12 - 24	92.9 - 9.2	Red, Blue & Yellow
ACT260	02	Twisted quad airframe wire	12 - 24	123.9 - 12.22	Red, Blue, Yellow & Green

Jacketed

Part Number	Wire Type	Description	Gauge AWG	Max Weight kg/km	Colours
ACT260	03	2-Core interconnect cable	16 - 24	30.2 - 6.1	Red & Blue
ACT260	03	3-Core interconnect cable	16 - 24	44.9 - 8.9	Red, Blue & Yellow
ACT260	03	4-Core interconnect cable	16 - 24	59.6 - 11.7	Red, Blue, Yellow & Green
ACT260	04	2-Core airframe cable	12 - 24	63.6 - 6.75	Red & Blue
ACT260	04	3-Core airframe cable	12 - 24	94.8 - 9.9	Red, Blue & Yellow
ACT260	04	4-Core airframe cable	12 - 24	125.9 - 13	Red, Blue, Yellow & Green

Screened & Jacketed

Part Number	Wire Type	Description	Gauge AWG	Max Weight kg/km	Colours
ACT260	05	Single Core interconnect cable	16 - 24	22.3 - 7.2	White
ACT260	05	2-Core interconnect cable	16 - 24	41.8 - 12.2	Red & Blue
ACT260	05	3-Core interconnect cable	16 - 24	58.8 - 16	Red, Blue & Yellow
ACT260	05	4-Core interconnect cable	16 - 24	74 - 19	Red, Blue, Yellow & Green
ACT260	06	Single Core airframe cable	12 - 24	41.7 - 7.99	White
ACT260	06	2-Core airframe cable	12 - 24	80.5 - 13.6	Red & Blue
ACT260	06	3-Core airframe cable	12 - 24	115.2 - 17.9	Red, Blue & Yellow
ACT260	06	4-Core airframe cable	12 - 24	147.4 - 21.2	Red, Blue, Yellow & Green

Note: The outer jacket colour for all the above cables is white. For further information, technical data or assistance with your specific ACT260 wire and cable requirements, please contact us.

Wire and Cable

KP260 Wire

Taped, 260°C rated

Ruggedised airframe wiring cables

1 Effective cables for challenging and hazardous environments. Used predominantly throughout the aerospace industry. Additional applications include communications, automotive, mass transit, defence / marine, oil, gas and petrochemical plants.

Features & Benefits

- Low weight/volume
- Resistance to oils and solvents
- High and low temperature capabilities
- Excellent fire resistance
- Low smoke and fume properties
- Excellent physical performance and ageing properties.

Operating Temperature

- -65°C to +260°C

Voltage Rating

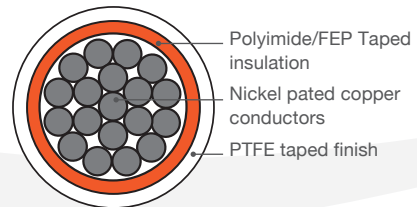
- 600 volts rms at 2000Hz

Specifications

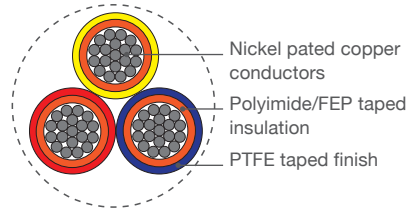
- KP260



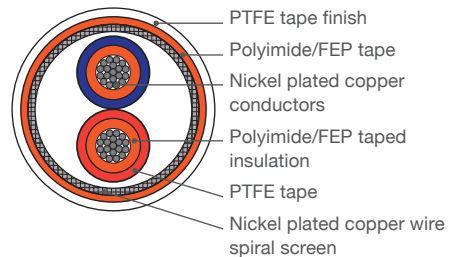
Single Core



Twisted Single Core Triple and Pair



Screened & Jacketed



Note

For further information, technical data or assistance with your specific KP260 wire and cable requirements please contact us.

KP260 Wire

Taped, 260°C rated

Ruggedised airframe wiring cables

Single Core				
Part Number	Description	Gauge AWG	Max Weight kg/km	Colours
KP260-AWG	Single core airframe wire	1 - 24	400 - 3.55	White
KP260-AWG	Single core airframe wire	0000 - 0	1060 - 525	White

Twisted Single Cores				
Part Number	Description	Gauge AWG	Max Weight kg/km	Colours
KP260-2-AWG	Twisted pair airframe wire	12 - 24	65.92 - 7.32	Red & Blue
KP260-3-AWG	Twisted triple airframe wire	12 - 24	98.88 - 10.97	Red, Blue & Yellow

Screened & Jacketed				
Part Number	Description	Gauge AWG	Max Weight kg/km	Colours
KP260-1MS-AWG	Single core airframe cable	12 - 24	42.6 - 9.3	White
KP260-2MS-AWG	2-Core airframe cable	12 - 24	99 - 17	Red, Blue
KP260-3MS-AWG	3-Core airframe cable	12 - 24	143 - 21.2	Red, Blue & Yellow
KP260-4MS-AWG	4-Core airframe cable	12 - 24	179 - 25.6	Red, Blue, Yellow & Green

Note: The outer jacket colour for all the above cables is white.

For further information, technical data or for assistance with your specific KP260 wire and cable requirements, please contact us.

Wire and Cable

PTFE Wire

260°C rated

Equipment wire and cabling

1

Polytetrafluoroethylene (PTFE) is a fluorocarbon polymer insulation material that allows wiring systems to be used and operated in the most demanding of environments.

PTFE is resistant to lubricants and fuels, very flexible, plus it has excellent thermal and electrical properties. Particularly suitable for applications requiring high levels of thermal and chemical resistance.

Features & Benefits

- Mechanically tough and flexible
- Excellent temperature performance
- Very high dielectric performance
- Non flammable / Flame resistant
- Excellent chemical resistance
- Silver and Nickel plated conductors
- Water repellent

Operating Temperature

- -75°C to +200°C (Silver plated copper)
- -75°C to +260°C (Nickel plated copper)

Specifications/Approvals

- BS 3G 210
- MIL-W-16878

Voltage Rating

- 300, 600 & 1000 volts



PTFE Wire Construction

Single Core



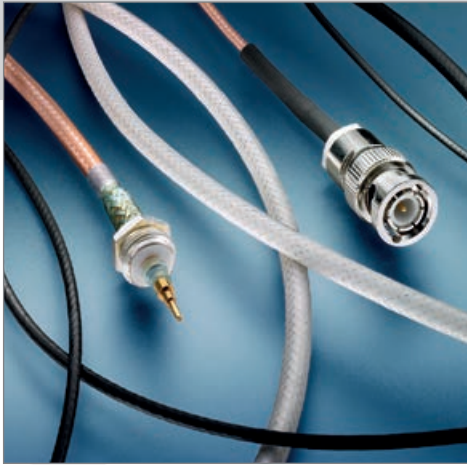
Note

For further information, technical data or assistance with your specific PTFE wire and cable requirements please contact us.

Quick Reference Guide

BS Reference BS 3G210	MIL-W-16878	Voltage Rating	Nom Insulation Thickness (mm)
TYPE A	ET	300 V rms	0.15
TYPE B	E	600 V rms	0.25
TYPE C	EE	1000 V rms	0.40

Note: For more information on the current PTFE stock profile, technical data, or assistance with your specific PTFE wire and cable requirements, please contact us.



Cheminax COAXIAL Cables

200°C rated

Small, lightweight coaxial cables

Cheminax controlled electrical cables are used in the aircraft and aerospace industries. They have a wide range of applications in missiles, avionics, radio frequency and microwave systems, computers, security & surveillance systems and communications.

Cheminax coaxial cables were designed to solve interconnect problems in electronic systems, such as computers, military equipment and other areas of high-density packing, where cables are required to perform to more exacting specifications than standard radio grade (RG) or UL recognised (UR) constructions.

Cheminax coaxial cables offer a smaller and lighter solution than standard RG and UR cables.

Standard Cable Jacket for Cheminax

The table below represents a selection of standard Thermorad jacketed cables, other jacket materials are available, see following pages.

Thermorad is a general purpose jacket material which is unaffected by most common chemicals and solvents and is suitable for use during N.B.C. decontamination. Thermorad is highly flame retardant and has an overall balance of physical and chemical properties.

Features & Benefits

- Small size, light weight
- Low capacitance and attenuation
- High velocity of propagation
- High flexibility

Operating Temperature

- -65°C to +200°C

Other Cheminax coaxial cable options are available, for additional information please refer to the following pages for part number configuration.

Standard coax cables - dimensions and electrical properties

Part Number	Impedance (Ohms)	Capacitance (pF/m)	Attenuation (dB/100m)		Conductor (mm)	Nom Dielectric Dia. (mm)	Nom. Cable Dia. (mm)	Nom. Weight (kg/100m)
			100MHz	400MHz				
5020A1311-0	50 Ω	84.0	15.84	34.45	19/0.20	2.70	3.80	2.2
5024A1311-0	50 Ω	83.7	23.76	50.34	19/0.127	1.70	2.70	1.1
5026A1311-0	50 Ω	85.3	30.98	64.79	7/0.15	1.20	2.10	0.9
5028A1317-0	50 Ω	87.9	38.92	79.70	7/0.127	0.97	1.85	0.6
7524A1311-0	75 Ω	56.4	14.53	31.84	19/0.127	2.80	3.80	1.9
7528A1317-0	75 Ω	56.0	22.81	48.38	7/0.127	1.65	2.60	1.0
7530A1317-9	75 Ω	57.0	28.00	58.84	7/0.10	1.35	2.30	0.8
0024A0311-0	100 Ω	44.3	46.32	-	19/0.127	1.40	3.99	2.4

Cheminax COAXIAL cable

Building your part number

Small lightweight coaxial cables

1

75 26 A 1 3 1 4 - 0

PART NUMBER EXAMPLE

IMPEDANCE

Always two digits - If 100Ω or higher, use last two digits (eg 00).

CONDUCTOR SIZE (AWG)

Always two digits

VARIATION

Letter assigned

CONSTRUCTION

- | | | | |
|---|-----------------------|---|--------------------|
| 1 | = Single round shield | 6 | = Triax-other |
| 2 | = Single flat shield | 7 | = n/a |
| 3 | = Double round shield | 8 | = Composite shield |
| 4 | = Two shield (other) | 9 | = Core only |
| 5 | = Triax-round shield | 0 | = Other |

JACKET

- | | | | |
|---|------------------------|---|------------------------------|
| 1 | = General purpose PVF2 | 6 | = Spec 55 (modified XL-ETFE) |
| 2 | = Outer space PVF2 | 7 | = Flexline |
| 3 | = Thermorad | 8 | = Zerohal |
| 4 | = FEP | 9 | = None |
| 5 | = Uncross-linked ETFE | 0 | = Other |

DIELECTRIC

- | | | | |
|---|-------------|---|------------------------------|
| 1 | = Rayfoam L | 4 | = FEP (solid) |
| 2 | = Rayfoam H | 6 | = Spec 55 (modified XL-ETFE) |
| 3 | = Rayolin F | 0 | = Other |

CONDUCTOR TYPE

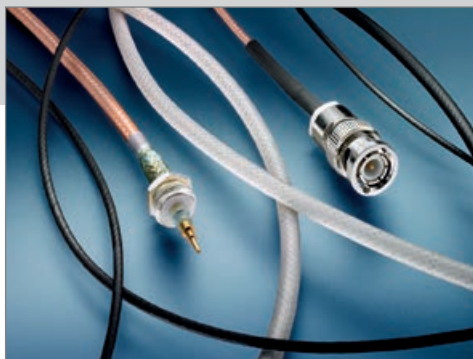
- | | | | |
|---|--|---|--|
| 1 | = Tin plated copper | 6 | = Nickel plated high-strength Cu alloy |
| 2 | = Silver plated copper | 7 | = Tin plated copper-clad steel |
| 3 | = Nickel plated copper | 8 | = Silver plated copper clad steel |
| 4 | = Silver plated high-strength Cu alloy | 9 | = Bare copper |
| 5 | = n/a | A | = CS95 |

JACKET COLOUR

- | | | | |
|---|----------|----|---------------------|
| 0 | = Black | 6 | = Blue |
| 1 | = Brown | 7 | = Violet |
| 2 | = Red | 8 | = Grey |
| 3 | = Orange | 9 | = White |
| 4 | = Yellow | 9X | = Transparent white |
| 5 | = Green | | |

Note: Users should independently evaluate the suitability of the product for their application.

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Cheminax COAXIAL Cables

Alternatives to RG cables

High performance option to standard cables

Alternative Solutions

The comprehensive lists below and on the following page is provided as a quick guide for high performance upgrades to standard RG & UR cables, with a brief comment on benefits and key features.

To complement the mechanical and electrical features of Cheminax miniature coaxial cables please refer to the electrical interconnect section of this catalogue.

RG/U	Alternatives	Comments
4	5020A3311-0	Small, light
	5018D3311-0	Improved electricals
5	5018D3311-0	Small, light
8	5012E1339-0	Dimensionally similar
11	7518A1311-0	Small, light
29	5020A1311-0	Small, light
31	5012E1339-0	Dimensionally similar
55	5020A3311-0	Small, light
	5018D3311-0	Improved electricals
58	5021D1331-0	Dimensionally similar
	5020A1311-0	Small, light
	5018A1311-0	Improved electricals
59	7523D1331-0	Dimensionally similar
	7524A1311-0	Small, light
	7520A1311-0	Improved electricals
62	9524A1311-0	Small, light
63	2524A1311-0	Small, light
87	5012A3311-0	Small, light
89	5012A3311-0	Small, light
115	5012A3311-0	Small, light
122	5020A1311-0	Improved electricals
124	7524A1311-0	Small, light
133	9524A1311-0	Small, light
140	7524A1311-0	Small, light
141	5020A1311-0	Small, light
142	5019D3318-0	Small, light
	5018D3311-0	Improved electricals
144	7518A1311-0	Small, light
149	7518A1311-0	Small, light

RG/U	Alternatives	Comments
159	5020A1311-0	Small, light
174	5026A1311-0	Small, light
	5024A1311-0	Improved electricals
178	5030A1317-0	Small, light
	5028A1317-0	Improved electricals
179	7530A1317-0	Small, light
	7528A1317-0	Improved electricals
180	9530E1014-0	Small, light
	9527A1318-9	Improved electricals
188	5026A1311-0	Small, light
	5024A1311-0	Improved electricals
210	9524A1311-0	Small, light
213	5012E1339-0	Dimensionally similar
214	5012A3311-0	Small, light
223	5019D3318-0	Small, light
	5018D3311-0	Improved electricals
225	5012A3311-0	Small, light
235	5012A3311-0	Small, light
279	7524A1311-0	Dimensionally similar
282	5024A1311-0	Small, light
302	7524A1311-0	Small, light
303	5020A1311-0	Small, light
304	5018A1311-0	Small, light
316	5026A1311-0	Small, light
	5024A1311-0	Improved electricals
393	5012A3311-0	Small, light
400	5020A3311-0	Small, light
	5018D3311-0	Improved electricals
403	5030A5314-0	Small, light

Cheminax COAXIAL cable

Alternatives to UR cables

Small lightweight coaxial cables

1

UR	Alternatives	Comments
43	5020A1311-0	Small, light
57	7518A1311-0	Small, light
65	7518A1311-0	Small, light
67	5012E1339-0	Dimensionally similar
70	7524A1311-0	Small, light
72	5020A1311-0	Small, light
76	5020A1311-0	Small, light
84	7524A1311-0	Small, light
90	7522A1311-0	Small, light
95	5026A1311-0	Small, light
96	9524A1311-0	Dimensionally similar
102	5012E1339-0	Dimensionally similar
104	7522A1311-0	Small, light
105	7518A1311-0	Small, light
106	7222A1311-0	Small, light
107	5012E1339-0	Small, light
108	5020A1311-0	Small, light
109	5026A1311-0	Small, light
110	5030A1317-0	Small, light
111	7530A1317-0	Small, light
112	5012A3311-0	Small, light
113	7518A1311-0	Small, light
116	5026A1311-0	Small, light
117	7524A1311-0	Small, light
200	7524A1311-0	Dimensionally similar
201	7522A1311-0	Dimensionally similar
202	7522A1311-0	Dimensionally similar
203	7520A1311-0	Small, light
204	7518A1311-0	Dimensionally similar
205	7518A1311-0	Dimensionally similar
207	7524A1311-0	Small, light
208	7524A1311-0	Small, light
210	7524A1311-0	Small, light
301	5020A1311-0	Small, light
306	7524A1311-0	Small, light

Note: To complement the mechanical and electrical features of Cheminax miniature coaxial cables please refer to the electrical interconnect section of this catalogue.

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High Speed DATA Cables

Overview DataMATES®

Cat 5e, 6, 6A and USB



High quality, high performance engineered electronic high speed data cables and interconnect solutions for demanding military, aerospace and motorsport applications. These products are designed and manufactured to meet stringent electrical and mechanical performance criteria including EMI immunity, lightweight, low loss, high temperature and harsh environment

Ethernet communications backbone | Ground Vehicle Bus | Cabin management | In-flight entertainment | Avionics networks | High definition video.

Meets Requirements of

FAR Part 23 and 25, Appendix F (as applicable)

The part reference table below represents a brief overview of the range only, for additional information please contact us.



High Speed Data Cables - characteristics and properties overview

Cable Family	Capability	Part Number	Rating	Conductors	Dia. mm	Weight / 100m
DataMates PLUS	-55°C to +200°C > 76m distance Better shielding Better corrosion	E10224	Cat 5e	1 Pair 24AWG SPC	4.34	3.2kg
		E40424		2 Pairs 24 AWG SPC	5.33	4.1kg
		E50824	Cat 6	4 Pairs 24 AWG SPC	6.73	7.4kg
		E6A0824	Cat 6, 6A		6.99	7.9kg
DataMates BASE	150°C temp > 61m distance Laser markable	E12224	Cat 5e	1 Pair 24 AWG Tin PC	3.71	2.4kg
		E12424		2 Pairs 24 AWG Tin PC	4.78	3.4kg
		E6A2824	Cat 6, 6A	4 Pairs 24 AWG Tin PC	6.60	6.8kg
DataMates LITE	200°C temp > 175 ft distance Very light Very flexible	E13226	Cat 5e	1 Pair 26 AWG SPC	3.40	2.5kg
		E13426		2 Pairs 26 AWG SPC	3.99	2.9kg
		E6A3824	Cat 6, 6A	4 Pairs 24 AWG SPC	6.60	7.1kg
		E6A3826		4 Pairs 26 AWG SPC	5.59	5.2kg
DataMates QUAD	10% lighter Lower loss Easy termination	E51424	Cat 5e	4 x 24AWG SPCA	4.09	3.3kg
		E51426	Cat 5e	4 x 26AWG SPCA	3.48	2.7kg
		E50424	Cat 5e	4 x 24AWG SPCA	4.45	4.0kg
USB 2.0 High Speed	up to 200°C temp EIA-364-XX Skydrol resistant RoHS compliant FAR pt 23 & 25 (F)	USB2422	Data Pair Impedance 90Ω	Data pair 24 AWG SPC Power Pair 22 AWG SPC Drain Wire 28 AWG SPC	4.57	3.6kg

Note: For more information please see www.is-rayfast.com/pdfs/PIC_ProductGuide.pdf or contact us.

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RF and Video Cables

Overview RFMATES® and VideoMATE®

High Standards • High Definition

1 RF - 50 Ohm Coaxial and Triaxial Cables

50 Ohm coaxial and triaxial cables are designed and manufactured to meet the most stringent electrical and mechanical performance criteria. Ideal for advanced electronic applications including lightweight, low loss, high flexibility, high EMI immunity, high temperature and high corrosive resistance. All are Skydrol resistant, RoHS compliant.

- Navigation
- Collision Avoidance
- Communications

Key Benefits

- Lightweight and flexibility
- Superior electrical performance

Meets Requirements of

- FAR Part 23 and 25, Appendix F
- Mil-C-17 (as applicable)
- RoHS compliant

VIDEO - 75 Ohm and Triaxial Cables

Our 75 ohm coaxial and triaxial video cables are lightweight, low loss, flexible and easy to terminate. They are specifically designed and manufactured for reliable performance in aircraft systems and other harsh environments involving high temperature, strong EMI and/or corrosive materials. All 75 ohm video cables are Skydrol resistant, RoHS compliant.

- Cockpit Displays
- Surveillance Cameras
- Cabin Entertainment
- RS170 Video
- SMPTE 292M Video
- SMPTE 424M Video

Key Benefits

- Lightweight and flexibility
- Superior electrical performance

Meets Requirements of

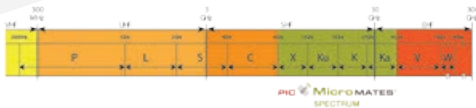
- FAR Part 23 and 25, Appendix F
- Mil-C-17 (as applicable)
- RoHS compliant



Note: For more information please see www.is-rayfast.com/pdfs/PIC_ProductGuide.pdf or contact us.

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Micro Cables & MicroMATES® High Frequency



MICRO - X and Ku Band Cable Assemblies

Provides high bandwidth for data and support satellite communications. These High Frequency cables are rated to a minimum 200°C on all materials and offer reduced weight, decreased loss and improved EMI performance.

Designed specifically to serve Ku Band & X Band applications, these cables feature: Inner flat or strip braid; High temperature polyamide foil; Dual braided shields and Silver plated copper throughout.

Correct cable assembly is critical to realising the full benefits of the cable and connector technology. Our service ensures the best performance solution.

- **Certified Test Process & Equipment**
- **Phase-matched Ship Sets**
- **Qualified Assembly Experts**
- **ISO 9001; AS 9100 Certification**
- **Complete traceability**
- **Improved Supply Chain Efficiency**

Associated Connector Solutions

We can also offer an extensive line of associated high quality connectors and contacts for this range of lightweight, high performance cables, including TNC, BNC, N, HN, C, SMA, ARINC, M39029 and D-Sub. Including many innovative connectors that improve termination, installation, maintenance and reliability. To ensure proper field installation, termination instructions and crimp die sets are available for most connectors.

Connectors for

- 50 Ohm RF Coaxial & Triaxial Cable
- 75 Ohm Video Coaxial & Triaxial Cable
- High Speed Data Communications Cable

Selection of unique features include ;

- 75° TNC Plug, spac saving low interference.
- Size 16 Contact with self extraction mechanism.
- QUAD Connector, four in one bulkhead seal.
- BladePatch RJ45 Connector, lock.

Note: For more information please see www.is-rayfast.com/pdfs/PIC_ProductGuide.pdf or contact us.

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MARINE Cables

UK Defence Standard 61-12 (part 25)

Limited Fire Hazard

1

IS-Rayfast offer a comprehensive portfolio of high performance cables designed for today's modern range of warships and submarines.

Zerohal Marine Cables

The cables briefly described over these two pages are manufactured and approved to UK Defence Standard 61-12 (Part 25). These cables have been widely adopted as the basis for lightweight Limited Fire Hazard (LFH) cables by the UK Navy and many other Navies worldwide. Limited Fire Hazard Cables are designed to minimise the risk associated with the generation of smoke and toxic fumes during a fire.

Def Stan 61-12 (Part 25) Spec Summary

Cables manufactured and approved to Def Stan 61-12 (part 25) use component wires and cable jackets approved to specifications which independently impose performance limits on the generation of smoke and fumes in fire.

Def Stan 61-12 (Part 25) cables employ;

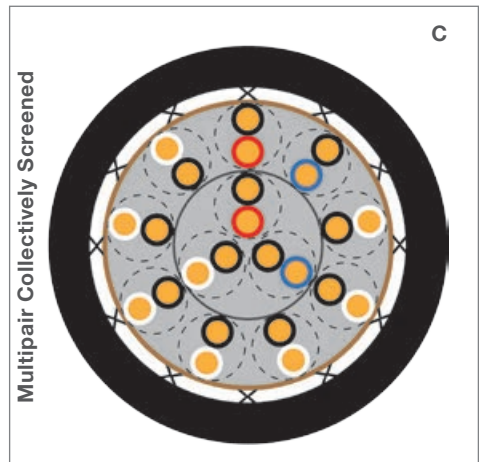
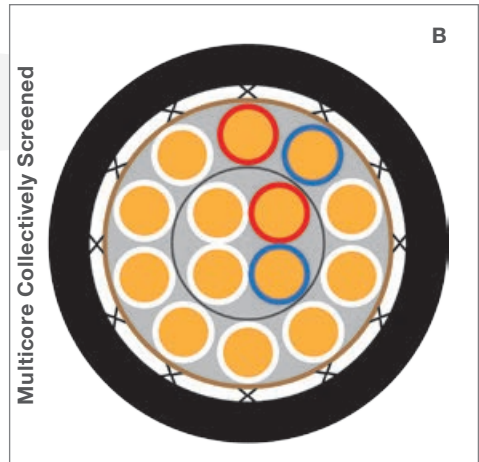
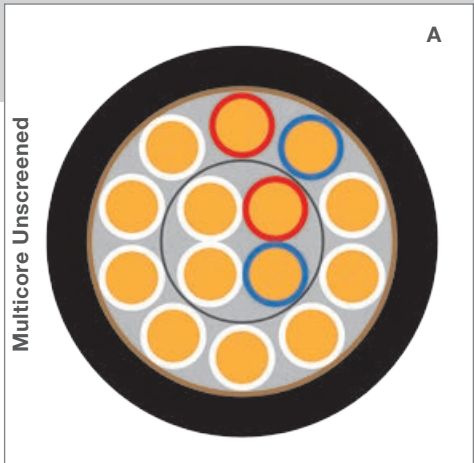
- Component wires approved to Def Stan 61-12 (Part 18). Within this specification, wires are categorised as Type 1 pliable, or Type 2 non-pliable. Component wires 99M0111 are Type 1, pliable wires.
- Jacket material is approved to Def Stan 61-12 (Part 31) (Limited Fire Hazard Sheathing for Electric Cables). Zerohal jacket material is fully approved to this specification.

Def Stan 61-12 (Part 25) details a number of specific cable constructions. Alternative cable constructions utilising optional component layout or specialised shielding are available on request. Alternative constructions use approved wires and jackets and will meet the full performance requirements of Def Stan 61-12 (Part 25).

Other LFH Specification Approvals

- MSV 34411, 34412, 34430, 34435, 34436 (Netherlands)
- Mil-C-24640, PMS 400 (USA)

Note: For further information or a copy of the applicable catalogue please contact us.

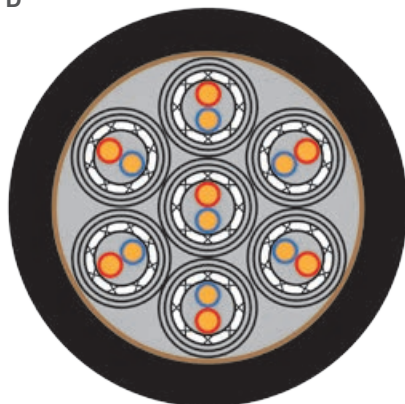


MARINE Cables

UK Defence Standard 61-12 (Part 25)

Limited Fire Hazard

D



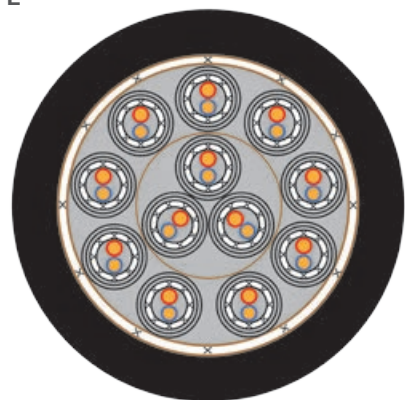
Multipair Individually Screened

Multicore Cables (A & B)

- 2 core - one Red & one Blue.
- 3 core - one Red, one Blue & one White.
- Others - 2 adjacent marker cores - one Red (pilot core), one Blue (direction core), remainder all White in each cable layer.

Where a single core is used in the centre of the cable, its colour shall be White. All cores in a multicore cable having four or more cores, shall be identified by means of numbers in a contrasting colour.

E



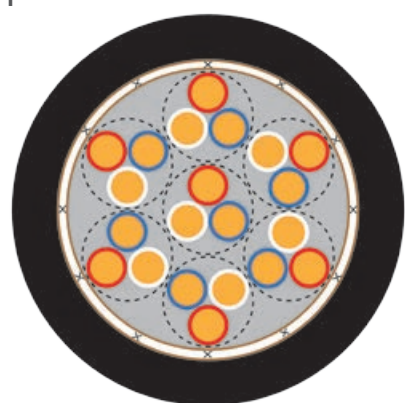
Multipair Collective & Individual Screened

Multipair Cables, Screened (C)

- For each layer the First pair has 1 core Black, 1 core Red (pilot pair).
- Second pair has 1 core Black, 1 core Blue (direction pair).
- All other pairs have 1 core Black, 1 core White.

Where one pair is used in the centre, the colours shall be 1 core Black, 1 core White. Where the cable consists of one pair only, the colours shall be 1 core Red, 1 core Blue and not numbered. All pairs shall also be identified by means of numbers in a contrasting colour, starting from black numbered 1 of the first pair.

F



Multitriples Collectively Screened

Multipair Cables, Screened (D & E)

Each pair shall have one core Red, one core Blue with an overall shield and double mylar wrap. Pairs shall be identified by means of numbering in black ink on outer mylar wrap.

Multitriples Cables Screened (F)

In multitriples cables, each triple shall have one core Red, one core Blue, one core White with the White core numbered sequentially in Black ink.

Mains Colour Cables

- 2 core - 1 Blue & 1 Brown
- 3 core - 1 Blue, 1 Brown & 1 Yellow/Green

Cable Sheath Marking

Each cable sheath shall be marked with the relevant NATO Stock Number, the component wire conductor stranding, year of manufacture and manufacturer's name in accordance with Def Stan 61-12 (Part 25).

SPECIALIST Cables

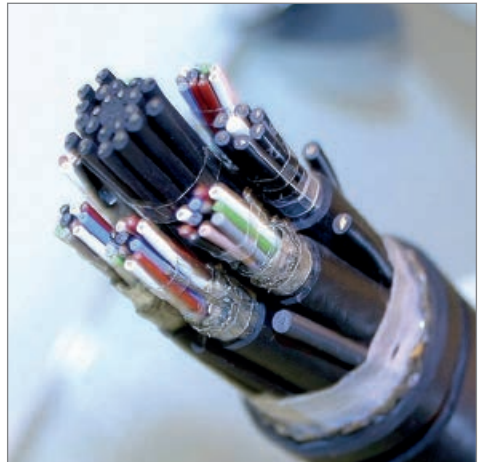
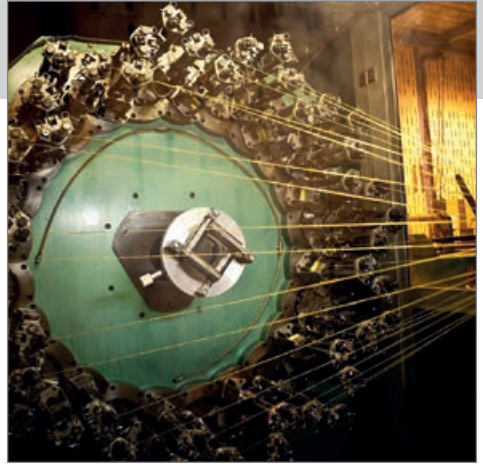
Electrical cables and composite systems

1 Introduction

Used in a wide variety of demanding industrial and commercial applications, including factory automation and robotics, materials handling, processing, packaging and building services.

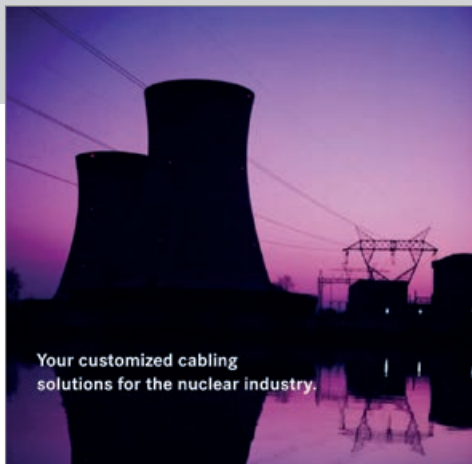
As a distributor we ensure the end product is of the highest order. All of the specialist cables we supply have been tested by the manufacturer to meet stringent quality and durability requirements. Such testing ensures reliability on site, making for cost effective installation.

The more complex the application, the more bespoke cables have to be produced. We select manufacturers with many years of experience of materials such as PVC, PUR, Rubber, Silicone, TPE and Low smoke halogen-free compounds, from basic multi-core cables to composite cables we can help to design a cable to a customer's exact requirements. Of course, a custom cable does not always have to be highly complex and from printing customer details to a change of outer sheath colour, we are always willing to assist in solving your requirements.



SPECIALIST Cables

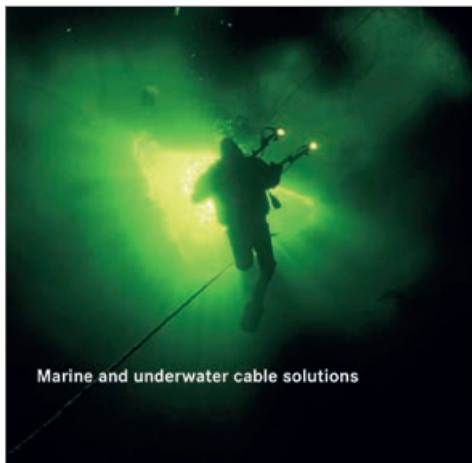
Special electric cables and composite cables systems



Your customized cabling solutions for the nuclear industry.



Wired technology for man-made machines



Marine and underwater cable solutions

Nuclear

Complete range of cables for all aspects of nuclear engineering: power, control, coaxial, telecoms, umbilical, or composite. Cables can be individually or overall shielded, armoured and reinforced.

- Flame retardant to IEC 332.1 & 332.3
- Resist radiation doses up to 200 Mrads.
- Cables in accordance to Cogema La Hague and Cogema Melox specification (centre for the enrichment and re-treatment of uranium).
- Cable types 10 Nouvelle Generation.
- Mulrad 2 cables.
- Cables for nuclear robotics.

Robotics

A wide range of special and standard cables designed for your robotic and drag chain applications.

- F3 for short drag chain applications.
- F1X for long distance and fast drag chains
- F1 for continuous bending and torsional applications with high speed acceleration.
- F1 Gold, for extreme conditions
- UL extra flexible cables
- BUS cables / MultiBUS cables
- Umbilicals
- Composites cables

Marine and underwater

Providing both composite electrical and optical cables for many applications such as ROVs, seabed vehicle umbilicals to ship and submarine.

- ROV tethers
- Umbilicals fixed and mobile equipment
- Trenching and burying machines
- Detection and sonar
- Oceanographic and buoy
- Mooring line and stay
- Onboard power and instrumentation
- Floating cables

Custom Designed Cables

Design Guide 1

Multi-conductor cables

1

Multi-conductor cables provide high performance custom designed solutions for the most demanding applications and environments, including but not limited to Aerospace, Marine and Industrial markets.

Features & Benefits

- Small size, light weight
- Complete range of components
- Specially formulated jacket materials
- Special shielding (screening) to address EMI/ EMC problems
- Custom designed and purpose built
- Prototype facility

Operating Temperatures

- Temperature capabilities -55°C to +260°C

Consideration should be given to the selection of components used in the cable, to ensure the right combination of physical, chemical and electrical properties is achieved to meet your specific application requirements.

High-performance component wires and miniature coaxial cables are combined with unique cable jacket materials to meet the requirements of demanding environments. We can provide a rapid response to any design requests, supported by the highest quality manufacturing standards.

Multi Conductor Cable - Design Check List

Design/Construction:

- Conductor wire type and size
- Type and number of components
- Insulation material
- Screen type
- Jacket material

Electrical:

e.g. Voltage rating and any other relevant controlled electricals.

Specific Application Requirements:

e.g. Temperature range, fluid/abrasion resistance, flammability / LFH requirements, flexibility etc.



Conductor Size

Conductor Size (AWG)	N° Strands / Diameter	Conductor OD (mm) nominal	Cross Sectional Area (mm ²)	Resistance (Tinned Cu) Ohms/km max @ 20°C	Current carrying capacity (amps) 30°C rise above 20°C ambient
Conductor Sizing & Performance Guide					
30	7/0.10	0.30	0.06	356.0	2.2
28	7/0.13	0.38	0.09	225.0	2.9
26	19/0.10	0.50	0.16	135.0	4.1
24	19/0.13	0.63	0.24	86.0	5.5
22	19/0.16	0.80	0.38	53.2	7.4
20	19/0.20	1.00	0.62	32.4	10.0
18	19/0.25	1.25	0.96	20.4	14.0
16	19/0.29	1.44	1.23	15.8	15.5
14	19/0.36	1.80	1.94	9.9	21.0
12	37/0.32	2.24	2.97	6.6	28.0

Current carrying capacities are for a single wire and should be de-rated for bundles and / or higher ambient temperature than 20°C. Contact IS-Rayfast for further information.

Custom Designed Cables

Design Guide 2

Multi-conductor cables



Building Blocks Shortlist

This guide is designed to help you identify the building blocks necessary to create a custom multicore cable design;

- What is your application/end use?
- What temperature rating is required?
- How many components are needed?
- What is each component used for (data, signal or power)?
- What would be the conductor size of the components?
- Are there any electrical shielding (EMI) requirements? If so, please list specifics such as component and or cable shielding.
- Are there specific flexibility, mechanical, or fluid resistance requirements? If so, please list specifics and rank the order of importance.
- Do you require specific or continuous lengths?
- Is there a customer specification involved? If so, please provide a copy.
- List any timelines and annual usage estimates.

Components

Typical wire components include the following, with others available;

- SPEC 44 wire and cable
- SPEC 55 wire and cable
- SPEC 99 wire and cable
- SPEC 100 wire and cable
- Flexible power cables
- Optical fibres

Screening, Wraps & Tapes

- Fabric and film tapes
- Aramid or steel strength members
- Full range of electrical screens (including SuperScreens).

Jacket Materials

FDR 25 - Fluid resistant, flexible, high temperature. Originally designed for use in compartments exposed to hot diesel fuels and vibration.

Thermorad/Thermorad F - General purpose unaffected by most common chemicals and solvents. Highly flame retardant and has an overall balance of physical and chemical properties.

Thermorad HTF - Very high temperature fluoro-elastomer, fluid resistant. Excellent stability during continuous high temperature exposure to adverse chemical environments, ideal for aircraft fuel tanks and engine cables.

Raythane C/FR - Mechanically tough and flexible, modified Polyurethane. Flame Retardant version (FR).

Rayolin - Excellent long term water immersion with low moisture transition and compatible with underwater splices.

NT/Thermorad NTFR - Low temperature flexibility, operating temperature range -55°C to +90°C

Zerohal - LFH (Low Fire Hazard), halogen-free cable jacket material developed and approved to the most exacting requirements for low fire hazard cables in many countries.

NBC - Revolutionary fluoroelastomer material that is resistant to nuclear, chemical and biological exposure, ideal for ground equipment.

CUSTOM Designed Cables

Design Guide 3

Multi-conductor cables

1 Electrical Screening

In many applications screening of cables is important, whether to minimise cross-talk within the cable, the prevention of interference from external sources or the elimination of radiation from the cable itself.

The design of cables to provide effective shielding over a broad frequency spectrum is complex and cables must be tailored to specific electromagnetic environments. From simple aluminised Polyester providing electrostatic screening, progressively more complex shielding can be designed incorporating plated copper braids and Mu metal wraps.

Conventional braiding methods can be significantly improved by computer optimisation. This tightly controlled process can give many times the shielding performance of a basic braided shield with minimal weight penalty or increase in optical coverage. Supershielded cable combine Mu metal wraps with optimised braids to provide even further enhanced performance, especially at low frequencies.

Aluminised Polyester

Offers first level of protection for standard Electrostatic screening applications.

Single Braid

Increased screening level offering low level EMI and low sensitivity environments.

Single Optimised Braid

Further improved braid screen for sensitive lines and high EMI work.

Double Optimised Braid

Two layers of braid screen offering protection for highly sensitive lines and severe EMI.

Double Optimised Braids with Mu Metal Wrap

As above but with interlayer of screening, otherwise known as Superscreened, this cable is suitable for very high protection levels EMP/Tempest.

Triple Optimised Braids + Double Mu Metal Wraps

The double and triple Superscreened cable is recommended for the severest of environmental applications.



Screening Options

Aluminised Polyester



Single Braid



Single Optimised Braid



Double Optimised Braid



Double Optimised Braids with Mu metal wrap



Triple Optimised Braids with double Mu metal wrap



TECHNICAL DATA

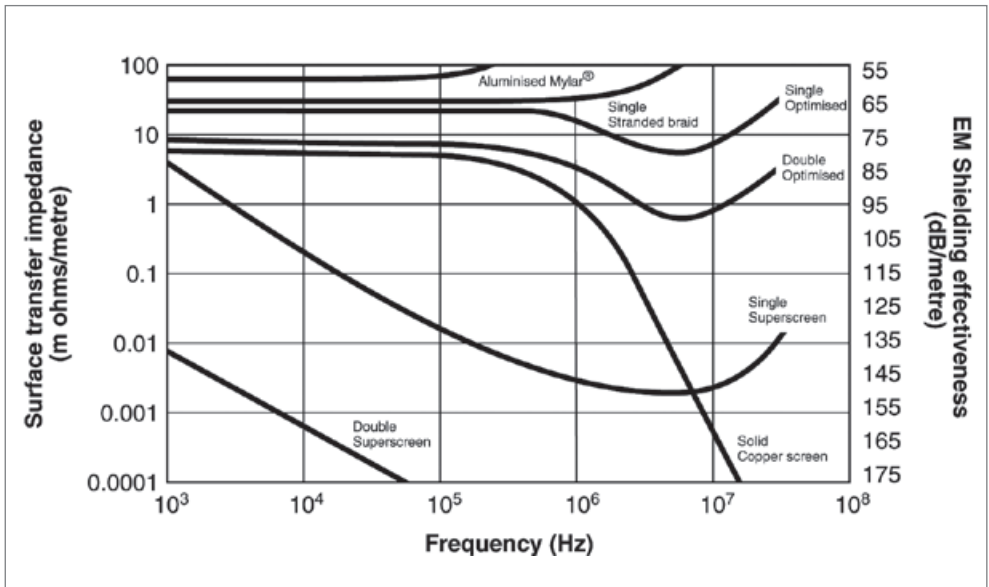
Electrical Shielding



Design and Manufacturing Expertise

The problems of shielding cables are complex but with the introduction of double and triple optimised braids we have the solution for the most difficult shielding issues. Shielding of cables without degrading cable flexibility can be provided for coaxial and multi-conductor cables. To complement this range of cables we can offer cable terminations, connectors, shielded moulded parts and connector back fittings to give a total screening performance.

Screening Performance of Various Types of Screen Constructions



Note: For further information, technical data or assistance with your specific application requirements, please contact us.

TECHNICAL DATA

Wire Bundle Sizing

1 Multiplication Factors for Wire Bundles with Equal Size Wires

This table provides multiplication factors for wire bundles of 1 to 61. To determine the approximate diameter of a wire bundle when the wires are all the same size, find the factor for the number of wires in the bundle and multiply the wire diameter by that factor.

Calculation of Wire Bundles for Different Size Wires

To determine the wire bundle diameter when using wires of different sizes, follow these steps:

- 1 Determine the number of wires in the wire bundle.
- 2 Find the diameter of the wires in the Wire & Cable section of this catalogue.
- 3 Calculate the cable bundle outside diameter by using the method shown below.

Example: A bundle of wires containing:

3 x 44A0111-22 (1.19mm dia.)

5 x 44A0111-20 (1.40mm dia.)

1 x 44A0111-18 (1.65mm dia.)

$$D = 1.2 \sqrt{(3 \times 1.19^2 + 5 \times 1.40^2 + 1 \times 1.65^2)}$$

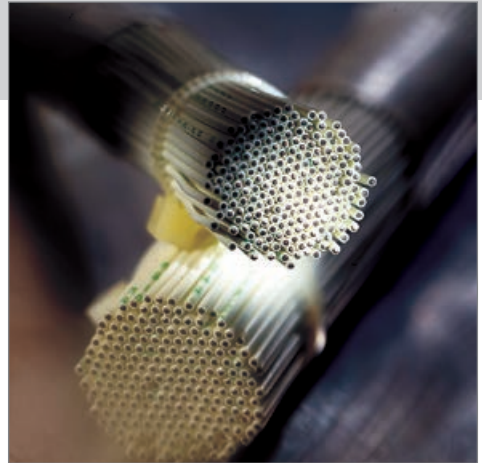
$$D = 1.2 \sqrt{(3 \times 1.4 + 5 \times 2.0 + 1 \times 2.7)}$$

$$D = 1.2 \sqrt{(4.2 + 10.0 + 2.7)}$$

$$D = 1.2 \sqrt{(17)}$$

$$D = 1.2 \times 4.12$$

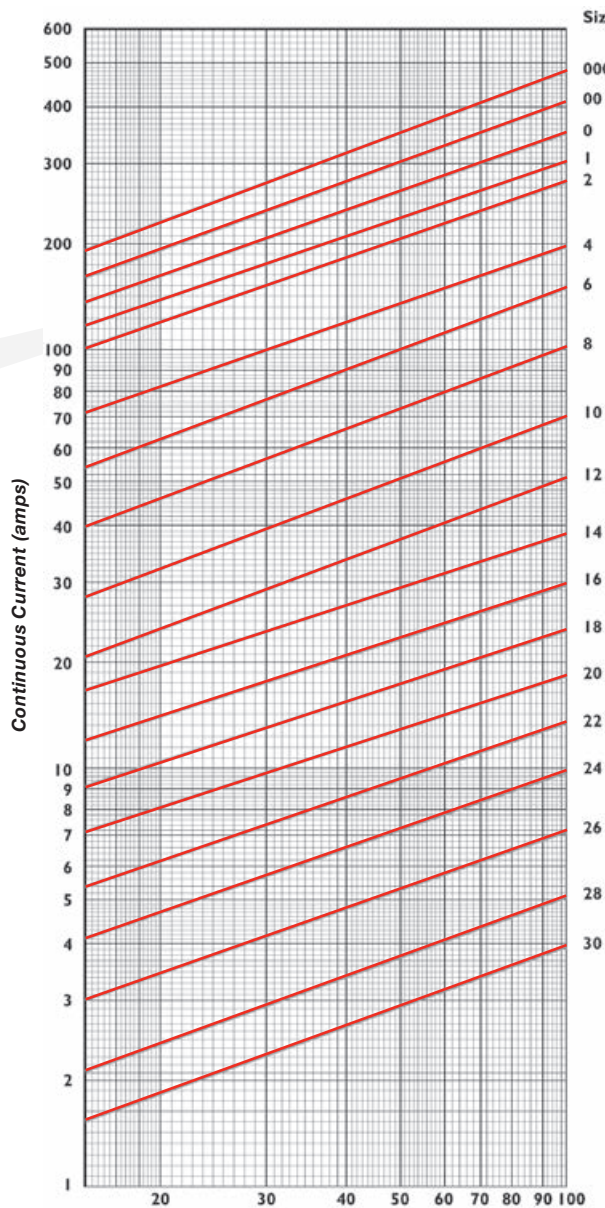
$$D = 4.95\text{mm}$$



Number of Wires	Multiplication Factor
1	1.00
2	2.00
3	2.16
4	2.41
5	2.70
6, 7	3.00
8	3.60
9, 10, 11, 12	4.00
13, 14	4.41
15, 16	4.70
17, 18, 19	5.00
20, 21	5.31
22, 23, 24	5.61
25, 26, 27	6.00
28, 29, 30	6.41
31, 32, 33	6.70
34, 35, 36, 37	7.00
38, 39 40	7.31
41, 42, 43, 44	7.61
45, 46, 47, 48	8.00
49, 50, 51, 52	8.41
53, 54, 55, 56	8.70
57, 58, 59, 60, 61	9.00

TECHNICAL DATA

Temperature Rise by Current Guidelines



Size (AWG)

The graph illustrates the conductor temperature rise of a single insulated wire in 'Free Air'.

Table A

Conductor size, resistance and current carrying capacity.

Table B

Multiplying factor for multicore cables of the same size.

Example for 22 AWG twisted pair
 $7.4 \text{ amps (single)} \times 0.825 = 6.1 \text{ amps}$

Table A

Conductor Size (AWG)	Max Resistance (Tinned Cu) Ohms/km @ 20°C	Current carrying capacity (amps) for 30°C rise above 20°C ambient
30	356.0	2.2
28	225.0	2.9
26	135.0	4.1
24	86.0	5.5
22	53.2	7.4
20	32.4	10.0
18	20.4	14.0
16	15.8	15.5
14	9.9	21.0
12	6.6	28.0

Table B

Number of Cores	Derating Factor
2	0.825
3	0.73
4	0.66
7	0.54
9	0.49
12	0.43
15	0.39
18	0.36
21	0.33
24	0.31
27	0.29
30	0.28
37	0.26

Conductor Temperature Rise Above Ambient