Draka

Product Range

Contents

The range at a glance

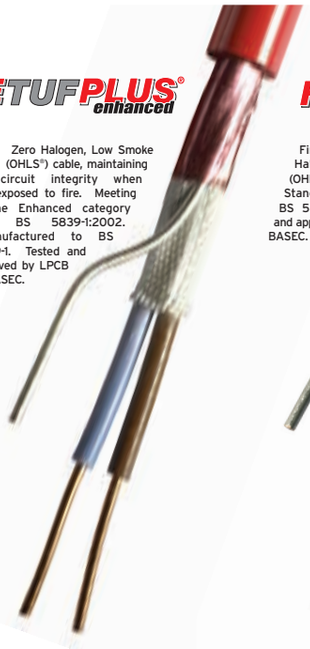
Draka's vast product range covers the great majority of general and industrial applications. All cables conform to an extensive range of British, International and customer specifications.

Draka are a major supplier to the construction industry, with a complete range of housewiring and low voltage supply cables, for use in domestic premises, commercial office developments and public buildings, such as retail business parks, hospitals and sports complexes.

In addition to this general range of energy cables, the company is a market leader in the production of fire performance cables and addresses the needs of a host of specific, individual markets and applications. These include oil and petrochemicals, rail, television, lighting and signalling for motorways and airfields, cables for security systems, and specialist communication and data transmission cables.

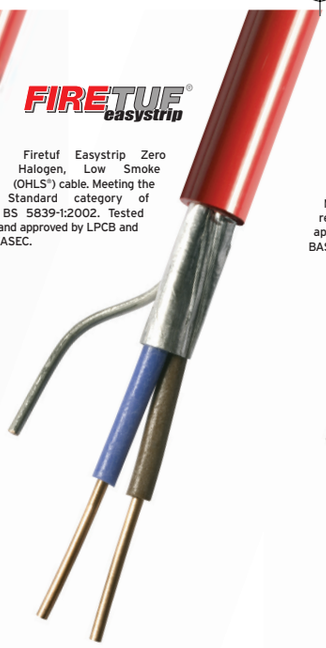
FIRETUF PLUS® enhanced

Zero Halogen, Low Smoke (OHLS®) cable, maintaining circuit integrity when exposed to fire. Meeting the Enhanced category of BS 5839-1:2002. Manufactured to BS 7629-1. Tested and approved by LPCB and BASEC.



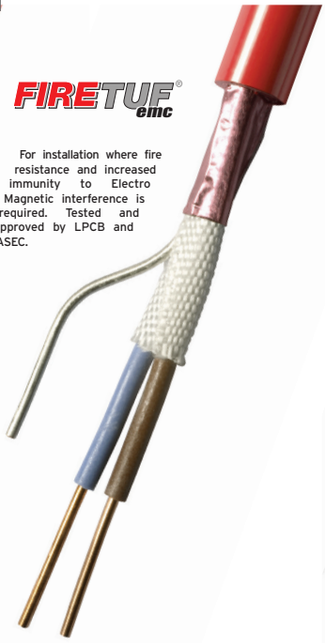
FIRETUF® easystrip

Firetuf Easystrip Zero Halogen, Low Smoke (OHLS®) cable. Meeting the Standard category of BS 5839-1:2002. Tested and approved by LPCB and BASEC.



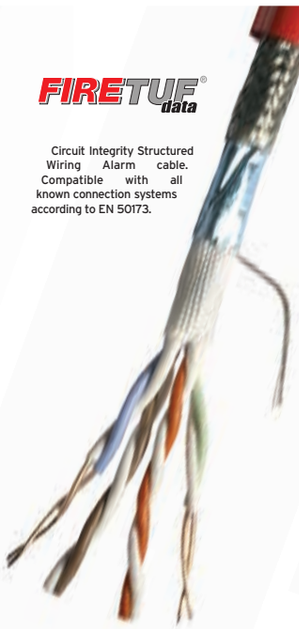
FIRETUF® emc

For installation where fire resistance and increased immunity to Electro Magnetic interference is required. Tested and approved by LPCB and BASEC.



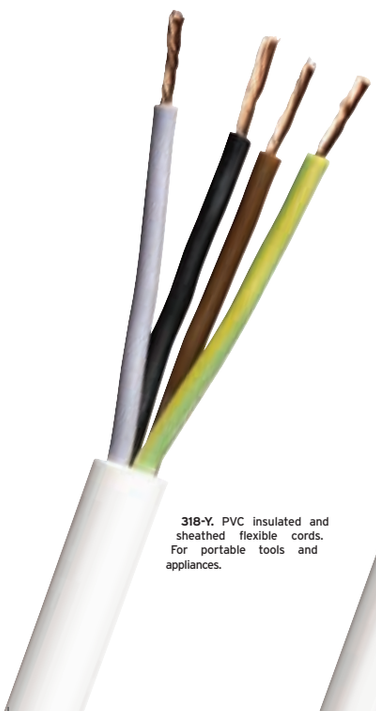
FIRETUF® data

Circuit Integrity Structured Wiring Alarm cable. Compatible with all known connection systems according to EN 50173.

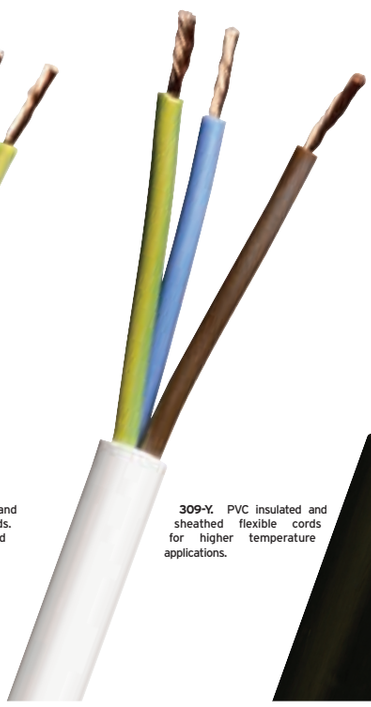


FIRETU coax

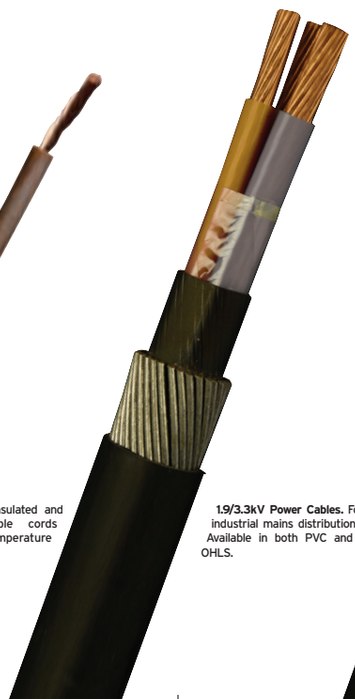
Zero Halogen, Low Sm (OHLS®) coaxial cable visual safety systems.



318-Y. PVC insulated and sheathed flexible cords. For portable tools and appliances.



309-Y. PVC insulated and sheathed flexible cords for higher temperature applications.



1.9/3.3kV Power Cables. For industrial mains distribution. Available in both PVC and OHLS.

694-XLH. Used for industrial wiring and mains distribution. PVC sheathed power cables.

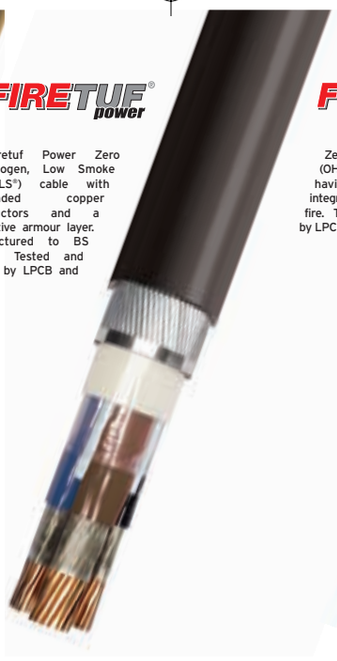
Type 8, Type 16. insulated overhead po lines.

TUF® coaxial

Low Smoke
l cable for
tems.

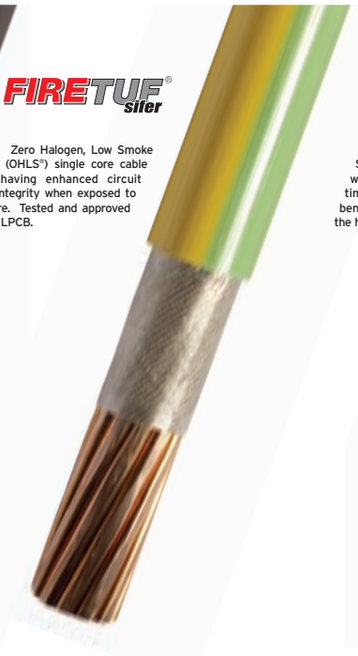
FIRETUF® powerplus

Enhanced circuit integrity 600/1000V power cable meeting the requirements of BS 7346-6 and compliant with 2007 edition of building regulations. Tested and approved by LPCB and BASEC.



FIRETUF® power

Firetuf Power Zero Halogen, Low Smoke (OHLS®) cable with stranded copper conductors and a protective armour layer. Manufactured to BS 7846. Tested and approved by LPCB and BASEC.



FIRETUF® sifer

Zero Halogen, Low Smoke (OHLS®) single core cable having enhanced circuit integrity when exposed to fire. Tested and approved by LPCB.

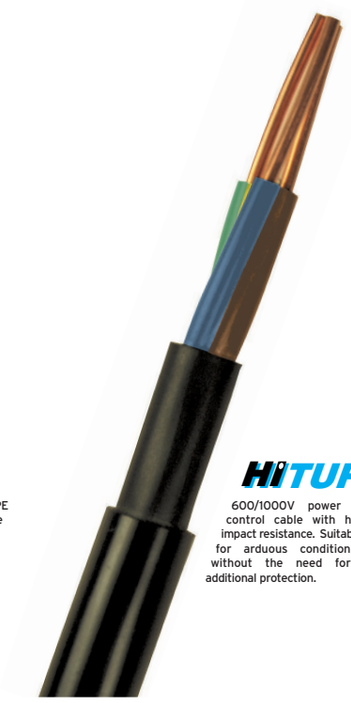
FIRETUF® connecta system

A Zero Halogen, Low Smoke (OHLS®) modular wiring system, offering time and cost saving benefits whilst delivering the highest level of safety.

The most trust

e 16. PVC
ead power

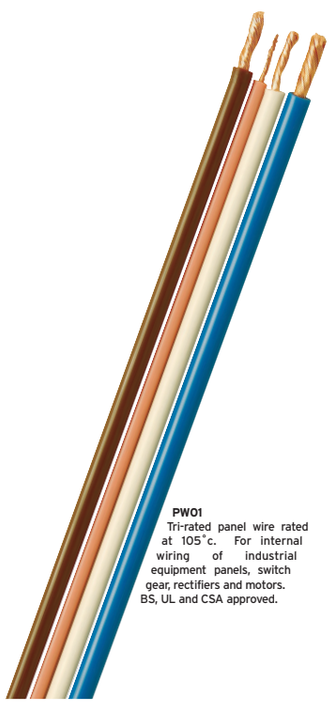
6U81SH 0.6/1kV XLPE insulated single core sheathed cables for industrial wiring and mains service. Available in both PVC and OHLS.



HiTUF®

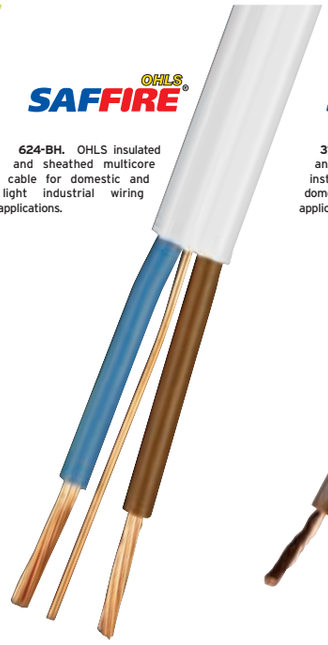
600/1000V power and control cable with high impact resistance. Suitable for arduous conditions without the need for additional protection.

Armoured Multicores. Industrial wiring for remote control and telemetry circuits etc.

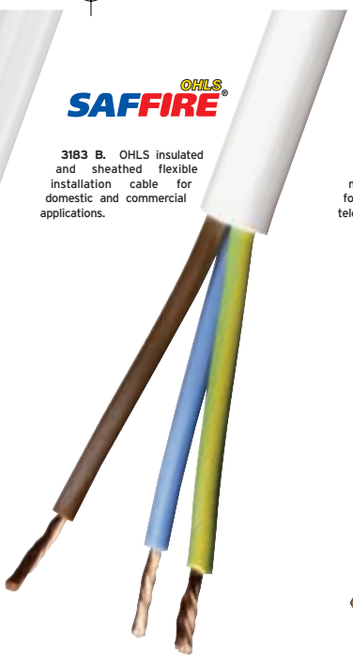


PW01 Tri-rated panel wire rated at 105°c. For internal wiring of industrial equipment panels, switch gear, rectifiers and motors. BS, UL and CSA approved.

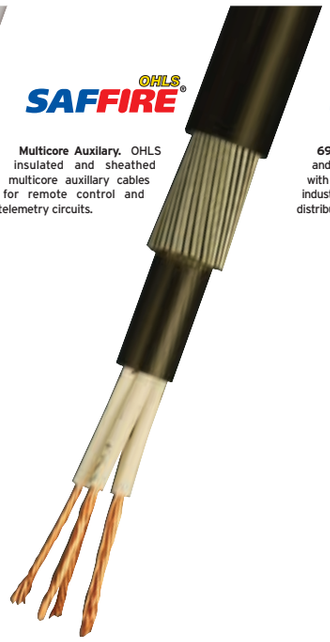
6491 B. OHLS insulated single core cables for installation in cable management systems.



624-BH. OHLS insulated and sheathed multicore cable for domestic and light industrial wiring applications.



3183 B. OHLS insulated and sheathed flexible installation cable for domestic and commercial applications.



Multicore Auxilary. OHLS insulated and sheathed multicore auxillary cables for remote control and telemetry circuits.

694-LSH. OHLS insulated and sheathed power cables with reduced fire hazard for industrial wiring and mains distribution.

;ed cable range

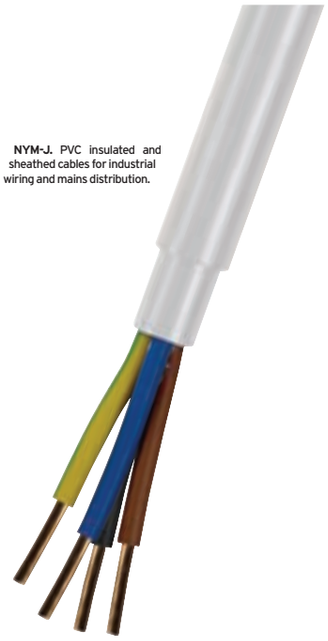
Rubber Flexible Cables HO7RN-F
Cable for the indoor and outdoor connection of electrical equipment where there is a requirement for flexibility.

Control Flexes
YY 300/500V control flexes for signal and control of machine tools, assembly lines and plant engineering. Also available as SY and CY with a galvanized steel wire braid.

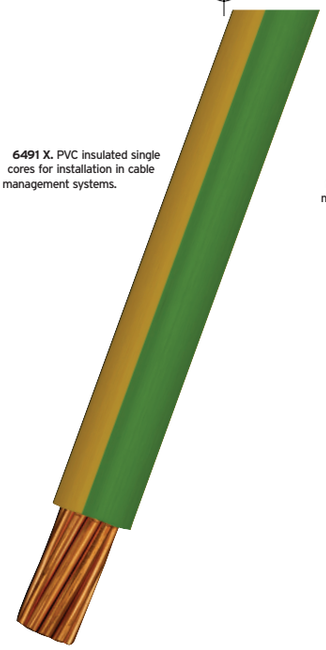
HI SHIELD™

Hydrocarbon resistant instrumentation cables have applications in environments where attack from oil, solvents or other chemicals is likely.

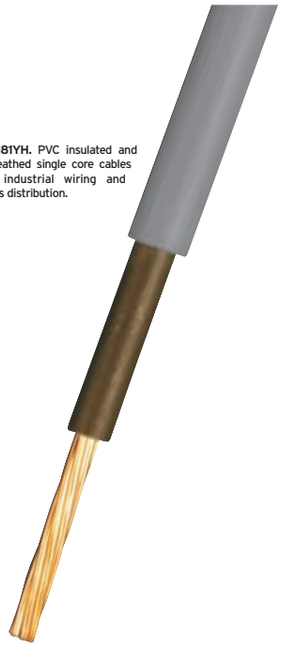
Multipair instrumentation and control cables. Used in the provision of voice and data services and the interconnection of electrical equipment and instruments.



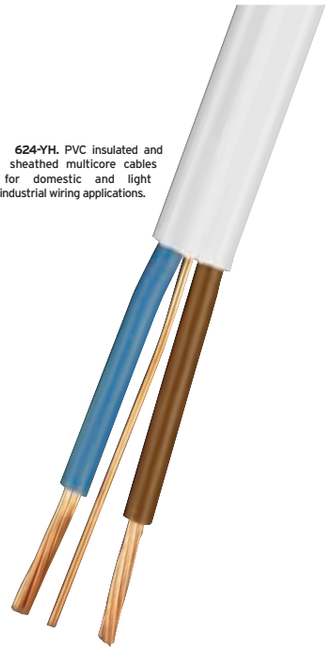
NYM-J. PVC insulated and sheathed cables for industrial wiring and mains distribution.



6491 X. PVC insulated single cores for installation in cable management systems.

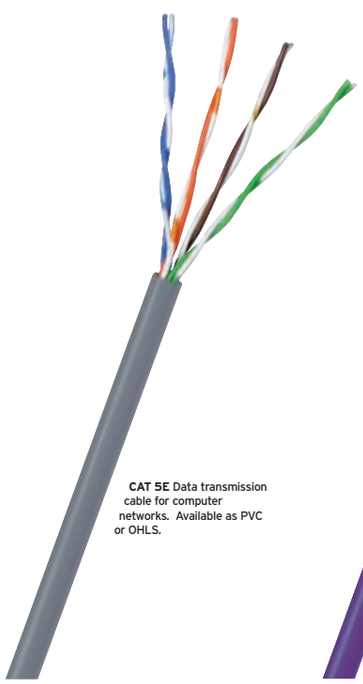


6181YH. PVC insulated and sheathed single core cables for industrial wiring and mains distribution.

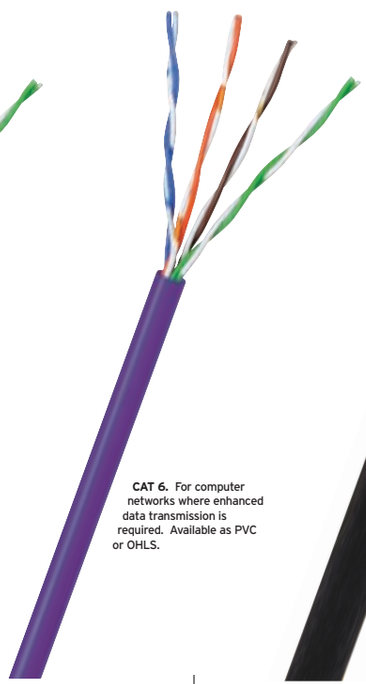


624-YH. PVC insulated and sheathed multicore cables for domestic and light industrial wiring applications.

Multipair instrumentation and control cables. Used in the provision of voice and data services and the interconnection of electrical equipment and instruments.



CAT 5E Data transmission cable for computer networks. Available as PVC or OHLS.



CAT 6. For computer networks where enhanced data transmission is required. Available as PVC or OHLS.

TV 4425 Downleads for interconnection of TV aerials and receivers.

Medium Voltage Power Cables. 6350/11000v power cables for energy distribution. Available in PVC or OHLS.

Draka, the world's mo

When it comes to specifying low voltage cables, you have to choose products from a company you can trust.

Draka is that company, an international cable manufacturer with a turnover of circa 2 billion Euro and over 9,000 employees worldwide. As part of Draka Cableteq Low Voltage Europe, a division of Draka Holding NV, we are the leading supplier of fire performance cables, zero halogen and PVC power cables and building wires in the UK.

With over 80 years of in-depth experience, our vast product range has been developed and manufactured with leading edge technology and is backed by the resources of one of the world's major specialist cable companies. Our products have been supplied into numerous oil and petrochemical, mass transit, lighting and signalling for highways and specialist communications and data transmission projects.

In common with all Draka Group companies, our values are based on being trusted, reliable and professional coupled with an emphasis on customer service and innovation.

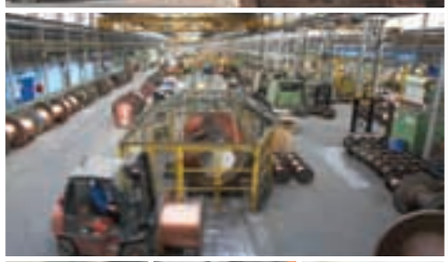
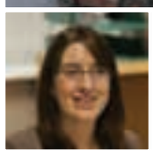
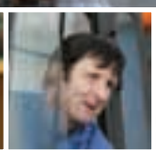
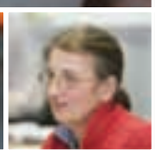
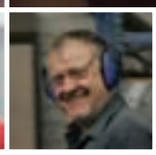
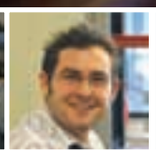
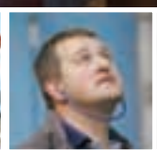
Draka's UK operations include copper wire drawing and stranding, compound and cable manufacture and distribution.

These extensive facilities give the Company strategic control over all major aspects of its business, from raw materials to the finished product. This enables us to ensure highest product quality, reliability and continuity of supply, for our customers.

Draka holds many national and international product approvals including those administered by BASEC, the British Approvals Service for Cables.

We operate Quality Management systems approved to BS EN ISO 9001 in addition to





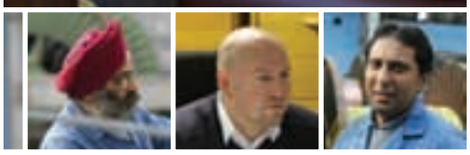
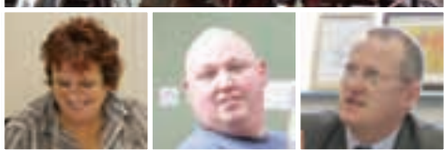
st trusted cable brand

OHLS SAFFIRE®

specific customer quality assurance schemes where required.

Part of our continuing success is down to our commitment to ongoing product development through investment in innovation. We are constantly working to improve our product range to meet your specific needs. Indeed, the development of our product range forms the cornerstone of our entire operation.



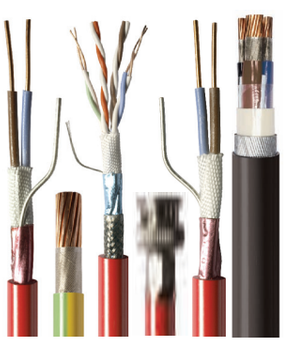




Our prestigious range of cables is produced at our purpose-built Derby site, using the latest plant and machinery, backed by comprehensive development and testing facilities. Moreover, we manufacture the internationally recognised Firetuf range of circuit integrity cables. This range covers cables which maintain essential function in the event of a fire, for the following applications:

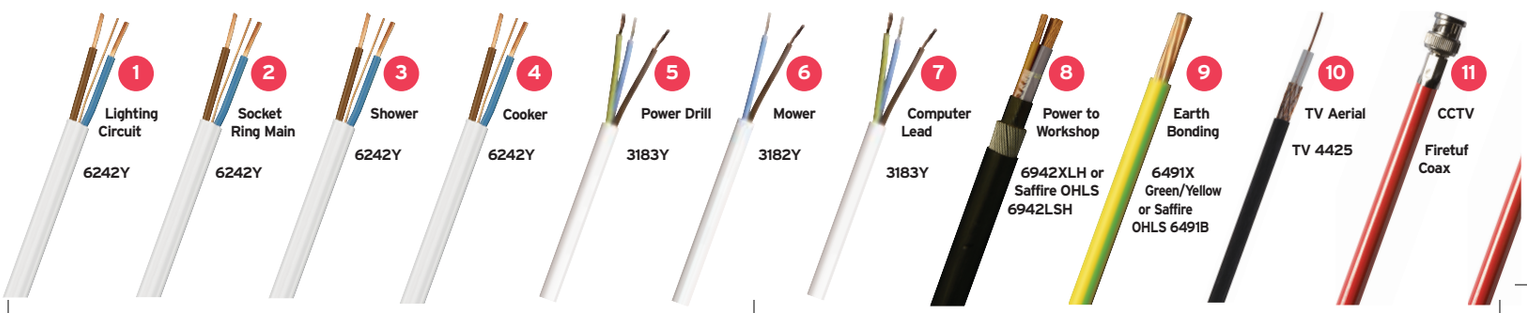
- Fire alarm and emergency lighting
- Co-axial CCTV monitoring
- Power and data transmission

It comes as no surprise therefore, that Draka's market-leading products have been specified for a number of high profile building developments, both in the UK and other international arenas. These include Wembley Arena, the Emirates Stadium for Arsenal FC, London Underground, Channel Tunnel Rail Link, the Bullring Shopping Centre in Birmingham, Heathrow's new Terminal 5, Burj-Al-Arab Hotel in Dubai and the Petronas Twin Towers in Malaysia.

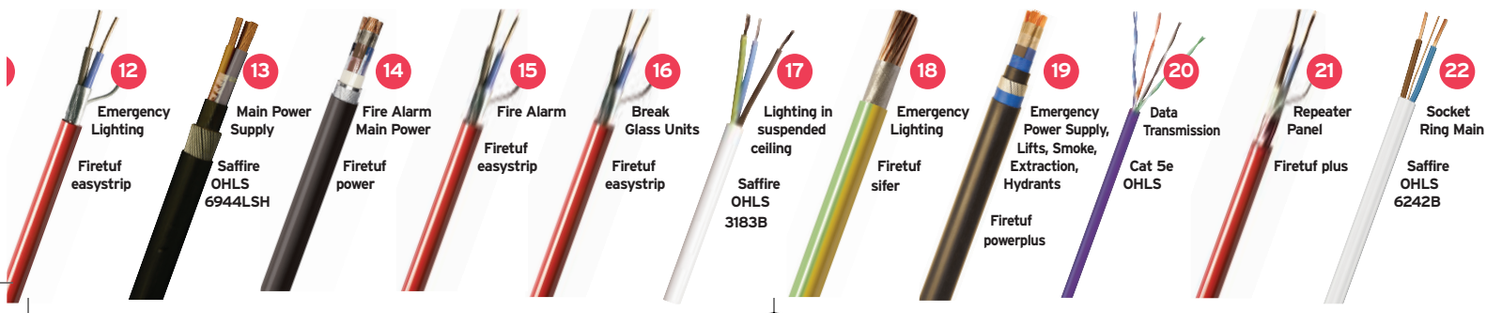
Above all, our values at Draka are not solely concerned with factories, machines and cables, but also with people. The people that produce, sell and administer our products and services, the people that buy these products and services and perhaps most important of all, the people who, without even knowing it, benefit every day from the safety and security provided by Draka products.

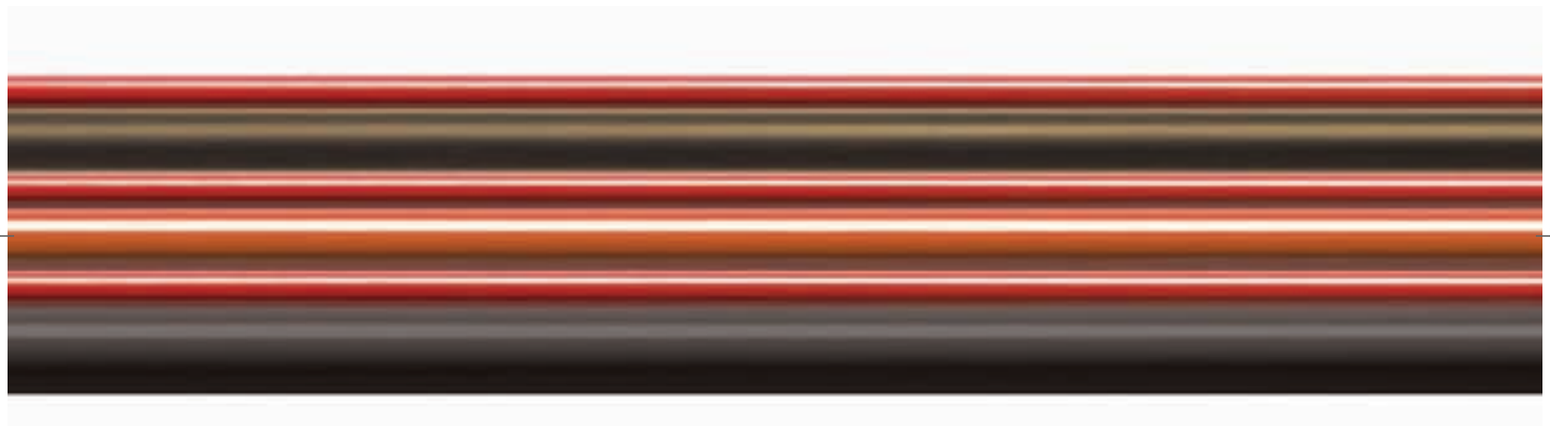



CABLES FOR EVE



:RY APPLICATION





Draka Firetuf Cables

At Draka, we fully understand the importance of fire performance cables. This is why we are deeply committed to a policy of ongoing product development through investment in innovation.

This is not just because we want our products and range to be consistently improved, so that they are better able to satisfy your needs, but because we understand that lives are at stake and that the performance and effectiveness of our products can help prevent loss of life.

In short, at Draka we know that the safety of occupants and users of public, commercial and industrial premises is of paramount importance. One factor that can play a key role in making buildings and occupants safer is the appropriate use of fire performance cables for critical safety systems, including fire alarms, emergency lighting, PA systems, CCTV systems and other emergency power supplies.

Moreover, the correct selection and installation of these vital safety cables ensures that, in the event of an emergency, systems can continue to function and people will have time to leave the building safely, as well as helping the emergency services to operate effectively.

A perfect example of how our policy of continuous innovation produces better, even more effective products, is the introduction of Firetufplus, which provides enhanced cable performance with all the benefits associated with pliable alarm cable.

Firetuf cables set the standards for others to follow.

CLIP & GLAND SELECTION CHART

Cable ref.	Cable ref.	No. of cores	Core area mm²	Fire resistant P-Clip	A2/A2F brass gland ref.**	Nylon OHLS® gland ref.	LUL approved glands
FTES2EH1.5		2	1.5	WP30 (WP30/2*)	M20S	251/93	251-R(LSF)
	FTPLUS2EH1.5	2	1.5	WP34 (WP34/2/3*)	M20S	251/93	251-R(LSF)
FTES3EH1.5		3	1.5	WP32	M20S	251/93	251-R(LSF)
	FTPLUS3EH1.5	3	1.5	WP37	M20S	251/93	251-R(LSF)
FTES4EH1.5		4	1.5	WP37	M20S	251/93	251-R(LSF)
	FTPLUS4EH1.5	4	1.5	WP40	M20S	251/93	251-R(LSF)
FTES2EH2.5		2	2.5	WP37	M20S	251/93	251-R(LSF)
	FTPLUS2EH2.5	2	2.5	WP40	M20S	251/93	251-R(LSF)
FTES3EH2.5		3	2.5	WP37	M20S	251/93	251-R(LSF)
	FTPUS3EH2.5	3	2.5	WP43	M20S	252/93	252-R(LSF)
FTES4EH2.5		4	2.5	WP43	M20	252/93	252-R(LSF)
	FTPLUS4EH2.5	4	2.5	WP47	M20	252/93	252-R(LSF)
FTES2EH4.0		2	4	WP43	M20	252/93	252-R(LSF)
	FTPLUS2EH4.0	2	4	WP47	M20	252/93	252-R(LSF)
FTES3EH4.0		3	4	WP47	M20	252/93	252-R(LSF)
	FTPLUS3EH4.0	3	4	WP51	M20	254/94	254-R(LSF)
FTES4EH4.0		4	4	WP51	M25	254/94	254-R(LSF)
	FTPLUS4EH4.0	4	4	WP54	M25	254/94	254-R(LSF)
FTEMC2EH1.5		2	1.5	WP34	M20S	251/93	251-R(LSF)
	FTEMC2EH2.5	2	2.5	WP37	M20S	251/93	251-R(LSF)

Clip and nylon gland references are for white, if red is required add the letter "R" after the clip or gland coding.
* Clips for 2 or 3 cables.
** For 'Enhanced' performance with Firetuf Plus, A2 brass glands should be used for through joints.
** For Hazardous Areas, flameproof A2F brass glands should be used.

APPROVALS AND JOINTING

All Firetuf cables are tested and Certified by LPCB and BASEC to the latest edition of appropriate Standards.

Firetuf EASYSTRIP Multicore
LPCB Ref.No 361d

Firetuf EASYSTRIP
BASEC Ref.No 004/004/218

BS 5839-1:2002 recommends that cables are installed without joints if possible. When through joints are used, all terminations and other accessories should be such as to minimise the probability of early failure in the event of a fire.

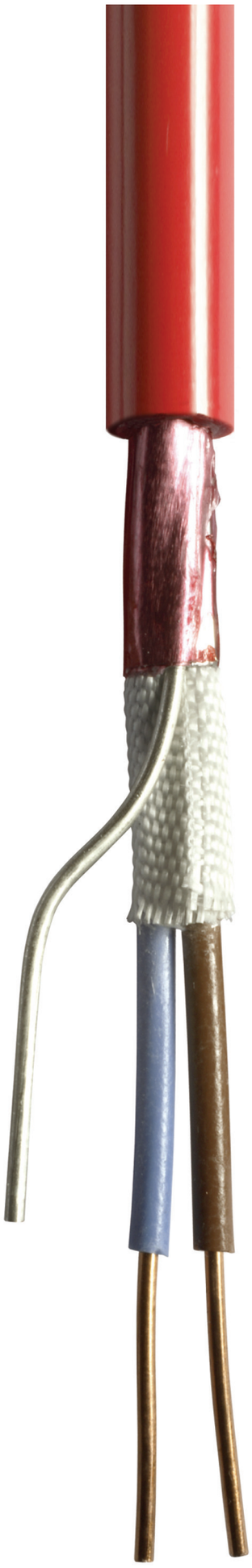
Appropriately jointed Firetuf cables continue to provide circuit integrity up to the full BS 5839 rating.

CURRENT RATINGS AND ASSOCIATED VOLT DROP

BS 7629 limits maximum conductor temperature (unless enclosed) to 70°C

	Reference method 1* (Clipped direct)				Reference Method 3* (Enclosed)			
	One twin cable single phase AC or DC		One 3 or 4 core cable 3 phase		One twin cable single phase AC or DC		One 3 or 4 core cable 3 phase	
Phase conductor CSA mm²	Current Rating A	Volt Drop mV/A/m	Current Rating A	Volt Drop mV/A/m	Current Rating A	Volt Drop mV/A/m	Current Rating A	Volt Drop mV/A/m
1.5	19.5	29	17.5	25	16.5	29	15	25
2.5	27	18	24	15	23	18	20	15
4.0	36	11	32	9.5	30	11	27	9.5

* As defined in Appendix 4 of BS 7671, the IEE Wiring Regulations, 16th Edition. Conductor operating temperature: 70°C. Ambient temperature: 30°C



FIRETUFPLUS® enhanced

CIRCUIT INTEGRITY ALARM CABLE

Zero Halogen, Low Smoke (OHLS®) cable, maintaining circuit integrity when exposed to fire. Meeting the Enhanced category of BS 5839-1:2002. Manufactured to BS 7629-1. Tested and approved by LPCB and BASEC.

Firetufplus has been specially designed to meet the Enhanced requirements detailed in BS 5839-1:2002, Clause 26.2e. It therefore meets the PH120 class, and additionally meets the requirements for integrated water spray and mechanical shock also described in Clause 26.2e, and detailed in BS 8434 Part 2:2003:

60 mins - fire and mechanical impact, followed by
60 mins - fire, mechanical impact and water

Firetufplus achieves the Enhanced performance, whilst retaining all the advantages associated with a pliable cable. These include:

- Lower termination costs
- No special tools or training
- Ease of handling and installation
- Available in long lengths
- Twisted core construction to improve signal clarity
- Suitable for use in Zone 1 and Zone 2 hazardous areas

Firetufplus achieves the Enhanced performance by application of state of the art materials technology, providing advanced resistance to fire and heat, enabling the maintenance of circuit integrity through this most onerous testing protocol.

LPCB
TESTED & CERTIFIED
BASEC

Construction

Conductors:	Solid or stranded plain annealed copper wire.
Insulation:	Enhanced silicone rubber.
Binder:	Enhanced close weave glass tape.
Conductor (earth):	Solid or stranded tinned annealed copper.
Electrostatic screen:	Enhanced aluminium/polyester laminated tape.
Sheath:	Enhanced Thermoplastic Zero Halogen, Low Smoke (OHLS®) compound.

Physical Characteristics

Voltage rating (Uo/U):	300/500V.
Operating temp:	-40˚C to +90˚C (The cable should not be flexed when either the ambient or cable temperature is below 0˚C).
Min. bending radius:	6 x overall diameter of cable.

Standards Achieved

Circuit integrity:	BS 5839-1:2002 Clause 26.2e Enhanced. BS 8434-2:2003. BS EN 50200 PH120. BS 6387 C, W & Z.
Flame propagation:	IEC 60332-3, IEC 60332-1, BS EN 50265, BS EN 50266.
Acid gas emission:	IEC 60754, BS EN 50267.
Smoke emission:	IEC 61034, BS EN 50268.

Cable ref.	No. of cores	Conductor Class	CSA mm²	Protective earth conductor CSA mm²	Nominal overall diameter mm	Approx. nett weight kg/km
FTPLUS2EH1.5	2	1	1.5	1.5	8.6	130
FTPLUS3EH1.5	3	1	1.5	1.5	9.0	135
FTPLUS4EH1.5	4	1	1.5	1.5	10.1	170
FTPLUS2EH2.5	2	1	2.5	2.5	9.9	175
FTPLUS3EH2.5	3	1	2.5	2.5	10.6	200
FTPLUS4EH2.5	4	1	2.5	2.5	11.9	250
FTPLUS2EH4.0	2	2	4	4	11.7	250
FTPLUS3EH4.0	3	2	4	4	12.8	300
FTPLUS4EH4.0	4	2	4	4	14.4	370

FIRETUF® easystrip

CIRCUIT INTEGRITY ALARM CABLE

Firetuf Easystrip Zero Halogen Low Smoke cable has been designed and manufactured in the UK to provide superior flame retardance and circuit integrity, together with optimised ease of installation characteristics. Manufactured to BS7629-1 and meeting the Standard category of BS 5839-1:2002. Tested and approved by LPCB and BASEC.

- Fastest ever sheath removal, allowing reduced termination times
- Smallest diameter and most flexible
- Easily dressable
- Smallest bending radius without deformation or cable kinking
- Reduced weight
- Suitable for use in Zone 1 and Zone 2 hazardous areas
- Twisted core construction for improved signal clarity

Construction

Conductors:	Solid or stranded plain annealed copper wire.
Insulation:	Silicone rubber.
Electrostatic screen:	Aluminium/polyester laminated tape.
Conductor (earth):	Solid or stranded tinned annealed copper.
Sheath:	High performance, Thermoplastic Zero Halogen, Low Smoke (OHLS®) compound.

Physical Characteristics

Voltage rating (Uo/U):	300/500V.
Operating temp:	-40˚C to +90˚C (The cable should not be flexed when either the ambient or cable temperature is below 0˚C).
Min. bending radius:	6 x overall diameter of cable.

Standards Achieved

Circuit integrity:	BS 5839-1:2002 Clause 26.2d Standard. BS 8434-1:2003. BS EN 50200 PH30. BS 6387 C, W & Z.
Flame propagation:	IEC 60332-3, IEC 60332-1, BS EN 50265, BS EN 50266.
Acid gas emission:	IEC 60754, BS EN 50267.
Smoke emission:	IEC 61034, BS EN 50268.

LPCB TESTED & CERTIFIED BASEC

Cable ref.	No. of cores	Conductor Class	CSA mm²	Protective earth conductor CSA mm²	Nominal overall diameter mm	Approx. nett weight kg/km
FTES2EH1.5	2	1	1.5	1.5	7.7	100
FTES3EH1.5	3	1	1.5	1.5	8.0	117
FTES4EH1.5	4	1	1.5	1.5	9.2	145
FTES2EH2.5	2	1	2.5	2.5	8.9	150
FTES3EH2.5	3	1	2.5	2.5	9.5	177
FTES4EH2.5	4	1	2.5	2.5	10.9	220
FTES2EH4.0	2	2	4	4	10.7	225
FTES3EH4.0	3	2	4	4	11.9	275
FTES4EH4.0	4	2	4	4	13.4	340

FIRETUF® emc

CIRCUIT INTEGRITY ALARM CABLE

In airport environments, where higher than normal levels of electro magnetic radiation are present, alarm systems could be vulnerable to false alarms. Firetuf emc cables were specifically designed to meet the onerous requirements for immunity to Electro Magnetic Interference (EMI) and have been supplied for London Heathrow Terminal 5. Zero Halogen, Low Smoke (OHLS®) cable, maintaining circuit integrity when exposed to fire, meeting the Standard category of BS 5839-1:2002. Manufactured to BS 7629-1. Tested and approved by LPCB and BASEC.

These cables are suitable for installations where a fire situation may pose a major hazard and the maintenance of circuit integrity is a requirement, thereby giving increased protection to life and property. Application of the latest sheath extrusion technology and 100% cover electrostatic screen, gives Firetuf emc its unique advantages which include:

- Increased immunity to EMI
- Available in long length
- Ease of handling and installation
- Lower termination costs
- Twisted core construction to improve signal clarity
- Suitable for use in Zone 1 and Zone 2 hazardous areas

Construction

Conductors:	Solid or stranded plain annealed copper wire.
Insulation:	Silicone rubber.
Binder:	Close weave glass tape.
Electrostatic screen:	Enhanced aluminium/polyester laminated tape.
Conductor (earth):	Solid or stranded tinned annealed copper.
Sheath:	High performance, Thermoplastic Zero Halogen, Low Smoke (OHLS®) compound.

Physical Characteristics

Voltage rating (Uo/U):	300/500V.
Operating temp:	-40˚C to +90˚C (The cable should not be flexed when either the ambient or cable temperature is below 0˚C).
Min. bending radius:	6 x overall diameter of cable.

Standards Achieved

Circuit integrity:	BS 5839-1:2002 Clause 26.2d Standard. BS 8434-1:2003. BS EN 50200 PH30. BS 6387 C, W & Z.
Flame propagation:	IEC 60332-3, IEC 60332-1, BS EN 50265, BS EN 50266.
Acid gas emission:	IEC 60754, BS EN 50267.
Smoke emission:	IEC 61034, BS EN 50268.

Cable ref.	No. of cores	Conductor Class	CSA mm²	Earth CSA mm²	Nominal diameter mm	Approx. nett weight kg/km
FTEMC2EH1.5	2	1	1.5	1.5	8.3	110
FTEMC2EH2.5	2	1	2.5	2.5	9.7	170

FIRETUF® data

CIRCUIT INTEGRITY DATA CABLE

Circuit Integrity Structured Wiring Alarm cable. Compatible with all known connection systems according to EN 50173.

Based on the design for structured wiring (found in IEC 61156 and BS EN 50288), Firetuf Data cable brings together high frequency data transmission and circuit integrity in a one pair, two pair and four pair cable that will continue to transmit data even when being directly attacked by fire.

Firetuf Data has successfully passed BS 5839: 2002 test protocols. This patented design allows the continuation of data transmission in the event of a fire.

Firetuf Data has three designs: one, two and four pair construction all using the same wire size of 0.63mm, overall screened plus a drain wire and braided.

Physical Characteristics	
Min. Installation Bend Radius:	8 x Dia.
Min. Fixed Bending Radius:	6 x Dia.
Installation Temp. Range:	0°C to 50°C.
Installed Operating Temp. Range:	-20°C to 60°C.

Electrical Characteristics @ 20°C	
Structural Return Loss RI:	>IEC dB.
Characteristic Impedance @ 10MHz:	100±5Ω.
DC Conductor Loop Resistance:	<19Ω/100m.
Max. Resistance unbalance:	≤2%.
Nominal Velocity of Propagation:	57%.
Max. Capacitance unbalance:	1600 pF/km.
Insulation Resistance (500V):	≥5000 MΩ.km.

Standards Achieved

ISO/IEC 11801:1994; EN 50173:1995; EN 50288-2-1

Circuit integrity:	BS 5839-1:2002 Clause 26.2e Enhanced BS 8434-2:2003 BS EN 50200 >PH120 IEC 60331-23 BS 6387 C
Flame propagation:	UL 1581 VW1; IEC 60332.3
Acid gas emission:	IEC 60754
Smoke emission:	IEC 61034

Cable	Part No.	Nominal Diameter mm	Approx weight kg/km
1 pair	910234	6.8	48
2 pair	910244	8.1	97
4 pair	910245	10.45	122

More detailed data sheets available upon request.

FIRETUF® coaxial

CIRCUIT INTEGRITY COAXIAL CABLE

Zero Halogen, Low Smoke (OHLS®) coaxial cable for visual safety systems.

Fire resistant 75Ω Coax similar to RG59. Ideal for CCTV, security, smoke detection and evacuation monitoring applications, where continued functionality is required during a fire situation. Due to the zero halogen low smoke construction Firetuf Coaxial is ideal for use in public, commercial and industrial environments.

Construction	
Conductor:	Plain annealed copper wire.
Insulation:	Dual layer Polyethylene and Silicone rubber.
Binder:	Close weave glass tape.
Screen:	Two layers plain copper wire braid.
Sheath:	Thermoplastic Zero Halogen Low Smoke (OHLS®) compound.

Physical Characteristics	
Min. bending radius:	Installation: 10 x overall diameter.
	Fixed: 5 x overall diameter.
Temperature range:	Installation: -5ºC to +60ºC
	Operating: -30ºC to +70ºC
Conductor Diameter:	0.65mm
Overall Diameter:	9.1mm
Approximate weight:	110 kg/km

Electrical Characteristics @ 20ºC			
Character impedance		Ω(ohms)	75±5
Attenuation at (nominal)	0,5Mhz	dB/100m	0.65
	1Mhz	dB/100m	0.90
	5Mhz	dB/100m	2.24
	10Mhz	dB/100m	3.35
	100Mhz	dB/100m	15.03
	300Mhz	dB/100m	32.51
Screening Attenuation	30-1000Mhz	dB	>100
	1000-2000Mhz	dB	>95
	2000-3000Mhz	dB	>89
Transfer impedance	5-30 Mhz	mΩ/m	≤5
	Velocity ratio	%	61.4
	DC resistance		
	Inner conductor	Ω/km	55.3
	Outer conductor	Ω/km	3.7
	Return loss		
	5-30Mhz	dB	>22
	30-470Mhz	dB	>22
	470-1000Mhz	dB	>18
	1000-3000Mhz	dB	>20
	Electrical strength (1min.)		
	Dielectric	kV d.c.	2.00
	Sheath	kV d.c.	3.75

Standards Achieved	
Construction:	BS EN 50117-1 & draft BS EN 50117-2-4 2002, EN 50083-2/A1 screening class A
Circuit integrity:	BS 5839-1:2002 Clause 26.2e Enhanced BS 8434-2:2003 BS EN 50200 >PH120 IEC 60331-23
Flame propagation:	IEC 60332-3
Acid gas emission:	IEC 60754
Smoke emission:	IEC 601034

FIRETUF® powerplus

ENHANCED CIRCUIT INTEGRITY ENERGY CABLE

By utilisation of high performance materials, Draka has now enhanced the circuit integrity performance of this design of 600/1000V SWA armoured power cable so as to meet the most onerous requirements of BS7346-6 : 2005 - "Components for smoke and heat control systems - Part 6: Specification for cable systems". The new standard defines fire performance requirements of various types of fire rated cables in maintaining circuit integrity for life safety, fire fighting and property protection systems.

Fire Safety systems include automatic fire suppression facilities, fire detection and alarms, fire compartmentalisation, smoke control and ventilation, sprinkler and wet risers, ventilation and shutters, fire fighting lifts etc.

All these systems require secure power supplies in the event of fire and the result of emphasis on the performance of the existing generation of power cables has highlighted the need for enhanced performance.

Firetuf Powerplus meets the specified requirement of the constructional standard BS7846 and in providing enhanced circuit integrity preserves the handling and installation characteristics of a wire armoured design.

The Building Regulations Approved Document B on fire safety was revised on 1st April 2007 and this now specifies fire performance in accordance with BS7346-6.

Firetuf Powerplus can be specified with confidence in meeting the demanding performance required to support modern fire engineering systems in today's buildings.

Construction

Conductors:	Plain annealed stranded copper conductors. For sizes up to and including 35mm² these are circular. Shaped conductors start at 50mm² with the exception of 2 core cables where shaped conductors start at 25mm².
Insulation:	Mica-glass fire-resistant tapes, covered by an extruded layer of cross-linked polyethylene.
Binder:	Polyester tape.
Bedding:	An extruded layer of Zero Halogen, Low Smoke (OHLS®) compound.
Armour:	Single layer of galvanised steel wires.
Sheath:	Thermoplastic Zero Halogen, Low Smoke (OHLS®) compound.

Physical Characteristics

Voltage rating(Uo/U):	600/1000V.
Operating temp:	-40˚C to +90˚C (The cable should not be flexed when either the ambient or cable temperature is below 0˚C).
Min. bending radius:	8 x overall diameter of cable.
Current Rating:	Refer to table 4E4A or 4E4B of BS7671, ERA 69-30 pt V or on pages 102-105.

Note: In the event of a fire, the increase in impedance may require consideration to the installation of larger conductor sizes, to accommodate motor starting loads and the performance of protective conductors.

Standards Achieved

Circuit integrity:	BS7346-6 120 mins.
Acid gas emission:	IEC 60754, BS EN 50267.
Flame propagation:	IEC 60332-3, BS EN 50265, BS EN 50266.
Smoke emission:	IEC 61034, BS EN 50268.

LPCB TESTED & CERTIFIED BASEC

Firetuf Powerplus Technical Data

2 Core

Nominal area of conductor mm²	Insulation thickness mm	Nominal armour wire dia. mm	Approx. dia. under armour mm	Approx. overall diameter mm	Approx. cable weight kg/km	Max conductor resistance DC@20°C Ω/km	Max conductor resistance AC@90°C Ω/km	Reactance @50Hz Ω/km	Impedance AC@90°C Ω/km	Max. arm. resistance at 20°C Ω/km
10	0.7	1.25	16.6	22.7	1060	1.83	2.3330	0.093	2.335	6.00
16	0.7	1.25	18.6	24.7	1290	1.15	1.4660	0.088	1.469	3.70
25	0.9	1.25	21.6	27.6	1640	0.727	0.9270	0.082	0.930	3.70
35	0.9	1.6	23.7	30.4	2130	0.524	0.6680	0.077	0.673	2.60
50	1.0	1.6	21.8	28.5	2030	0.387	0.4940	0.076	0.500	2.30
70	1.1	1.6	24.8	31.7	2580	0.268	0.3420	0.075	0.349	2.00
95	1.1	2	27.5	35.4	3440	0.193	0.2470	0.074	0.258	1.40
120	1.2	2	29.9	38	4050	0.153	0.1960	0.072	0.209	1.30
150	1.4	2	32.7	41	4740	0.124	0.1597	0.073	0.176	1.20
185	1.6	2.5	36.2	45.8	6050	0.0991	0.1284	0.073	0.148	0.82
240	1.7	2.5	40	49.9	7390	0.0754	0.9890	0.072	0.122	0.73
300	1.8	2.5	43.7	53.8	8760	0.0601	0.0801	0.072	0.107	0.67
400	2.0	2.5	48.6	59.1	10720	0.0470	0.0641	0.071	0.096	0.59

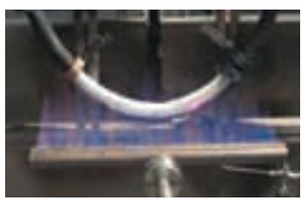
3 Core

Nominal area of conductor mm²	Insulation thickness mm	Nominal armour wire dia. mm	Approx. dia. under armour mm	Approx. overall diameter mm	Approx. cable weight kg/km	Max conductor resistance DC@20°C Ω/km	Max conductor resistance AC@90°C Ω/km	Reactance @50Hz Ω/km	Impedance AC@90°C Ω/km	Max. arm. resistance at 20°C Ω/km
10	0.7	1.25	17.6	23.6	1180	1.83	2.333	0.093	2.335	4.00
16	0.7	1.25	19.8	25.8	1460	1.15	1.466	0.088	1.469	3.50
25	0.9	1.6	23	29.6	2070	0.727	0.927	0.082	0.930	2.50
35	0.9	1.6	25.2	31.9	2480	0.524	0.668	0.077	0.673	2.30
50	1.0	1.6	24.9	31.6	2630	0.387	0.494	0.076	0.500	2.00
70	1.1	1.6	28.3	35.2	3400	0.268	0.342	0.075	0.349	1.80
95	1.1	2	31.1	39.2	4550	0.193	0.247	0.074	0.258	1.30
120	1.2	2	34	42.3	5410	0.153	0.196	0.072	0.209	1.20
150	1.4	2.5	37.4	46.9	6800	0.124	0.1597	0.073	0.176	0.78
185	1.6	2.5	41.4	51.1	8140	0.0991	0.1284	0.073	0.148	0.71
240	1.7	2.5	45.9	56	10040	0.0754	0.9890	0.072	0.122	0.63
300	1.8	2.5	50.2	60.5	12020	0.0601	0.0801	0.072	0.107	0.58
400	2.0	2.5	56.1	66.8	14820	0.0470	0.0641	0.071	0.096	0.52

4 Core

Nominal area of conductor mm²	Insulation thickness mm	Nominal armour wire dia. mm	Approx. dia. under armour mm	Approx. overall diameter mm	Approx. cable weight kg/km	Max conductor resistance DC@20°C Ω/km	Max conductor resistance AC@90°C Ω/km	Reactance @50Hz Ω/km	Impedance AC@90°C Ω/km	Max. arm. resistance at 20°C Ω/km
10	0.7	1.25	19.2	25.2	1350	1.83	2.333	0.093	2.335	3.70
16	0.7	1.25	21.6	27.6	1690	1.15	1.466	0.088	1.469	3.10
25	0.9	1.6	25.2	31.8	2410	0.727	0.927	0.082	0.930	2.30
35	0.9	1.6	27.7	34.4	2920	0.524	0.668	0.077	0.673	2.00
50	1.0	1.6	28.5	35.3	3280	0.387	0.494	0.076	0.500	1.80
70	1.1	2	32.4	40.5	4570	0.268	0.342	0.075	0.349	1.20
95	1.1	2	35.9	44.2	5720	0.193	0.247	0.074	0.258	1.10
120	1.2	2.5	39.4	48.8	7270	0.153	0.196	0.072	0.209	0.76
150	1.4	2.5	43.3	53	8580	0.124	0.1597	0.073	0.176	0.68
185	1.6	2.5	47.8	57.9	10300	0.0991	0.1284	0.073	0.148	0.61
240	1.7	2.5	53	63.3	12800	0.0754	0.9890	0.072	0.122	0.54
300	1.8	2.5	57.7	68.4	15410	0.0601	0.0801	0.072	0.107	0.49
400	2.0	3.15	64.9	77.4	19910	0.0470	0.0641	0.071	0.096	0.35

Shaped conductors unless otherwise stated.
* Circular conductors



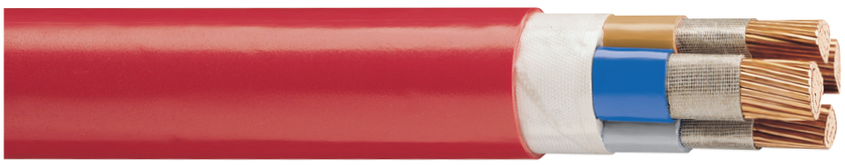
Firetuf Powerplus designs achieve the highest rating of 120 minutes when subjected to integrated testing involving direct impact and high pressure water spray. The details of this test are currently documented in Annex B of BS7346, but will soon be published as a stand alone standard BS8491.

FIRETUF® power

CIRCUIT INTEGRITY ENERGY CABLE

Zero Halogen, Low Smoke (OHLS®) cable with stranded copper conductors and a protective armour layer. Manufactured to BS 7846. Tested and approved by LPCB and BASEC.

These cables offer the advantages of an armoured 600/1000 Volt rated, zero halogen, low smoke cable with circuit integrity. They are intended for use in installations where vital circuits are required to continue operation in the event of the outbreak of fire. Firetuf Power is particularly suited for use in public buildings and constructions (such as hospitals, theatres, shopping developments, tunnels, mass transit railways, oil & petrochemical plants, power stations and computer installations) where the danger to life, equipment and structures may be greatly increased in the event of a power failure due to fire.



Also available in unarmoured design. Details available upon request.

LPCB TESTED & CERTIFIED BASEC

Construction

Conductors:	Plain annealed stranded copper conductors. For sizes up to and including 35mm² these are circular. Shaped conductors start at 50mm² with the exception of 2 core cables where shaped conductors start at 25mm².
Insulation:	Mica-glass fire-resistant tapes, covered by an extruded layer of cross-linked polyethylene.
Binder:	Polyester tape.
Bedding:	An extruded layer of Zero Halogen, Low Smoke (OHLS®) compound.
Armour:	Single layer of galvanised steel wires.
Sheath:	Thermoplastic Zero Halogen, Low Smoke (OHLS®) compound.

Physical Characteristics

Voltage rating(Uo/U):	600/1000V.
Operating temp:	-40˚C to +90˚C (The cable should not be flexed when either the ambient or cable temperature is below 0˚C).
Min. bending radius:	8 x overall diameter of cable.
Current Rating:	Refer to table 4E4A or 4E4B of BS7671, ERA 69-30 pt V or on pages 102-105.

Note: In the event of a fire, the increase in impedance may require consideration to the installation of larger conductor sizes, to accommodate motor starting loads and the performance of protective conductors.

Standards Achieved

Circuit integrity:	IEC 60331, BS 7846 F2, BS 6387 categories C, W & Z.
Acid gas emission:	IEC 60754, BS EN 50267.
Flame propagation:	IEC 60332-3, BS EN 50265, BS EN 50266.
Smoke emission:	IEC 61034, BS EN 50268.

Firetuf Power Technical Data

2 Core

Nominal area of conductor mm²	Insulation thickness mm	Nominal armour wire dia. mm	Approx. dia. under armour mm	Approx. overall diameter mm	Approx. cable weight kg/km	Max conductor resistance DC@20°C Ω/km	Max conductor resistance AC@90°C Ω/km	Reactance @50Hz Ω/km	Impedance AC@90°C Ω/km	Max. arm. resistance at 20°C Ω/km
1.5*	0.6	0.9	8.7	13.1	420	12.100	15.428	0.104	15.428	10.7
2.5*	0.7	0.9	10.0	14.6	500	7.410	9.448	0.101	9.448	8.8
4*	0.7	0.9	11.1	15.7	580	4.610	5.878	0.099	5.878	7.9
6*	0.7	0.9	12.3	16.9	660	3.080	3.927	0.094	3.928	7.0
10*	0.7	0.9	14.2	19.0	830	1.830	2.333	0.093	2.335	6.0
16*	0.7	1.25	15.9	21.4	1000	1.150	1.466	0.088	1.469	3.8
25	0.9	1.25	15.7	21.4	1100	0.727	0.927	0.082	0.930	3.7
35	0.9	1.6	17.7	24.3	1550	0.524	0.668	0.077	0.673	2.5
50	1.0	1.6	20.0	26.8	1850	0.387	0.494	0.076	0.500	2.3
70	1.1	1.6	23.0	30.0	2450	0.268	0.342	0.075	0.349	2.0
95	1.1	2.0	26.1	34.1	3350	0.193	0.247	0.074	0.258	1.4
120	1.2	2.0	28.9	37.1	3900	0.153	0.196	0.072	0.209	1.3
150	1.4	2.0	31.9	40.3	4650	0.124	0.160	0.073	0.176	1.2
185	1.6	2.5	35.9	45.7	5950	0.0991	0.128	0.073	0.148	0.82
240	1.7	2.5	40.0	50.0	7350	0.0754	0.099	0.072	0.122	0.73
300	1.8	2.5	44.3	54.5	8700	0.0601	0.080	0.072	0.107	0.67
400	2.0	2.5	49.4	60.0	10750	0.0470	0.064	0.071	0.096	0.59

3 Core

Nominal area of conductor mm²	Insulation thickness mm	Nominal armour wire dia. mm	Approx. dia. under armour mm	Approx. overall diameter mm	Approx. cable weight kg/km	Max conductor resistance DC@20°C Ω/km	Max conductor resistance AC@90°C Ω/km	Reactance @50Hz Ω/km	Impedance AC@90°C Ω/km	Max. arm. resistance at 20°C Ω/km
1.5*	0.6	0.9	9.3	13.7	426	12.100	15.428	0.104	15.428	10.2
2.5*	0.7	0.9	10.6	15.2	540	7.410	9.448	0.101	9.448	8.2
4*	0.7	0.9	11.8	16.4	640	4.610	5.878	0.099	5.878	7.5
6*	0.7	0.9	13.1	17.7	740	3.080	3.927	0.094	3.925	6.6
10*	0.7	1.25	15.1	20.6	1080	1.830	2.333	0.093	2.335	4.0
16*	0.7	1.25	17.0	22.7	1310	1.150	1.466	0.088	1.469	3.6
25*	0.9	1.6	20.0	26.6	1800	0.727	0.927	0.082	0.930	2.5
35*	0.9	1.6	22.3	29.1	2200	0.524	0.668	0.077	0.673	2.3
50	1.0	1.6	22.8	29.6	2450	0.387	0.494	0.076	0.500	2.0
70	1.1	1.6	26.3	33.3	3200	0.268	0.342	0.075	0.349	1.8
95	1.1	2.0	29.9	38.1	4450	0.193	0.247	0.074	0.258	1.3
120	1.2	2.0	33.1	41.5	5300	0.153	0.196	0.072	0.209	1.2
150	1.4	2.5	37.0	46.6	6700	0.124	0.160	0.073	0.176	0.78
185	1.6	2.5	41.1	50.9	8050	0.0991	0.128	0.073	0.148	0.71
240	1.7	2.5	46.0	56.2	9950	0.0754	0.099	0.072	0.122	0.63
300	1.8	2.5	50.9	61.3	12050	0.0601	0.080	0.072	0.107	0.58
400	2.0	2.5	56.9	67.7	14800	0.0470	0.064	0.071	0.096	0.52

4 Core

Nominal area of conductor mm²	Insulation thickness mm	Nominal armour wire dia. mm	Approx. dia. under armour mm	Approx. overall diameter mm	Approx. cable weight kg/km	Max conductor resistance DC@20°C Ω/km	Max conductor resistance AC@90°C Ω/km	Reactance @50Hz Ω/km	Impedance AC@90°C Ω/km	Max. arm. resistance at 20°C Ω/km
1.5*	0.6	0.9	10.1	14.5	520	12.100	15.428	0.104	15.428	9.5
2.5*	0.7	0.9	11.6	16.2	620	7.410	9.448	0.101	9.448	7.7
4*	0.7	0.9	13.0	17.6	730	4.610	5.878	0.099	5.878	6.8
6*	0.7	1.25	14.4	19.9	990	3.080	3.927	0.094	3.925	4.3
10*	0.7	1.25	16.8	22.3	1260	1.830	2.333	0.093	2.335	3.7
16*	0.7	1.25	18.9	24.6	1640	1.150	1.466	0.088	1.469	3.2
25*	0.9	1.6	22.2	28.8	2150	0.727	0.927	0.082	0.930	2.3
35*	0.9	1.6	24.8	31.6	2650	0.524	0.668	0.077	0.673	2.0
50	1.0	1.6	26.2	33.2	3100	0.387	0.494	0.076	0.500	1.8
70	1.1	2.0	30.7	38.9	4400	0.268	0.342	0.075	0.349	1.2
95	1.1	2.0	34.5	42.9	5650	0.193	0.247	0.074	0.258	1.1
120	1.2	2.5	38.7	48.3	7250	0.153	0.196	0.072	0.209	0.76
150	1.4	2.5	42.8	52.6	8550	0.124	0.160	0.073	0.176	0.68
185	1.6	2.5	47.6	57.8	10300	0.0991	0.128	0.073	0.148	0.61
240	1.7	2.5	53.8	64.2	12900	0.0754	0.099	0.072	0.122	0.54
300	1.8	2.5	59.2	70.0	15550	0.0601	0.080	0.072	0.107	0.49
400	2.0	3.15	66.6	79.3	20250	0.0470	0.064	0.071	0.096	0.35

Shaped conductors unless otherwise stated.
* Circular conductors

FIRETUF® sifer

CIRCUIT INTEGRITY ENERGY CABLE

Zero Halogen, Low Smoke (OHLS®) single core cable having enhanced circuit integrity when exposed to fire. Tested and approved by LPCB.

These cables are designed for drawing into trunking and conduit where a fire situation may pose a major hazard and the maintenance of circuit integrity is a requirement. To achieve optimum performance they should be installed in metal conduit.

Construction

Conductors: Stranded plain annealed copper wire conductor

Insulation: Mica-glass fire resistant tape covered by an extruded layer of cross-linked Zero Halogen, Low Smoke (OHLS®) insulating compound

Physical Characteristics

Voltage rating (Uo/U):600/1000V.

Operating temp: -40˚C to +90˚C (The cable should not be flexed when either the ambient or cable temperature is below 0˚C).

Min. bending radius: 8 x overall diameter

Standards Achieved

Circuit integrity: BS 6387 categories C, W & Z (when applied to a single cable)

Exceeds IEC 60331 - 3 hours at 750°C - when the test temperature was increased to 950°C, equivalent to BS 6387 Category C. (This test was also satisfactorily applied to Sifer cable in an earthed metal conduit, as per LPCB guidance notes).

Flame propagation: IEC 60332-1, BS EN 50265, IEC 60332-3, BS EN 50266.

Acid gas emission: IEC 60754-1, BS EN 50267-2-1.

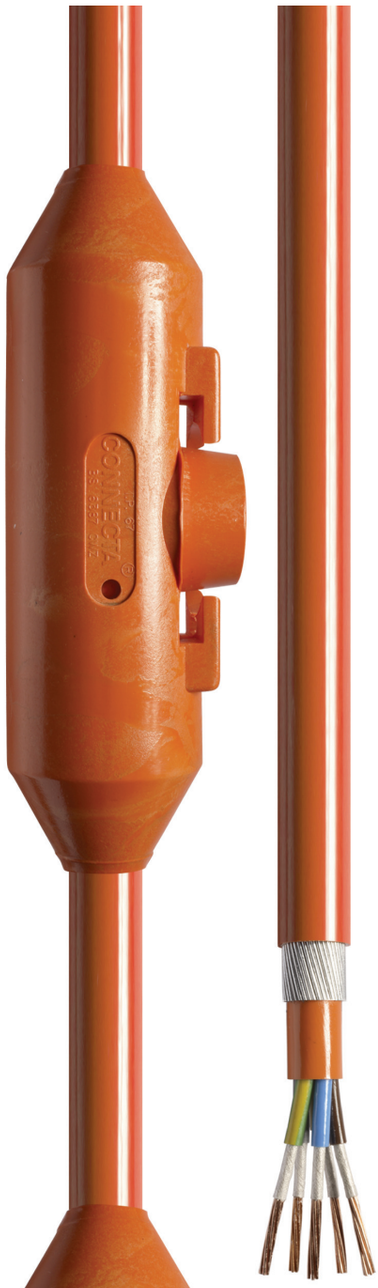
Smoke emission: IEC 61034, BS EN 50268

A full range of insulation colours is available including green/yellow.

Sheathed versions also available. Details available upon request.

LPCB TESTED & APPROVED

Nominal area of conductor mm^2	Insulation thickness mm	Mean diameter (upper limit) mm	Approx. weight of cable kg/km	Conductor resistance Max @20°C Ω/km
1.5	0.7	3.9	32	12.10
2.5	0.8	4.6	43	7.41
4	0.8	5.1	55	4.61
6	0.8	5.6	85	3.08
10	1.0	7.1	146	1.83
16	1.0	8.1	198	1.15
25	1.2	9.8	320	0.727
35	1.2	10.9	410	0.524
50	1.4	13.4	549	0.387
70	1.4	15.2	770	0.268
95	1.6	17.6	1140	0.193
120	1.6	19.3	1425	0.153
150	1.8	21.3	1720	0.124
185	2.0	23.7	2155	0.0991
240	2.2	26.8	2900	0.0754
300	2.4	29.7	3540	0.0601
400	2.6	33.3	4410	0.0470
500	2.8	37.2	5660	0.0366
630	2.8	41.3	7140	0.0283



FIRETUF® connecta system

MODULAR WIRING SYSTEM

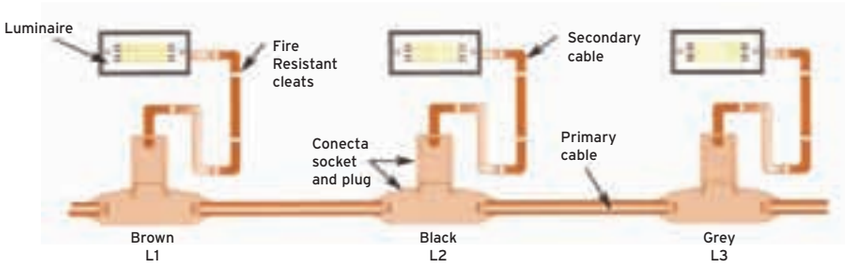
A Zero Halogen, Low Smoke (OHLS®) modular wiring system, offering time and cost saving benefits whilst delivering the highest level of safety.

The Firetuf Connecta system has been designed for ease of installation and cost effectiveness, allied to the overall safety of the system. The Connecta system provides solutions for lighting and power supplies in tunnel environments.

Based on Firetuf power or armoured OHLS® cable, Connecta is available in both fire resistant and flame retardant designs, and also offers ingress protection to IP 67.

Available in the size range 2.5mm^2 to 50mm^2 and manufactured to the bespoke requirements of the client, Connecta offers a time and cost effective solution to a variety of safety critical applications.

Every Connecta system is designed with the clients preset lengths between moulded socket outlets, which are unique to each installation. Secondary outputs are taken from the primary cables via moulded plugs to individual appliances. The system is therefore, easy to install by suitably qualified personnel and requires minimal maintenance.



The Connecta system has been installed in the Channel Tunnel Rail Link (CTRL), London Underground, Heathrow Terminal 5 Tunnels, Dublin Port Tunnel and the Singapore Mass Transit Network (MRT) amongst others. The Connecta system offers the following benefits:

- **Reduced installation time**
- **Reduced installation costs**
- **Circuit integrity equivalent to BS 6387 C,W & Z**
- **Ingress protection to IP 67**
- **Minimum maintenance requirements**
- **System flexibility to meet clients positioning requirements**
- **Lightweight and compact jointing system**

	Small Connecta	Large Connecta	Extra Large Connecta
Diameter (mm)	70	90	90
Length (mm)	150	220	260
Weight (Kg)	1.5	2	2.2

Draka
Saffire OHLS® Cables

Draka has placed itself at the forefront of cable design and material technology and is able to assist it's customers in meeting ever more demanding requirements placed on cable performance, through an ongoing process of close technical co-operation with its end-users. Illustrating this commitment has been the company's development of its Zero Halogen, Low Smoke OHLS® range of fire performance cables.

Draka UK engineers have developed this range working closely with major specifying and testing bodies such as London Underground, British Nuclear Fuels, BAA and LPCB

Cables within the Saffire OHLS® range show significantly improved performance, when compared with other cables, in meeting the demands of the specific hazards within a fire situation. This is achieved by the reduction of harmful gases and smoke production during burning.

OHLS® cables are particularly suitable for use in buildings and constructions such as hospitals, theatres, shopping precincts, tunnels and public utilities where protection of life, equipment and structures is essential.

OHLS SAFFIRE®

6491 B - PREMIUM FIRE SAFETY WIRING CABLE

STANDARD: BS 7211

VOLTAGE RATING: 450/750V

When installed in an earthed metal enclosure, cables are suitable for voltages up to 1000V a.c. or up to 750V to earth d.c.

APPLICATION:

Industrial wiring installations where smoke and acid gas emission would pose a major hazard in the event of fire. These cables are intended for drawing into trunking and conduit. They may also be used inside fixed, protected installations such as light fittings, appliances, switchgear and controlgear, which are to be used in higher temperature zones.

CONSTRUCTION:

Single core cable. Solid or stranded plain copper conductor, Thermosetting Zero Halogen Low Smoke (OHLS®) insulated.

INSULATION COLOURS:

Black, Brown, Yellow†, Blue, Red, Green/Yellow, Grey, Orange, Pink, Turquoise and Violet. White is also available.

BASEC: Certified

MAXIMUM CONDUCTOR TEMPERATURE: 90°C

Note: Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductor is suitable for the conductor operating temperature (see regulation 512-02 of BS7671, the 16th Edition of IEE Wiring Regulations)

CURRENT RATING: Refer to tables 4E1A & 4E1B in BS7671 or on pages 95-97

HARMONISED CODE: H07Z-R

FIRE PERFORMANCE CHARACTERISTICS:

Smoke emission: IEC 61034 , BS EN 50268

Acid gas emission: IEC 60754-2, BS EN 50267-2

Flame propagation: IEC 60332-1, BS EN 50265

Nominal area of conductor mm	Class of conductor at 20°C	Conductor Resistance Ω/Km	Insulation thickness (upper limit) mm	Mean overall diameter mm	Approx. nett weight kg/km	Minimum bending radius factor
1.5	2	12.1	0.7	3.4	22	2D
2.5	2	7.41	0.8	4.2	35	2D
4	2	4.6	0.8	4.8	50	2D
6	2	3.08	0.8	5.4	72	2D
10	2	1.83	1.0	6.8	121	2D
16	2	1.15	1.0	8.0	182	2D
25	2	0.727	1.2	9.8	285	2D
35	2	0.524	1.2	11.0	390	3D
50	2	0.387	1.4	13.0	520	3D
70	2	0.268	1.4	15.0	720	3D
95	2	0.193	1.6	17.0	980	3D
120	2	0.153	1.6	19.0	1220	3D
150	2	0.124	1.8	21.0	1500	3D
185	2	0.0991	2.2	23.5	1910	3D
240	2	0.0754	2.2	26.5	2490	6D
300	2	0.0601	2.4	29.5	3100	6D
400	2	0.0470	2.6	33.5	3950	6D
500	2	0.0366	2.8	37.0	5000	6D
630	2	0.0283	2.8	41.0	6350	6D

† Single colour yellow is not harmonised

OHLS SAFFIRE®

624 BH - PREMIUM FIRE SAFETY WIRING CABLE

STANDARD: BS 7211

VOLTAGE RATING: 300/500V

APPLICATION:
Domestic and light industrial wiring, where smoke and acid gas emission would pose a major hazard in the event of fire. Can be clipped to surface, on trays or in free air where there is little risk of mechanical damage. Suitable for laying into trunking or conduit etc. when mechanical protection is required. May be embedded in plaster or laid in walls.

CONSTRUCTION:
Two or three core flat cables with an additional uninsulated copper circuit protective conductor. Solid or stranded plain copper conductors. XLPE insulated, laid parallel with CPC and Zero Halogen Low Smoke (OHLS®) sheathed.

CORE COLOURS: Two core: Brown and Blue. Three core: Brown, Black and Grey.

SHEATH COLOUR: White

BASEC: Certified

MAXIMUM CONDUCTOR TEMPERATURE: 90°C
Note: Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductor is suitable for the conductor operating temperature (see regulation 512-02 of BS7671, the 16th Edition of IEE Wiring Regulations)

CURRENT RATING: Refer to table 4D5A in BS7671 or on page 94

FIRE PERFORMANCE CHARACTERISTICS:

Smoke emission: IEC 61034 , BS EN 50268

Acid gas emission: IEC 60754-2, BS EN 50267-2

Flame propagation: IEC 60332-1, BS EN 50265

Reference number	Nominal area of conductor	Class of conductor	Maximum resistance of conductor at 20°C	Insulation thickness	Sheath thickness	Overall dimensions Upper limit (d xD)	Circuit protective conductor cross-section	Approx. nett weight	Minimum bending radius factor (major axis)
	mm^2		Ω/km	mm	mm	mm	mm^2	kg/km	3D
6242BH	1.0	1	18.1	0.7	0.9	5.0 x 9.1	1.0	67	3D
6242B7H	1.0	2	18.1	0.7	0.9	5.1 x 9.4	1.0	72	3D
6242BH	1.5	1	12.1	0.7	0.9	5.3 x 9.7	1.0	80	3D
6242B7H	1.5	2	12.1	0.7	0.9	5.4 x 10.0	1.0	85	4D
6242BH	2.5	1	7.41	0.7	1.0	6.0 x 11.2	1.5	113	4D
6242B7H	2.5	2	7.41	0.7	1.0	6.1 x 11.4	1.5	119	4D
6242BH	4	2	4.61	0.7	1.0	6.7 x 12.6	1.5	155	4D
6242BH	6	2	3.08	0.7	1.1	7.5 x 14.6	2.5	219	4D
6242BH	10	2	1.83	0.7	1.2	8.8 x 17.6	*4.0	333	4D
6242BH	16	2	1.15	0.7	1.3	10.1 x 20.5	*6.0	495	4D
6243BH	1.5	1	12.1	0.7	0.9	5.3 x 12.9	1.0	110	4D

* Stranded Class 2 cpc

OHLS SAFFIRE®

3183 B - PREMIUM FIRE SAFETY FLEXIBLE CABLE

STANDARD: Draka

VOLTAGE RATING: 300/500V

APPLICATION:
Used as an indoor general wiring cable, primarily for installation in public areas where smoke and acid gas emissions would pose a major hazard in the event of a fire. Applications include general supply leads in airports, hospitals and shopping centres.

CONSTRUCTION:
Three core flexible plain copper conductors, XLPE insulation, laid up cores and Zero Halogen Low Smoke (OHLS®) sheathed.

INSULATION COLOURS: Three Core: Green/Yellow, Blue, Brown.

SHEATH COLOUR: White. Other colours available to order.

MINIMUM BENDING RADIUS: 3D (Fixed).

MAXIMUM CONDUCTOR TEMPERATURE: 90°C
Note: Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductor is suitable for the conductor operating temperature (see regulation 512-02 of BS7671, the 16th Edition of IEE Wiring Regulations)

CURRENT RATING: Refer to tables 4H3A and 4H3B on page 103

FIRE PERFORMANCE CHARACTERISTICS:

Smoke emission: IEC 61034 , BS EN 50268

Acid gas emission: IEC 60754-2, BS EN 50267-2

Flame propagation: IEC 60332-1, BS EN 50265

Reference number	Nominal area of conductor	Class of conductor	Maximum resistance of conductor at 20°C	Insulation thickness	Sheath thickness	Mean overall diameter		Approx. nett weight
						Lower limit	Upper limit	
	mm^2		Ω/km	mm	mm	mm	mm	kg/km
3183B	0.75	5	26.00	0.6	0.8	6.4	8.0	71
	1.0	5	19.50	0.6	0.8	6.8	8.4	82
	1.5	5	13.30	0.7	0.9	8.0	9.8	118
	2.5	5	7.98	0.8	1.1	9.6	12.0	17

OHLS SAFFIRE®

PREMIUM FIRE SAFETY MULTICORE AUXILIARY CABLE

STANDARD: BS 6724

VOLTAGE RATING: 600/1000V

APPLICATION:
Industrial wiring for remote control and telemetry circuits etc. where smoke and acid gas emission would pose a major hazard in the event of fire. Can be laid direct in the ground, or in ducts, clipped to surface, on trays or in free air. May be embedded in concrete.

CONSTRUCTION:
Multi-core cables. Stranded plain copper conductors, XLPE insulated, cores laid up, extruded Zero Halogen, Low Smoke (OHLS®) bedding, galvanised steel wire armoured and Zero Halogen Low Smoke (OHLS®) sheathed

CORE COLOURS: White with Black numerals.

SHEATH COLOURS: Black. Other colours available to order.

BASEC: Certified

MINIMUM BENDING RADIUS: 6D

MAXIMUM CONDUCTOR TEMPERATURE: 90°C.
Note: Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductor is suitable for the conductor operating temperature (see regulation 512-02 of BS7671, the 16th Edition of IEE Wiring Regulations)

CURRENT RATING: Available upon request.

FIRE PERFORMANCE CHARACTERISTICS:

Smoke emission: IEC 61034 , BS EN 50268

Acid gas emission: IEC 60754-1, BS EN 50267

Flame propagation: IEC 60332-1, IEC 60332-3, BS EN 50265, Categories C & A; BS EN 50266.

Number of cores	Reference number	Nominal area of conductor	Approx. diameter under armour	Approx. diameter over armour	Approx. overall diameter	Approx. nett weight
		mm^2	mm	mm	mm	kg/km
Five	6945LS7W	1.5	9.5	11.3	14.3	420
		2.5	11.2	13.0	16.1	520
		4.0	12.7	15.2	17.8	750
Seven	6947LS7W	1.5	10.2	12.1	15.2	470
		2.5	12.3	14.1	17.1	600
		4.0	14.0	16.5	19.7	890
Twelve	69412LS7W	1.5	13.7	16.2	19.4	780
		2.5	16.3	18.8	22.4	1000
		4.0	19.1	22.2	25.7	1410
Nineteen	69419LS7W	1.5	16.2	18.7	22.2	1000
		2.5	19.9	23.1	26.6	1540
		4.0	22.5	25.7	29.3	1830
Twenty-seven	69427LS7W	1.5	20.0	23.2	26.7	1500
		2.5	24.0	27.2	30.7	1950
		4.0	27.5	30.7	34.4	2500
Thirty-seven	69437LS7W	1.5	22.3	25.5	29.0	1800
		2.5	26.9	30.1	33.8	2350
		4.0	31.0	35.0	39.2	3100
Forty-eight	69448LS7W	1.5	25.4	28.6	32.7	2050
		2.5	31.0	35.0	39.3	3100
		4.0	35.3	39.3	44.1	4100

OHLS SAFFIRE®

694-LSH PREMIUM FIRE SAFETY ENERGY CABLE

STANDARD: BS 6724

VOLTAGE RATING: 600/1000V

APPLICATION:
Industrial wiring and mains distribution, where smoke and acid gas emission would pose a major hazard in the event of fire. Can be laid direct in the ground, or in ducts, clipped to surface, on trays or in free air. May be embedded in concrete.

CONSTRUCTION:
Single, Two, Three, Four and Five core cables. Stranded plain copper conductors, XLPE insulated, cores laid up, extruded Zero Halogen, Low Smoke (OHLS®) bedding, galvanised steel wire armoured (Aluminium wires for single cores) and Zero Halogen, Low Smoke (OHLS®) sheathed.

CORE COLOURS:
Single core: Brown or Blue.
Two core: Brown and Blue.
Three core: Brown, Black and Grey.
Four core: Brown, Black, Grey and Blue.
Five core: Brown, Black, Grey, Green/Yellow and Blue.

SHEATH COLOURS: Black. Other colours available to order.

BASEC: Certified

MINIMUM BENDING RADIUS: 6D circular conductors. 8D shaped conductors.

MAXIMUM CONDUCTOR TEMPERATURE: 90°C.
Note: Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductor is suitable for the conductor operating temperature (see regulation 512-02 of BS7671, the 16th Edition of IEE Wiring Regulations)

CURRENT RATING: Refer to table 4E4A or 4E4B of BS7671, ERA69-30 Pt. V or on pages 102-105.

FIRE PERFORMANCE CHARACTERISTICS:

Smoke emission: IEC 61034 , BS EN 50268

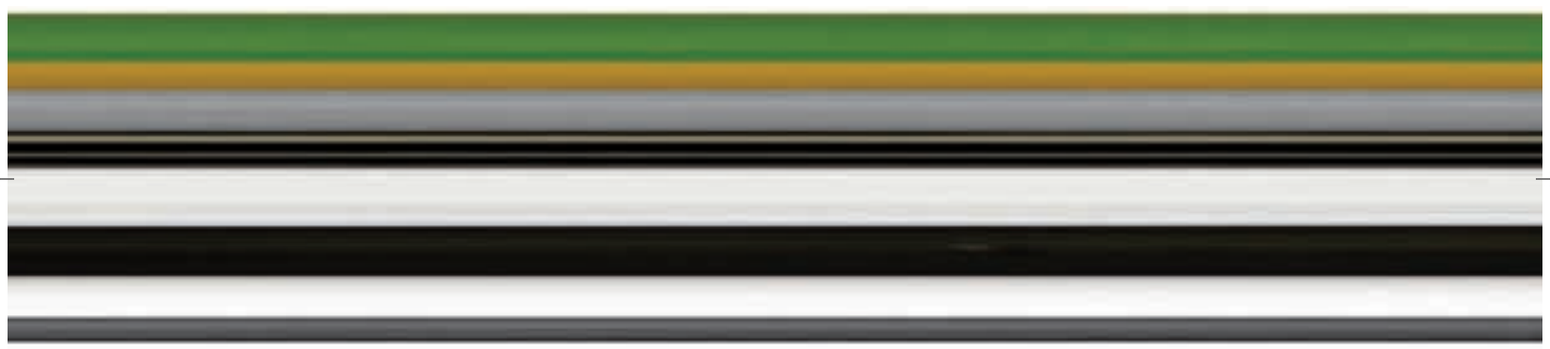
Acid gas emission: IEC 60754-1, BS EN 50267

Flame propagation: IEC 60332-1, IEC 60332-3, BS EN 50265, Categories C & A; BS EN 50266.

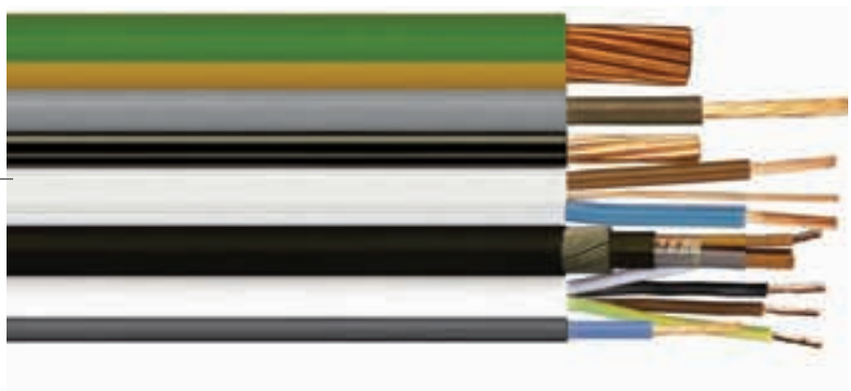
Reference number	Nominal area of conductor	Insulation thickness	Armour wire diameter	Approx. diameter under armour	Approx. overall diameter	Approx. cable weight	Maximum resistance of cable		Reactance @50 Hz	Impedance AC @ 90°C	Star capacitance	Maximum armour resistance at 20°C
							DC at 20°C	AC at 90°C				
	mm^2	mm	mm	mm	mm	kg/km	Ω/km	Ω/km	Ω/km	Ω/km	μF/km	Ω/km
Single	#50	1.0	0.9	12.7	17.5	800	0.3870	0.4938	0.104	0.505	0.41	1.30
Core	#70	1.1	1.25	14.7	20.2	960	0.2680	0.3410	0.101	0.356	0.46	0.75
Aluminium	#95	1.1	1.25	16.6	22.3	1240	0.1930	0.2469	0.097	0.265	0.53	0.67
Wire	#120	1.2	1.25	18.5	24.2	1510	0.1530	0.1962	0.094	0.217	0.56	0.61
Armour	#150	1.4	1.6	20.8	27.4	1900	0.1240	0.1594	0.095	0.186	0.52	0.42
694AWLSH	*185	1.6	1.6	23.2	30.0	2320	0.0991	0.1280	0.093	0.158	0.54	0.38
	*240	1.7	1.6	26.0	32.8	2930	0.0754	0.0985	0.090	0.134	0.59	0.34
	*300	1.8	1.6	28.6	35.6	3580	0.0601	0.0797	0.088	0.119	0.63	0.31
	*400	2.0	2.0	32.4	40.4	4600	0.0470	0.0635	0.089	0.109	0.62	0.22
	*500	2.2	2.0	36.0	44.2	5770	0.0366	0.0513	0.087	0.101	0.66	0.20
	*630	2.4	2.0	40.4	48.8	7250	0.0283	0.0419	0.085	0.095	0.70	0.18
	*800	2.6	2.5	45.6	55.4	9381	0.0221	0.0349	0.087	0.094	0.85	0.13
	*1000	2.8	2.5	50.6	60.6	11540	0.0176	0.0303	0.085	0.090	0.87	0.12

Reference number	Nominal area of conductor	Insulation thickness	Armour wire diameter	Approx. diameter under armour	Approx. overall diameter	Approx. cable weight	Maximum resistance of cable DC at 20°C	Maximum resistance of cable AC at 90°C	Reactance @ 50Hz	Impedance AC @ 90°C	Star capacitance	Maximum armour resistance at 20°C
	mm^2	mm	mm	mm	mm	kg/km	Ω/km	Ω/km	Ω/km	Ω/km	μF/km	Ω/km
Two	*1.5	0.6	0.9	7.3	12.3	305	12.1000	15.4280	0.104	15.428	0.23	10.20
Core	*2.5	0.7	0.9	8.5	13.6	354	7.4100	9.4480	0.101	9.449	0.25	8.80
Steel	*4	0.7	0.9	9.4	14.7	416	4.6100	5.8780	0.099	5.879	0.27	7.90
Wire	*6	0.7	0.9	10.5	15.9	507	3.0800	3.9270	0.094	3.927	0.30	7.00
Armour	#10	0.7	0.9	12.3	18.0	647	1.8300	2.3330	0.093	2.335	0.32	6.00
6942LSH	#16	0.7	1.25	14.9	20.4	993	1.1500	1.4660	0.088	1.469	0.35	3.70
	25	0.9	1.25	14.7	20.4	1290	0.7270	0.9260	0.082	0.930	0.38	3.70
	35	0.9	1.6	16.8	23.3	1500	0.5240	0.6685	0.077	0.673	0.42	2.60
	50	1.0	1.6	19.0	25.8	1890	0.3870	0.4940	0.076	0.500	0.45	2.30
	70	1.1	1.6	22.0	29.0	2450	0.2680	0.3412	0.075	0.349	0.49	2.00
	95	1.1	2.0	25.1	33.1	3300	0.1930	0.2471	0.074	0.258	0.55	1.40
	120	1.2	2.0	27.9	36.1	4020	0.1530	0.1964	0.072	0.209	0.57	1.30
	150	1.4	2.0	30.9	39.3	4750	0.1240	0.1597	0.073	0.176	0.57	1.20
	185	1.6	2.5	34.9	44.7	6180	0.0991	0.1284	0.073	0.148	0.55	0.82
	240	1.7	2.5	39.0	49.0	7570	0.0754	0.0989	0.072	0.122	0.60	0.73
	300	1.8	2.5	43.3	53.5	9180	0.0601	0.0801	0.072	0.107	0.62	0.67
	400	2.0	2.5	48.4	59.0	10500	0.0470	0.0641	0.071	0.096	0.64	0.59
Three	*1.5	0.6	0.9	7.8	12.6	335	12.1000	15.4280	0.104	15.428	0.23	9.50
Core	*2.5	0.7	0.9	9.2	14.1	388	7.4100	9.4480	0.101	9.449	0.25	8.20
Steel	*4	0.7	0.9	10.0	15.3	471	4.6100	5.8780	0.099	5.879	0.27	7.50
Wire	*6	0.7	0.9	11.2	16.6	576	3.0800	3.9270	0.094	3.928	0.30	6.70
Armour	#10	0.7	1.25	13.1	19.5	884	1.8300	2.3330	0.093	2.335	0.32	4.00
6943LSH	#16	0.7	1.25	15.3	21.6	1159	1.1500	1.4660	0.088	1.469	0.35	3.50
	#25	0.9	1.6	18.9	25.5	1800	0.7270	0.9260	0.082	0.930	0.37	2.50
	#35	0.9	1.6	21.3	28.0	2230	0.5240	0.6685	0.077	0.673	0.42	2.30
	50	1.0	1.6	21.7	28.5	2490	0.3870	0.4940	0.076	0.500	0.45	2.00
	70	1.1	1.6	25.2	32.2	3290	0.2680	0.3412	0.075	0.349	0.49	1.80
	95	1.1	2.0	28.8	37.0	4440	0.1930	0.2471	0.074	0.258	0.55	1.30
	120	1.2	2.0	32.0	40.4	5470	0.1530	0.1964	0.072	0.209	0.57	1.20
	150	1.4	2.5	35.9	45.5	6930	0.1240	0.1597	0.073	0.176	0.55	0.78
	185	1.6	2.5	40.0	49.8	8350	0.0991	0.1284	0.073	0.148	0.55	0.71
	240	1.7	2.5	44.9	55.1	10400	0.0754	0.0989	0.072	0.122	0.60	0.63
	300	1.8	2.5	49.8	60.2	12600	0.0601	0.0801	0.072	0.107	0.62	0.58
	400	2.0	2.5	55.8	66.6	14600	0.0470	0.0641	0.071	0.096	0.64	0.52
Four	*1.5	0.6	0.9	8.5	13.5	365	12.1000	15.4280	0.104	15.428	0.23	8.80
Core	*2.5	0.7	0.9	9.9	15.0	438	7.4100	9.4480	0.101	9.449	0.25	7.70
Steel	*4	0.7	0.9	11.0	16.4	532	4.6100	5.8780	0.099	5.879	0.27	6.80
Wire	*6	0.7	1.25	12.3	18.7	764	3.0800	3.9270	0.094	3.928	0.30	4.30
Armour	#10	0.7	1.25	14.5	21.1	1013	1.8300	2.3330	0.093	2.336	0.32	3.70
6944LSH	#16	0.7	1.25	17.0	22.9	1360	1.1500	1.4660	0.088	1.469	0.35	3.10
	#25	0.9	1.6	21.0	27.6	2160	0.7270	0.9260	0.082	0.930	0.37	2.30
	#35	0.9	1.6	23.6	30.4	2690	0.5240	0.6685	0.077	0.673	0.42	2.00
	50	1.0	1.6	25.0	32.0	3130	0.3870	0.4940	0.076	0.500	0.45	1.80
	70	1.1	2.0	29.5	37.7	4500	0.2680	0.3412	0.075	0.349	0.48	1.20
	95	1.1	2.0	33.3	41.7	5600	0.1930	0.2471	0.074	0.258	0.55	1.10
	120	1.2	2.5	37.5	47.1	7400	0.1530	0.1964	0.072	0.209	0.55	0.76
	150	1.4	2.5	41.6	51.4	8780	0.1240	0.1597	0.073	0.176	0.55	0.68
	185	1.6	2.5	46.4	56.6	10630	0.0991	0.1284	0.073	0.148	0.55	0.61
	240	1.7	2.5	52.6	63.0	13390	0.0754	0.0989	0.072	0.122	0.58	0.54
	300	1.8	2.5	58.0	68.8	16290	0.0601	0.0801	0.072	0.107	0.62	0.49
	400	2.0	3.15	65.4	78.1	19800	0.0470	0.0641	0.071	0.096	0.63	0.35
Five	*1.5	0.6	0.9	9.7	14.3	410	12.1000	15.4280	0.104	15.428	0.23	8.20
Core	*2.5	0.7	0.9	11.7	16.3	470	7.4100	9.4480	0.101	9.449	0.25	6.80
Steel	*4	0.7	0.9	13.0	17.8	710	4.6100	5.8780	0.099	5.879	0.27	6.20
Wire	*6	0.7	1.25	14.5	20.0	876	3.0800	3.9270	0.094	3.928	0.30	3.90
Armour	#10	0.7	1.25	17.2	22.9	1165	1.8300	2.3330	0.093	2.336	0.32	3.40
6945LSH	#16	0.7	1.6	20.0	26.6	1742	1.1500	1.4660	0.088	1.469	0.35	2.20
	#25	0.9	1.6	24.7	31.5	2323	0.7270	0.9260	0.082	0.930	0.37	1.80
	#35	0.9	1.6	27.8	34.8	2932	0.5240	0.6685	0.077	0.673	0.42	1.60
	#50	1.0	2.0	32.4	40.4	4192	0.3870	0.4940	0.076	0.500	0.45	1.10
	#70	1.1	2.0	37.9	46.3	5336	0.2680	0.3412	0.075	0.349	0.48	0.90

Shaped conductors unless otherwise stated. * Circular, non-compacted, conductors. # Compacted circular conductors.



Draka PVC Cables



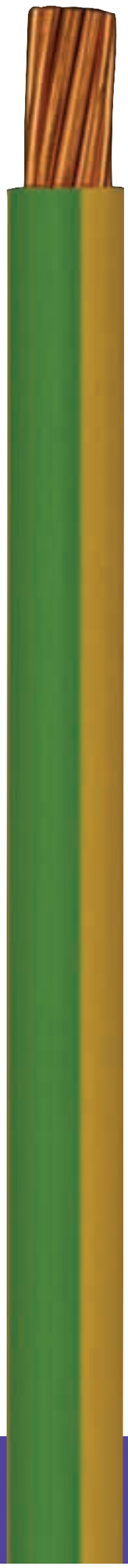
PVC continues to be a versatile material for general wiring and power cables. However, where fire hazard is considered a risk to building occupants, halogen free alternatives should be employed. All cables are BASEC approved and fully compliant with the RoHS directive with respect to elimination of hazardous substances.

PVC is a widely accepted general purpose thermoplastic. It has good mechanical and ageing properties, and resistance to ozone and weather. It is preferable to pigment it with carbon black to obtain optimum resistance to the effects of sunlight for sheathing purposes.

PVC compounds are available that are very flame retardant but consideration must be given to the acid fumes and smoke emitted when subjected to fire conditions. In general PVC has good resistance to chemicals but is affected by solvents and some oils which tend to leach out the plasticiser and thus cause embrittlement.

6491 X

GENERAL WIRING CABLE



STANDARD: BS 6004

VOLTAGE RATING: 450/750V (1mm² 300/500V)
When installed in an earthed metal enclosure, cables are suitable for voltages up to 1000V a.c. or up to 750V to earth d.c.

APPLICATION:
Industrial wiring, these cables are intended for installation in trunking and conduit. They may also be used inside fixed, protected installations such as light fittings, appliances, switchgear and control gear.

CONSTRUCTION:
Single core cable. Solid or stranded plain copper conductor, PVC insulated only.

INSULATION COLOURS:
Black, Brown, Yellow†, Blue, Red, Green/Yellow, Grey, Orange, Pink, Turquoise and Violet. White is also available.

BASEC: Certified

MAXIMUM CONDUCTOR TEMPERATURE: 70°C.

CURRENT RATING: Refer to tables 4D1A & 4D1B in BS7671 or on page 90-92.

Nominal area of conductor mm²	Class of conductor	Conductor resistance 20°C Ω/km	Insulation thickness mm	Mean overall diameter (upper limit) mm	Approx. nett weight kg/km	Harmonised codes	Minimum bending radius factor
1.0	1	18.1	0.6	2.7	15	H05V-U	3D
1.5	1	12.1	0.7	3.2	21	H07V-U	3D
1.5	2	12.1	0.7	3.3	22	H07V-R	3D
2.5	1	7.41	0.8	3.9	32	H07V-U	3D
2.5	2	7.41	0.8	4.0	35	H07V-R	3D
4	2	4.61	0.8	4.6	50	H07V-R	3D
6	2	3.08	0.8	5.2	71	H07V-R	3D
10	2	1.83	1.0	6.7	120	H07V-R	3D
16	2	1.15	1.0	7.8	180	H07V-R	3D
25	2	0.727	1.2	9.7	280	H07V-R	3D
35	2	0.524	1.2	10.9	380	H07V-R	4D
50	2	0.387	1.4	12.8	510	H07V-R	4D
70	2	0.268	1.4	14.6	710	H07V-R	4D
95	2	0.193	1.6	17.1	970	H07V-R	4D
120	2	0.153	1.6	18.8	1200	H07V-R	4D
150	2	0.124	1.8	20.9	1480	H07V-R	4D
185	2	0.0991	2.0	23.3	1900	H07V-R	4D
240	2	0.0754	2.2	26.6	2480	H07V-R	6D
300	2	0.0601	2.4	29.6	3100	H07V-R	6D
400	2	0.0470	2.6	33.2	3950	H07V-R	6D
500	2	0.0366	2.8	36.9	5000	H07V-R	6D
630	2	0.0283	2.8	41.1	6350	H07V-R	6D

† Single core yellow is not harmonised.

6181YH

GENERAL WIRING CABLE

STANDARD: BS 6004

VOLTAGE RATING: 300/500V

APPLICATION:
Domestic and light industrial wiring. Can be clipped to surface, on trays or in free air where there is little risk of mechanical damage. Suitable for laying into trunking or conduit etc. when mechanical protection is required. May be embedded in plaster.

CONSTRUCTION:
Single core cable. Solid or stranded plain copper conductor, PVC insulated and PVC sheathed.

CORE COLOURS: Brown or Blue.

SHEATH COLOURS: Grey. Other colours available to order.

BASEC: Certified

MAXIMUM CONDUCTOR TEMPERATURE: 70°C

CURRENT RATING: Refer to tables 4D1A & 4D1B in BS7671 or "A Closer Look at Cable" or on page 90-92

Nominal area of conductor mm²	Class of conductor	Maximum resistance of conductor at 20°C Ω/km	Insulation thickness mm	Sheath thickness mm	Mean overall diameter (upper limit) mm	Approx nett weight kg/km	Minimum bending radius factor
1	1	18.1	0.6	0.8	4.5	27	3D
1.5	1	12.1	0.7	0.8	4.9	36	3D
2.5	1	7.41	0.8	0.8	5.8	52	3D
4	2	4.61	0.9	0.9	6.8	76	3D
6	2	3.08	0.8	0.9	7.4	100	3D
10	2	1.83	1.0	0.9	8.8	160	3D
16	2	1.15	1.0	1.0	10.5	230	4D
25	2	0.727	1.2	1.1	12.5	340	4D
35	2	0.524	1.2	1.1	13.5	440	4D

624-YH

GENERAL WIRING CABLE

STANDARD: BS 6004

VOLTAGE RATING: 300/500V

APPLICATION:
Domestic and light industrial wiring. Can be clipped to surface, on trays or in free air where there is little risk of mechanical damage. Suitable for laying into trunking or conduit etc. when mechanical protection is required. May be embedded in plaster or laid in walls.

CONSTRUCTION:
Single, Two or Three core flat cables with an additional uninsulated copper circuit protective conductor. Solid or stranded plain copper conductors. PVC insulated, laid parallel with CPC and PVC sheathed.

CORE COLOURS:
Single core: Brown or Blue.
Two core: Brown and Blue.
Three core: Brown, Black and Grey.

SHEATH COLOUR: Grey

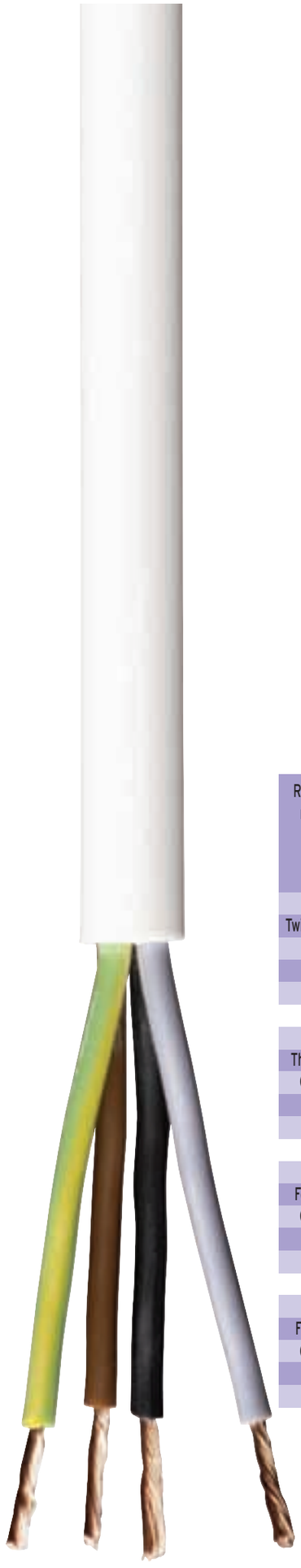
BASEC: Certified

MAXIMUM CONDUCTOR TEMPERATURE: 70°C

CURRENT RATING: Refer to table 4D5A in BS7671 or on page 94

Reference number	Nominal area of conductor mm^2	Class of conductor	Insulation thickness mm	Sheath thickness mm	Overall dimensions Upper limit (d x D) mm	Circuit protective conductor Cross-section mm^2	Approx nett weight kg/km	Minimum bending radius factor
6242YH	1	1	0.6	0.9	4.7 x 8.6	1.0	68	3D
2C + CPC	1.5	1	0.7	0.9	5.4 x 9.6	1.0	85	3D
	2.5	1	0.8	1.0	6.2 x 11.5	1.5	123	4D
	4	2	0.8	1.0	7.2 x 13.0	1.5	175	4D
	6	2	0.8	1.1	8.0 x 15.0	2.5	240	4D
	10	2	1.0	1.2	9.6 x 19.0	4.0*	390	4D
	16	2	1.0	1.3	11.0 x 22.5	6.0*	560	4D
6243YH	1	1	0.6	0.9	4.7 x 11.0	1.0	91	4D
3C + CPC	1.5	1	0.7	0.9	5.4 x 12.5	1.0	117	4D
	2.5	1	0.8	1.0	6.2 x 14.5	1.0	170	4D
	4	2	0.8	1.1	7.4 x 18.0	1.5	250	4D
	6	2	0.8	1.1	8.0 x 20.0	2.5	340	4D
	10	2	1.0	1.2	9.6 x 25.5	4.0*	540	6D
	16	2	1.0	1.3	11.0 x 29	6.0*	790	6D
6241YH	1.0	1	0.6	0.9	5.2 x 6.4	1.0	40	3D
1C + CPC	1.5	1	0.7	0.9	5.8 x 7.0	1.0	48	3D

* Stranded class 2 cpc



318-Y

FLEXIBLE CORDS

STANDARD: BS6500/BS7919.

VOLTAGE RATING: 300/500V.

APPLICATION:
General purpose indoors or outdoors in dry or damp situations. Suitable for portable tools, washing machines, vacuum cleaners, lawn mowers, refrigerators. Should not be used where sheath can come in to contact with hot surfaces. Not suitable below 0°C.

CONSTRUCTION:
Two, Three, Four or Five core circular flexible cord. Flexible plain copper conductors, PVC insulated, cores laid up and PVC sheathed.

CORE COLOURS:
Two core: Blue and Brown.
Three core: Green/Yellow, Blue and Brown.
Four core: Green/Yellow, Brown, Black and Grey.
Five core: Green/Yellow, Blue, Brown, Black and Grey.

SHEATH COLOUR: White. Other colours available to order.

MINIMUM BENDING RADIUS: 3D (Fixed), 6D (Flexing).

MAXIMUM CONDUCTOR TEMPERATURE: 70°C

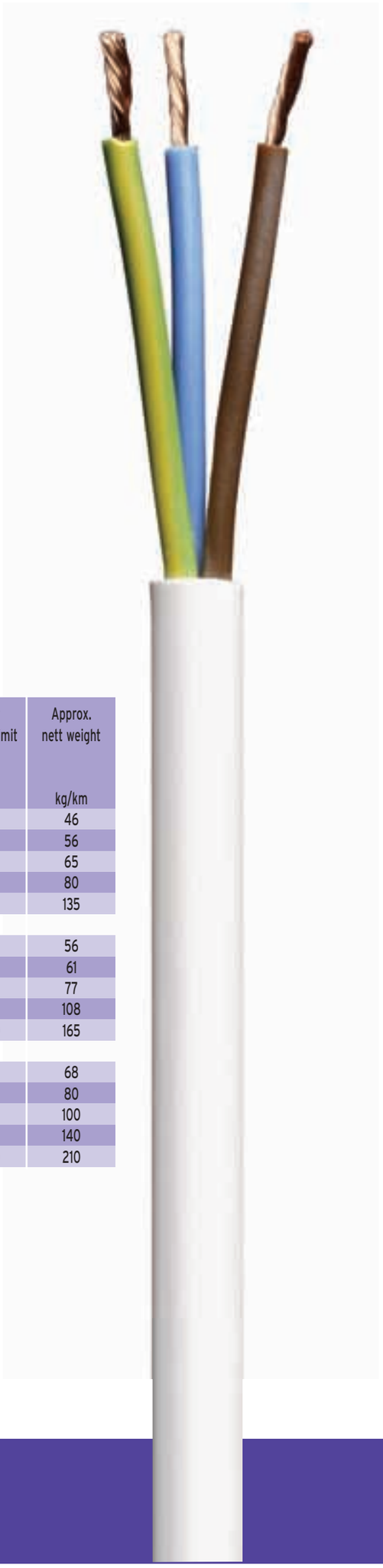
CURRENT RATING: Refer to tables 4H3A and 4H3B in BS7671 or page 103.

HARMONISED DESIGNATION: H05VV-F

Reference number	Nominal area of conductor	Class of conductor	Maximum resistance of conductor at 20°C	Insulation thickness	Sheath thickness	Mean overall diameter		Approx. nett weight
						Lower limit	Upper limit	
	mm^2		Ω/km	mm	mm	mm	mm	kg/km
3182Y	0.75	5	26.00	0.6	0.8	6.0	7.6	60
Twin Circular	1.0	5	19.50	0.6	0.8	6.4	8.0	69
	1.5	5	13.30	0.7	0.8	7.4	9.0	95
	2.5	5	7.98	0.8	1.0	8.9	11.0	145
	4.0	5	4.95	0.8	1.1	10.1	12.0	185
3183Y	0.75	5	26.00	0.6	0.8	6.4	8.0	71
Three Core	1.0	5	19.50	0.6	0.8	6.8	8.4	82
Circular	1.5	5	13.30	0.7	0.9	8.0	9.8	118
	2.5	5	7.98	0.8	1.1	9.6	12.0	175
	4.0	5	4.95	0.8	1.2	11.0	13.0	237
3184Y	0.75	5	26.00	0.6	0.8	6.8	8.6	85
Four Core	1.0	5	19.50	0.6	0.9	7.6	9.4	105
Circular	1.5	5	13.30	0.7	1.0	9.0	11.0	150
	2.5	5	7.98	0.8	1.1	10.5	13.0	214
	4.0	5	4.95	0.8	1.2	12.0	14.0	290
3185Y	0.75	5	26.00	0.6	0.9	7.4	9.6	110
Five Core	1.0	5	19.50	0.6	0.9	8.3	10.0	130
Circular	1.5	5	13.30	0.7	1.1	10.0	12.0	185
	2.5	5	7.98	0.8	1.2	11.5	14.0	265
	4.0	5	4.95	0.8	1.4	13.5	15.5	340

309-Y

HEAT RESISTANT FLEXIBLE CORDS



STANDARD: BS6500/BS7919.

VOLTAGE RATING: 300/500V.

APPLICATION:
General purpose, heat resisting, indoors or outdoors in dry or damp situations. Suitable for portable tools, immersion heaters, washing machines, lawn mowers, refrigerators, especially in higher temperature zones.

CONSTRUCTION:
Two, Three or Four core circular flexible cords. Flexible plain copper conductors, heat resisting PVC insulated, cores laid up and heat resisting PVC sheathed.

CORE COLOURS:
Two core: Blue and Brown. Three core: Green/Yellow, Blue and Brown. Four core: Green/Yellow, Brown, Black and Grey.

SHEATH COLOUR: White. Other colours available to order.

MINIMUM BENDING RADIUS: 3D (Fixed), 6D (Flexing).

MAXIMUM CONDUCTOR TEMPERATURE: 90°C.
Note: Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductor is suitable for the conductor operating temperature (see regulation 512-02 of BS7671, the 16th Edition of IEE Wiring Regulations).

CURRENT RATING: Refer to Tables 4H3A and 4H3B in BS7671 or on page 103.

HARMONISED DESIGNATION: H05V2V2-F

Reference number	Nominal area of conductor	Class of conductor	Maximum resistance of conductor at 20°C	Insulation thickness	Sheath thickness	Mean overall diameter		Approx. nett weight
						Lower limit	Upper limit	
	mm^2		Ω/km	mm	mm	mm	mm	kg/km
3092Y	0.5	5	39.00	0.6	0.8	5.6	7.0	46
Twin	0.75	5	26.00	0.6	0.8	6.0	7.6	56
Circular	1.0	5	19.50	0.6	0.8	6.4	8.0	65
	1.5	5	13.30	0.7	0.8	7.4	9.0	80
	2.5	5	7.98	0.8	1.0	8.9	11.0	135
3093Y	0.5	5	39.00	0.6	0.8	5.8	7.2	56
Three	0.75	5	26.00	0.6	0.8	6.4	8.0	61
Core	1.0	5	19.50	0.6	0.8	6.8	8.4	77
Circular	1.5	5	13.30	0.7	0.9	8.0	9.8	108
	2.5	5	7.98	0.8	1.1	9.6	12.0	165
3094Y	0.5	5	39.00	0.6	0.8	6.4	7.8	68
Four	0.75	5	26.00	0.6	0.8	6.8	8.6	80
Core	1.0	5	19.50	0.6	0.9	7.6	9.4	100
Circular	1.5	5	13.30	0.7	1.0	9.0	11.0	140
	2.5	5	7.98	0.8	1.1	10.5	13.0	210

694AW33XLH to 694333XLH

ENERGY CABLE

STANDARD: BS 5467

VOLTAGE RATING: 1900/3300V (Um 3600V)

APPLICATION:
Industrial and mains distribution. Can be laid direct in the ground, or in ducts, clipped to surface, on trays or in free air. May be embedded in concrete.

CONSTRUCTION:
Single or Three core cables. Stranded plain copper conductors, XLPE insulated, cores laid up, extruded PVC bedding, galvanised steel wire armoured (Aluminium wires for single cores) and PVC sheathed.

CORE COLOURS:
Single core: Brown.
Three core: Brown, Black and Grey.

SHEATH COLOUR: Black

MINIMUM BENDING RADIUS: 6D circular conductors, 8D Shaped conductors.

MAXIMUM CONDUCTOR TEMPERATURE: 90°C
Note: Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductor is suitable for the conductor operating temperature (see regulation 512-02 of BS7671, the 16th Edition of IEE Wiring Regulations)

CURRENT RATING: Refer to ERA 69-30 Pt. V or on page 104-105.

Reduced Flame Propagation designs and OHLS® sheathed cables to BS 6724 are also available to order.

Reference number	Nominal area of conductor	Insulation thickness	Armour wire diameter	Approx. diameter under armour	Approx. overall diameter	Approx. cable weight	Maximum resistance of cable		Reactance @50Hz	Impedance AC @ 90°C	Star capacitance	Maximum armour resistance at 20°C
							DC at 20°C	AC at 90°C				
	mm^2	mm	mm	mm	mm	kg/km	Ω/km	Ω/km	Ω/km	Ω/km	μF/km	Ω/km
Single	50*	2.0	1.25	14.9	20.6	820	0.3870	0.4939	0.114	0.507	0.28	0.75
Core	70*	2.0	1.25	6.7	22.4	1050	0.2680	0.3409	0.107	0.357	0.33	0.67
Aluminium	95*	2.0	1.25	18.6	24.3	1340	0.1930	0.2468	0.102	0.267	0.38	0.61
Wire	120*	2.0	1.6	20.6	27.2	1690	0.1530	0.1960	0.101	0.220	0.39	0.42
Armoured	150*	2.0	1.6	22.2	28.8	1980	0.1593	0.1240	0.098	0.187	0.43	0.39
	185	2.0	1.6	24.0	30.8	2380	0.0991	0.1279	0.095	0.159	0.47	0.37
694AW33XLH	240	2.0	1.6	26.6	33.4	2970	0.0754	0.0985	0.092	0.134	0.54	0.34
	300	2.0	1.6	29.1	36.1	3600	0.0601	0.0796	0.089	0.120	0.59	0.31
	400	2.0	2.0	32.4	40.4	4610	0.0470	0.0635	0.089	0.109	0.62	0.22
	500	2.2	2.0	36.0	44.2	5690	0.0366	0.0513	0.087	0.101	0.66	0.20
	630	2.4	2.0	40.4	48.8	7170	0.0283	0.0419	0.085	0.095	0.70	0.18
	800	2.6	2.5	45.6	55.4	9160	0.0221	0.0349	0.085	0.092	0.71	0.13
	1000	2.8	2.5	50.6	60.6	11280	0.0176	0.0303	0.083	0.089	0.76	0.12
Three	16*	2.0	1.6	22.1	28.9	1610	1.1500	1.4665	0.104	1.470	0.19	1.90
Core	25*	2.0	1.6	25.4	32.2	2070	0.7270	0.9260	0.098	0.931	0.23	1.70
Steel	35*	2.0	1.6	28.0	35.0	2340	0.5240	0.6685	0.091	0.675	0.26	1.80
Wire	50	2.0	2.0	26.7	34.7	3050	0.3870	0.4939	0.088	0.502	0.28	1.30
Armour	70	2.0	2.0	29.8	38.0	3810	0.2680	0.3411	0.084	0.351	0.32	1.20
	95	2.0	2.0	33.0	41.4	4740	0.1930	0.2470	0.081	0.260	0.37	1.10
694333XLH	120	2.0	2.5	36.1	45.7	6080	0.1530	0.1963	0.079	0.211	0.40	0.76
	150	2.0	2.5	38.7	48.5	7020	0.1240	0.1596	0.077	0.177	0.43	0.71
	185	2.0	2.5	41.9	51.9	8280	0.0991	0.1283	0.076	0.149	0.48	0.65
	240	2.0	2.5	46.7	56.9	10320	0.0754	0.0988	0.074	0.123	0.52	0.59
	300	2.0	2.5	50.8	61.2	12310	0.0601	0.0800	0.073	0.108	0.58	0.55
	400	2.0	2.5	55.8	66.6	14790	0.0470	0.0641	0.071	0.096	0.64	0.50

* Circular compacted conductors

694-XLH

ENERGY CABLE

STANDARD: BS 5467

VOLTAGE RATING: 600/1000V

APPLICATION:
Industrial wiring and mains distribution. Can be laid direct in the ground, or in ducts, clipped to surface, on trays or in free air. May be embedded in concrete.

CONSTRUCTION:
Single, Two, Three, Four and Five core cables. Stranded plain copper conductors, XLPE insulated, cores laid up, extruded PVC bedding, galvanised steel wire armoured (Aluminium wires for single cores) and PVC sheathed.

CORE COLOURS:
Single core: Brown or Blue.
Two core: Brown and Blue.
Three core: Brown, Black and Grey.
Four core: Brown, Black, Grey and Blue.
Five core: Brown, Black, Grey, Green/Yellow and Blue.

SHEATH COLOUR: Black. Other colours available to order.

BASEC: Certified

MINIMUM BENDING RADIUS: 6D circular conductors, 8D shaped conductors

MAXIMUM CONDUCTOR TEMPERATURE: 90°C
Note: Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductor is suitable for the conductor operating temperature (see regulation 512-02 of BS7671, the 16th Edition of IEE Wiring Regulations).

CURRENT RATING: Refer to tables 4E4A & 4E4B in BS7671 or ERA 69-30 Pt. V or on page 102-105.

Cables with reduced Flame Propagation and designs with alternative core identification are available to order.

Reference number	Nominal area of conductor	Insulation thickness	Armour wire diameter	Approx. diameter under armour	Approx. overall diameter	Approx. cable weight	Maximum resistance of cable		Reactance @50Hz	Impedance AC at 90°C	Star capacitance	Maximum armour resistance at 20°C
							DC at 20°C	AC at 90°C				
	mm^2	mm	mm	mm	mm	kg/km	Ω/km	Ω/km	Ω/km	Ω/km	μF/km	Ω/km
Single	#50	1.0	0.9	12.7	17.5	800	0.3870	0.4938	0.104	0.505	0.41	1.30
Core	#70	1.1	1.25	14.7	20.2	960	0.2680	0.3410	0.101	0.356	0.46	0.75
Aluminium	#95	1.1	1.25	16.6	22.3	1240	0.1930	0.2469	0.097	0.265	0.53	0.67
Wire	#120	1.2	1.25	18.5	24.2	1510	0.1530	0.1962	0.094	0.217	0.56	0.61
Armour	#150	1.4	1.6	20.8	27.4	1900	0.1240	0.1594	0.095	0.186	0.52	0.42
694AWXLH	*185	1.6	1.6	23.2	30.0	2320	0.0991	0.1280	0.093	0.158	0.54	0.38
	*240	1.7	1.6	26.0	32.8	2930	0.0754	0.0985	0.090	0.134	0.59	0.34
	*300	1.8	1.6	28.6	35.6	3580	0.0601	0.0797	0.088	0.119	0.63	0.31
	*400	2.0	2.0	32.4	40.4	4600	0.0470	0.0635	0.089	0.109	0.62	0.22
	*500	2.2	2.0	36.0	44.2	5770	0.0366	0.0513	0.087	0.101	0.66	0.20
	*630	2.4	2.0	40.4	48.8	7250	0.0283	0.0419	0.085	0.095	0.70	0.18
	*800	2.6	2.5	45.6	55.4	9381	0.0221	0.0349	0.087	0.094	0.85	0.13
	*1000	2.8	2.5	50.6	60.6	11540	0.0176	0.0303	0.085	0.090	0.87	0.12

Reference number	Nominal area of conductor	Insulation thickness	Armour wire diameter	Approx. diameter under armour	Approx. overall diameter	Approx. cable weight	Maximum resistance of cable DC at 20°C	Maximum resistance of cable AC at 90°C	Reactance @50HzAC	Impedance at 90°C	Star capacitance	Maximum armour resistance at 20°C
	mm^2	mm	mm	mm	mm	kg/km	Ω/km	Ω/km	Ω/km	Ω/km	μF/km	Ω/km
Two	*1.5	0.6	0.9	7.3	12.1	302	12.1000	15.4280	0.104	15.428	0.23	10.20
Core	*2.5	0.7	0.9	8.5	13.6	346	7.4100	9.4480	0.101	9.449	0.25	8.80
Steel	*4	0.7	0.9	9.4	14.7	410	4.6100	5.8780	0.099	5.879	0.27	7.90
Wire	*6	0.7	0.9	10.5	15.9	499	3.0800	3.9270	0.094	3.928	0.30	7.00
Armour	#10	0.7	0.9	12.3	18.0	648	1.8300	2.3330	0.093	2.335	0.32	6.00
6942XLH	#16	0.7	1.25	14.3	20.4	978	1.1500	1.4660	0.088	1.469	0.35	3.70
	25	0.9	1.25	14.7	20.4	1290	0.7270	0.9260	0.082	0.930	0.38	3.70
	35	0.9	1.6	16.8	23.3	1500	0.5240	0.6685	0.077	0.673	0.42	2.60
	50	1.0	1.6	19.0	25.8	1890	0.3870	0.4940	0.076	0.500	0.45	2.30
	70	1.1	1.6	22.0	29.0	2450	0.2680	0.3412	0.075	0.349	0.49	2.00
	95	1.1	2.0	25.1	33.1	3300	0.1930	0.2471	0.074	0.258	0.55	1.40
	120	1.2	2.0	27.9	36.1	4020	0.1530	0.1964	0.072	0.209	0.57	1.30
	150	1.4	2.0	30.9	39.3	4750	0.1240	0.1597	0.073	0.176	0.57	1.20
	185	1.6	2.5	34.9	44.7	6180	0.0991	0.1284	0.073	0.148	0.55	0.82
	240	1.7	2.5	39.0	49.0	7570	0.0754	0.0989	0.072	0.122	0.60	0.73
	300	1.8	2.5	43.3	53.5	9180	0.0601	0.0801	0.072	0.107	0.62	0.67
	400	2.0	2.5	48.4	59.0	10500	0.0470	0.0641	0.071	0.096	0.64	0.59
Three	*1.5	0.6	0.9	7.8	12.6	330	12.1000	15.4280	0.104	15.428	0.23	9.50
Core	*2.5	0.7	0.9	9.2	14.1	390	7.4100	9.4480	0.101	9.449	0.25	8.20
Steel	*4	0.7	0.9	10.0	15.3	464	4.6100	5.8780	0.099	5.879	0.27	7.50
Wire	*6	0.7	0.9	11.2	16.6	568	3.0800	3.9270	0.094	3.928	0.30	6.70
Armour	#10	0.7	1.25	13.1	19.5	866	1.8300	2.3330	0.093	2.335	0.32	4.00
6943XLH	#16	0.7	1.25	15.3	21.6	1152	1.1500	1.4660	0.088	1.469	0.35	3.50
	#25	0.9	1.6	18.9	25.5	1800	0.7270	0.9260	0.082	0.930	0.37	2.50
	#35	0.9	1.6	21.3	28.0	2230	0.5240	0.6685	0.077	0.673	0.42	2.30
	50	1.0	1.6	21.7	28.5	2490	0.3870	0.4940	0.076	0.500	0.45	2.00
	70	1.1	1.6	25.2	32.2	3290	0.2680	0.3412	0.075	0.349	0.49	1.80
	95	1.1	2.0	28.8	37.0	4440	0.1930	0.2471	0.074	0.258	0.55	1.30
	120	1.2	2.0	32.0	40.4	5470	0.1530	0.1964	0.072	0.209	0.57	1.20
	150	1.4	2.5	35.9	45.5	6930	0.1240	0.1597	0.073	0.176	0.55	0.78
	185	1.6	2.5	40.0	49.8	8350	0.0991	0.1284	0.073	0.148	0.55	0.71
	240	1.7	2.5	44.9	55.1	10400	0.0754	0.0989	0.072	0.122	0.60	0.63
	300	1.8	2.5	49.8	60.2	12600	0.0601	0.0801	0.072	0.107	0.62	0.58
	400	2.0	2.5	55.8	66.6	14600	0.0470	0.0641	0.071	0.096	0.64	0.52
Four	*1.5	0.6	0.9	8.5	13.5	365	12.1000	15.4280	0.104	15.428	0.23	8.80
Core	*2.5	0.7	0.9	9.9	15.0	438	7.4100	9.4480	0.101	9.449	0.25	7.70
Steel	*4	0.7	0.9	11.0	16.4	532	4.6100	5.8780	0.099	5.879	0.27	6.80
Wire	*6	0.7	1.25	12.3	18.7	764	3.0800	3.9270	0.094	3.928	0.30	4.30
Armour	#10	0.7	1.25	14.5	21.1	1013	1.8300	2.3330	0.093	2.336	0.32	3.70
6944XLH	#16	0.7	1.25	17.0	22.9	1360	1.1500	1.4660	0.088	1.469	0.35	3.10
	#25	0.9	1.6	21.0	27.6	2160	0.7270	0.9260	0.082	0.930	0.37	2.30
	#35	0.9	1.6	23.6	30.4	2690	0.5240	0.6685	0.077	0.673	0.42	2.00
	50	1.0	1.6	25.0	32.0	3130	0.3870	0.4940	0.076	0.500	0.45	1.80
	70	1.1	2.0	29.5	37.7	4500	0.2680	0.3412	0.075	0.349	0.48	1.20
	95	1.1	2.0	33.3	41.7	5600	0.1930	0.2471	0.074	0.258	0.55	1.10
	120	1.2	2.5	37.5	47.1	7400	0.1530	0.1964	0.072	0.209	0.55	0.76
	150	1.4	2.5	41.6	51.4	8780	0.1240	0.1597	0.073	0.176	0.55	0.68
	185	1.6	2.5	46.4	56.6	10630	0.0991	0.1284	0.073	0.148	0.55	0.61
	240	1.7	2.5	52.6	63.0	13390	0.0754	0.0989	0.072	0.122	0.58	0.54
	300	1.8	2.5	58.0	68.8	16290	0.0601	0.0801	0.072	0.107	0.62	0.49
	400	2.0	3.15	65.4	78.1	19800	0.0470	0.0641	0.071	0.096	0.63	0.35
Five	*1.5	0.6	0.9	9.7	14.3	410	12.1000	15.4280	0.104	15.428	0.23	8.20
Core	*2.5	0.7	0.9	11.7	16.3	470	7.4100	9.4480	0.101	9.449	0.25	6.80
Steel	*4	0.7	0.9	13.0	17.8	710	4.6100	5.8780	0.099	5.879	0.27	6.20
Wire	*6	0.7	1.25	14.5	20.0	876	3.0800	3.9270	0.094	3.928	0.30	3.90
Armour	#10	0.7	1.25	17.2	22.9	1165	1.8300	2.3330	0.093	2.336	0.32	3.40
	#16	0.7	1.6	20.0	26.6	1742	1.1500	1.4660	0.088	1.469	0.35	2.20
	#25	0.9	1.6	24.7	31.5	2323	0.7270	0.9260	0.082	0.930	0.37	1.80
	#35	0.9	1.6	27.8	34.8	2932	0.5240	0.6685	0.077	0.673	0.42	1.60
	#50	1.0	2.0	32.4	40.4	4192	0.3870	0.4940	0.076	0.500	0.45	1.10
	#70	1.1	2.0	37.9	46.3	5336	0.2680	0.3412	0.075	0.349	0.48	0.90

Shaped conductors unless otherwise stated. * Circular, non-compacted, conductors. # Compacted circular conductors.

6945XL7W to 69448XL7W

MULTICORE AUXILLIARY CABLE

STANDARD: BS 5467

VOLTAGE RATING: 600/1000V

APPLICATION:
Industrial wiring for remote control and telemetry circuits etc. Can be laid direct in the ground, or in ducts, clipped to surface, on trays or in free air. May be embedded in concrete.

CONSTRUCTION:
Multi-core cables. Stranded plain copper conductors, XLPE insulated, cores laid up, extruded PVC bedding, galvanised steel wire armoured and PVC sheathed.

CORE COLOURS:
White with Black numerals

SHEATH COLOUR: Black. Other colours available to order.

BASEC: Certified

MINIMUM BENDING RADIUS: 6D

MAXIMUM CONDUCTOR TEMPERATURE: 90°C.
Note: Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductor is suitable for the conduct or operating temperature (see regulation 512-02 of BS7671, the 16th Edition of IEE Wiring Regulations)

CURRENT RATING: Available upon request.

Reduced Flame Propagation designs are available to order.

Number of cores	Reference number	Nominal area of conductor	Approx. diameter under armour	Approx. diameter over armour	Approx. overall diameter	Approx. nett weight
		mm^2	mm	mm	mm	kg/km
Five	6945XL7W	1.5	9.5	11.3	14.3	420
		2.5	11.2	13.0	16.1	520
		4.0	12.7	15.2	17.8	750
Seven	6947XL7W	1.5	10.2	12.1	15.2	470
		2.5	12.3	14.1	17.1	600
		4.0	14.0	16.5	19.7	890
Twelve	69412XL7W	1.5	13.7	16.2	19.4	780
		2.5	16.3	18.8	22.4	1000
		4.0	19.1	22.2	25.7	1410
Nineteen	69419XL7W	1.5	16.2	18.7	22.2	1000
		2.5	19.9	23.1	26.6	1540
		4.0	22.5	25.7	29.3	1830
Twenty-seven	69427XL7W	1.5	20.0	23.2	26.7	1500
		2.5	24.0	27.2	30.7	1950
		4.0	27.5	30.7	34.4	2500
Thirty-seven	69437XL7W	1.5	22.3	25.5	29.0	1800
		2.5	26.9	30.1	33.8	2350
		4.0	31.0	35.0	39.2	3100
Forty-eight	69448XL7W	1.5	25.4	28.6	32.7	2050
		2.5	31.0	35.0	39.3	3100
		4.0	35.3	39.3	44.1	4100

6U81SH

INDUSTRIAL CABLE

STANDARD: BS 7889

VOLTAGE RATING: 600/1000V

APPLICATION:
Industrial wiring. Can be clipped to surface, on trays or in free air where there is little risk of mechanical damage. Suitable for laying into trunking or conduit etc. when mechanical protection is required. May be embedded in concrete.

CONSTRUCTION:
Single core cable. Stranded plain copper conductor, XLPE insulated and PVC sheathed.

CORE COLOURS: Brown or Blue

SHEATH COLOURS: Black. Other colours available to order.

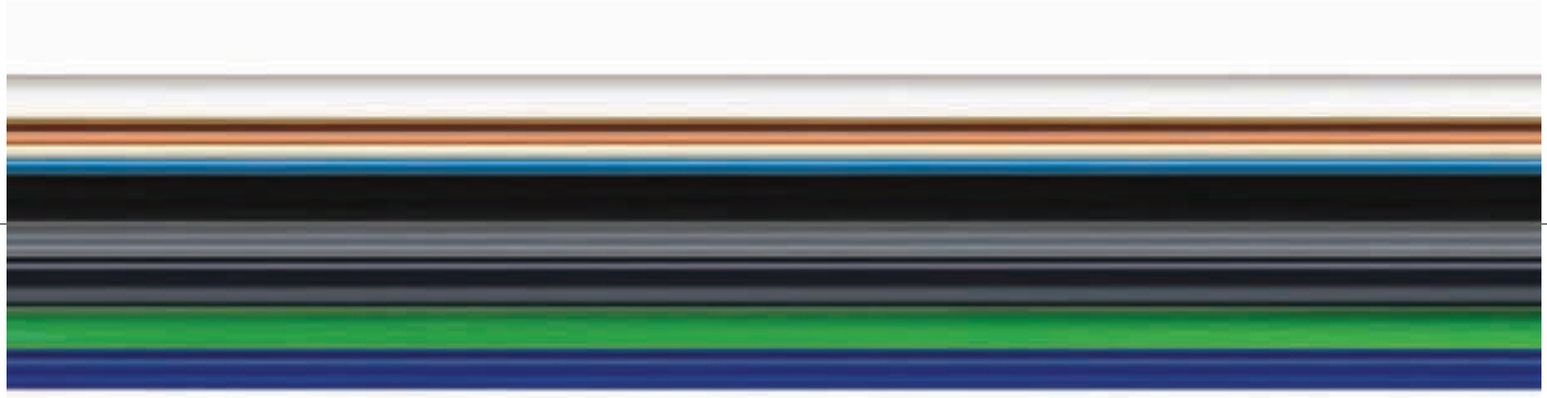
BASEC: Certified

MAXIMUM CONDUCTOR TEMPERATURE: 90°C.
Note: Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductor is suitable for the conductor operating temperature (see regulation 512-02 of BS7671, the 16th Edition of IEE Wiring Regulations).

CURRENT RATING: Refer to Tables 4E1A & 4E1B in BS7671 "A Closer Look at Cable" or on page 95-97.

Nominal area of conductor mm²	Insulation thickness mm	Sheath thickness mm	Mean overall diameter mm	Approx nett weight (upper limit) kg/km	Minimum bending radius factor
#50	1.0	1.4	13.7	541	4D
#70	1.1	1.4	15.8	749	4D
#95	1.1	1.5	17.5	1000	4D
#120	1.2	1.5	19.3	1241	4D
#150	1.4	1.6	21.5	1523	4D
185	1.6	1.6	24.7	1942	4D
240	1.7	1.7	27.7	2514	6D
300	1.8	1.8	30.6	3125	6D
400	2.0	1.9	34.2	3967	6D
500	2.2	2.0	38.0	5063	6D
630	2.4	2.2	42.9	6491	6D
800	2.6	2.3	47.8	8233	6D
1000	2.8	2.4	53.0	10305	6D

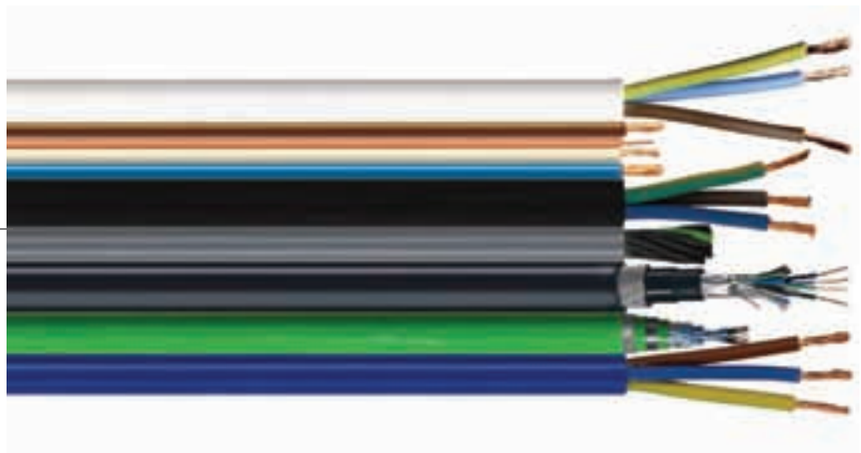
Circular compacted conductors



Draka Special Cables

To complement the fire performance, building wire and power cable range offered by Draka, we also manufacture a range of special purpose cables.

With high and low temperature performance cables through to data transmission and telemetry, we have cables for every application.



HITUF®

ENERGY CABLE

STANDARD: Draka

VOLTAGE RATING: 600/1000V

APPLICATION:
Industrial wiring and mains distribution. Particularly suitable for warehousing, golf courses, flood lighting, farms, water works and gantry wiring. Suitable clipped direct on tray, buried in concrete and in ducting. Can be laid direct in the ground subject to additional mechanical protection as stated in BS7671.

CONSTRUCTION:
Three and four core plain copper stranded conductors, XLPE insulation, PVC inner covering, high impact PVC sheath

CORE COLOURS: Three core: Green/Yellow, Blue and Brown. Four core: Green/Yellow, Brown, Black and Grey.

SHEATH COLOUR: Black

MINIMUM BENDING RADIUS: 6D

MAXIMUM CONDUCTOR TEMPERATURE: 70°C

CURRENT RATING: Refer to tables 4D2A and 4D2B in BS7671 or on pages 93-94.

Reference number	Nominal Cross-Sectional Area mm^2	Number of Cores	Nominal Diameter of Cable mm	Approx Nett Weight kg/km	Gland Male Conduit Thread Size 20mm	25mm	Fixing Clip Ref.
97HUF3/1.5	1.5	TWO CORE	9.7	140	252/93	253/94	NX4
97HUF3/2.5	2.5	AND EARTH	11.0	190	252/93	253/94	NX4
97HUF4/1.5	1.5	THREE CORE	10.4	160	252/93	253/94	NX4
97HUF4/2.5	2.5	AND EARTH	11.9	225	252/93	253/94	NX5

Other sizes available upon request

CABLE ACCESSORIES

Nylon glands: HITUF® cables can be terminated using impact resistant nylon glands fitted with a nitrile rubber bush to provide weatherproof entry. Where these cables are to be installed in Zone 1 and Zone 2 fire risk areas, a flame proof gland should be used.

Nylon cable clip: These clips are impact resistant, weatherproof and resistant to a wide range of chemical attack. The interior edges are radiused.

PW01

PANEL WIRES

Flexible Tri-rated hook up wires Type PW01 have been specifically designed for use in the switch, control, relay and instrumentation panels of power circuits and for purposes such as internal connectors in rectifier equipment, motor starters and controllers.

By combining three national standards in one product, PW01 is suitable for equipment installations required to meet both European and North America wiring regulations and codes of practice. This facilitates design, simplifies purchasing and cuts inventory costs.

CONSTRUCTION: Flexible plain annealed copper wire conductor to BS 6360 (Class 5). Plasticised PVC insulation specially formulated to combine excellent electrical performance with robust mechanical properties, yet still complying with UL, CSA and BS tests for spread of flame on a single vertical cable.

TEMPERATURE RANGE:
Recognised by UI and CSA as heat-resisting with a maximum conductor operating temperature of 105ºC. NOTE: BS6231 specifies a maximum conductor operating temperature of 90ºC for continuous use. Under certain conditions these cables can be operated at up to 105ºC, 'annex a' of BS 6231 gives full details. PW01 has good low temperature flexibility, meeting cold bend tests down to -30ºC.

MAXIMUM WORKING VOLTAGE:
UL, CSA 600V r.m.s. BS6231 (Uo/U) 600/1000V r.m.s.

OIL RESISTANCE:
PW01 is recognised by UL and CSA as resistant to oil at temperatures up to 60ºC.

SPREAD OF FLAME: VW-1, FT-1, BS 4066 : Part 1, EN 50265 and IEC 60332-1

APPLICATION STANDARDS:
1. Underwriters Laboratory Listed. Conforms to subject 758 Appliance Wiring Material for Styles 1015, 1028, 1283 and 1284 as applicable. UL File No E54385.

2. Canadian Standards Association approved. Complies with Standard C22.2, No.127, Type TEW. CSA File NO. LL43273

3. British Standards. Manufactured to BS 6231 Type CK.

Reference Number	Nominal Cross Sectional Area mm^2	Class of Conductor	Approx AWG	Nominal Conductor Diameter mm	Nominal Diameter of Cable mm	Approx Nett Weight kg/km	UL Style No.
PW01-0.50	0.5	5	22	0.93	2.7	12	1015
PW01-0.75	0.75	5	20	1.14	2.9	15	1015
PW01-1.0	1.0	5	18	1.32	3.1	18	1015
PW01-1.5	1.5	5	16	1.6	3.4	23	1015
PW01-2.5	2.5	5	14	2.0	3.8	34	1015
PW01-4.0	4.0	5	12	2.6	4.4	50	1015
PW01-6.0	6.0	5	10	3.3	5.1	71	1015
PW01-10.0	10.0	5	8	4.2	6.8	123	1028
PW01-16.0	16.0	5	6	5.7	9.2*	209	1283
PW01-25.0	25.0	5	4	7.1	10.6	296	1283
PW01-35.0	35.0	5	2	8.5	12.0	400	1283
PW01-50.0	50.0	5	1	10.3	14.7*	582	1284
PW01-70.0	70.0	5	2/0	12.4	16.8*	796	1284
PW01-95.0	95.0	5	3/0	14.5	18.9	1025	1284
PW01-120.0	120.0	5	4/0	16.0	20.4	1282	1284

*Marginally exceeds diameter of BS 6231

H07RN-F

FLEXIBLE RUBBER CABLE

STANDARD: BS7919/HD22.1, HD22.4

VOLTAGE RATING: 450/750V

APPLICATION:
Drakaflex rubber insulated and sheathed cables are intended for flexible connection to electrical equipment. They are suitable for both indoor and outdoor use in industrial and agricultural plant and on constuction sites. Drakaflex cables are also suitable for areas of medium mechanical stress and can be used in hot, cold, damp environments or in temporary immersion in water. They are also oil resistant.

CONSTRUCTION:
Conductors are plain copper class 5 flexibles. Insulation EPR rubber.

CORE COLOURS: According to HD308.

SHEATH: Synthetic Rubber - Black.

MINIMUM BENDING RADIUS: upto 25mm² 6D

MAXIMUM CONDUCTOR TEMPERATURE: 60°C.

CURRENT RATING:
<4mm² Table 4H3A, 4H3B in BS 7671 or on page 103
>4mm² Table 4H1A in BS 7671

Harmonised Designation H07RN-F

Number of cores x Cross sectional area of conductors (mm^2)	Class Of Conductor	Maximum Resistance of conductor @20°C Ω/km	Insulation Thickness mm	Mean Overall Diameter mm	Approx Nett Weight kg/km
1 x 1.5	5	13.000	0.86	7	58
1x2.5	5	7.980	0.96	7	75
1x6	5	3.300	1.17	10	138
1x10	5	1.910	1.47	12	204
1x16	5	1.210	1.74	13	286
1x25	5	0.780	2.03	15	390
1x35	5	0.554	2.31	17	523
1x50	5	0.386	2.66	19	699
1x70	5	0.272	2.98	22	950
1x95	5	0.206	3.30	24	1202
1x120	5	0.161	3.37	27	1524
1x150	5	0.129	3.69	29	1839
1x185	5	0.106	4.68	31	2184
1x240	5	0.080	5.26	35	2840
1x300	5	0.064	4.98	38	3413
2x1	5	19.500	0.84	10	112
2x1.5	5	13.300	0.86	10	136
2x2.5	5	7.980	0.96	12	190
2x4	5	4.950	1.07	14	271
2x6	5	3.300	1.17	16	372
2x10	5	1.190	1.47	22	643
2x16	5	1.210	1.74	24	859

Number of cores x Cross sectional area of conductors (mm^2)	Class Of Conductor	Maximum Resistance of conductor @20°C Ω/km	Insulation Thickness mm	Mean Overall Diameter mm	Approx Nett Weight kg/km
3x1	5	19.500	0.84	10	134
3x1.5	5	13.300	0.86	11	162
3x2.5	5	7.980	0.96	13	229
3x4	5	4.950	1.07	15	329
3x6	5	3.300	1.17	18	452
3x10	5	1.190	1.47	23	776
3x16	5	1.210	1.74	26	1058
3x25	5	0.780	2.03	30	1473
3x35	5	0.554	2.31	34	1728
3x50	5	0.386	2.66	39	2302
3x70	5	0.272	2.98	46	3094
3x95	5	0.206	3.30	50	3920
3x120	5	0.161	3.37	56	4936
4x1	5	19.500	0.84	11	163
4x1.5	5	13.300	0.86	12	197
4x2.5	5	7.980	0.96	14	279
4x4	5	4.950	1.07	16	402
4x6	5	3.300	1.17	20	561
4x10	5	1.190	1.47	25	935
4x16	5	1.210	1.74	28	1286
4x25	5	0.780	2.03	34	1692
4x32	5	0.554	2.31	38	2266
4x50	5	0.386	2.66	43	3021
4x70	5	0.272	2.98	50	4087
4x95	5	0.206	3.30	55	5227
4x120	5	0.161	3.37	62	6521
5x1	5	19.500	0.84	12	195
5x1.5	5	13.300	0.86	13	234
5x2.5	5	7.980	0.96	15	348
5x4	5	4.950	1.07	18	504
5x6	5	3.300	1.17	22	704
5x10	5	1.190	1.47	29	1155
5x16	5	1.210	1.74	31	1482
5x25	5	0.780	2.03	37	2123
6x1.5	5	19.500	0.84	16	329
6x2.5	5	13.300	0.86	18	461
6x4	5	7.980	0.96	21	671
12x1.5	5	19.500	0.84	21	548
12x2.5	5	13.300	0.86	24	758
12x4	5	7.980	0.96	29	1124
18x1.5	5	19.500	0.84	24	777
18x2.5	5	13.300	0.86	28	1103
18x4	5	7.980	0.96	34	1637
24x1.5	5	19.500	0.84	28	999
24x2.5	5	13.300	0.86	33	1430
36x1.5	5	19.500	0.84	32	1378
36x2.5	5	13.300	0.86	37	2029

YY, SY AND CY CONTROL

FLEXIBLE CONTROL CABLE

STANDARD: Generally to BS6500 and VDE 0250

VOLTAGE RATING: 300/500V

APPLICATION:
Suitable for use as signal and control cable for machine tools, assembly lines and plant engineering as a flexible cable between fixed and mobile equipment.

YY CONSTRUCTION:
Plain copper flexible Class 5 conductors to BS 6360 / VDE 0295. PVC Insulation, cores twisted together

CORE COLOURS: Black cores in accordance to VDE 0293. Earth conductor - Green/Yellow

SHEATH: Grey PVC outer sheath

MINIMUM BENDING RADIUS: 6D

MAXIMUM CONDUCTOR TEMPERATURE: 70ºC.

MINIMUM TEMPERATURE FOR FIXED INSTALLATIONS: -25ºC

SY CONSTRUCTION:
Plain copper flexible Class 5 conductors to BS 6360 / VDE 0295. PVC Insulation, PVC bedding, bright annealed galvanised steel wire braid

CORE COLOURS: Black cores in accordance to VDE 0293. Earth conductor - Green/Yellow

SHEATH: Clear PVC outer sheath

MINIMUM BENDING RADIUS: 6D

MAXIMUM CONDUCTOR TEMPERATURE: 70ºC.

MINIMUM TEMPERATURE FOR FIXED INSTALLATIONS: -25ºC

CY CONSTRUCTION:
Plain copper flexible Class 5 conductors to BS 6360 / VDE 0295. PVC Insulation, polyester binder tape, tinned annealed copper wire braid.

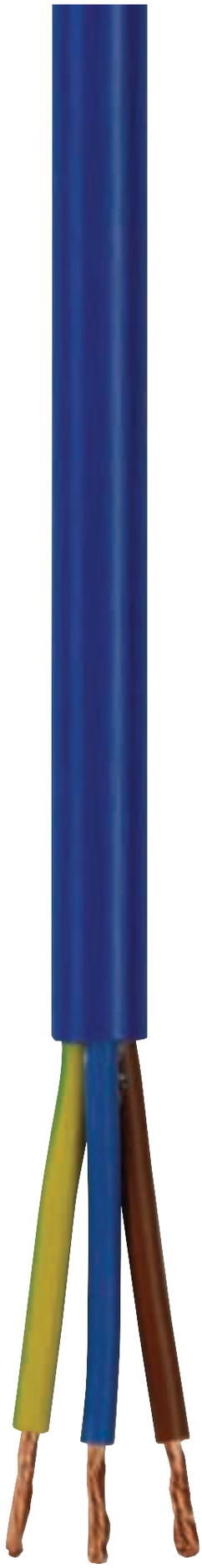
CORE COLOURS: Black cores in accordance to VDE 0293. Earth conductor - Green/Yellow

SHEATH: Grey PVC

MINIMUM BENDING RADIUS: 6D

MAXIMUM CONDUCTOR TEMPERATURE: 70ºC.

MINIMUM TEMPERATURE FOR FIXED INSTALLATIONS: -25ºC



3183Y - ARCTIC

LOW TEMPERATURE FLEXIBLE CORD

STANDARD: BS7919 Table 44

VOLTAGE RATING: 300/500V

APPLICATION:
These power supply leads remain flexible at temperatures lower than standard PVC cords and as such are ideal for outdoor use with tempory traffic lights and construction sites for use with 110V transformers and portable tools. Flexible cords H05VV-F are not suitable for these applications. 3183 Arctic grades are referenced in BS5740-3 (Guide to use) as suitable for minimum installation and handling of minus 25 degrees C.

CONSTRUCTION:
Flexible Class 5 conductor, low temperature PVC insulation, laid up low temperature PVC Sheath

CORE COLOURS: Three core green/yellow, blue, brown

SHEATH: Yellow, blue

MINIMUM BENDING RADIUS: 3D (fixed), 6D (flexing)

MAXIMUM CONDUCTOR TEMPERATURE: 60°C.

CURRENT RATING: Refer to tables 4H3A and 4H3B in BS7671 or on page 103.

NYM-J / NYM-O

PVC INSTALLATION CABLES

STANDARD: DIN VDE 0250

VOLTAGE RATING: 300/500V

APPLICATION:
For industrial and wiring installation in air or in cable management systems, embedded in masonry or cement. Not suitable for laying in ground.

CONSTRUCTION:
Solid or stranded plain copper conductors to VDE0295. PVC insulation, PVC sheath.

INSULATION COLOURS: Three Core: Green/Yellow, Blue, Brown.

SHEATH COLOUR: Grey

MINIMUM BENDING RADIUS: 4D

MAXIMUM CONDUCTOR TEMPERATURE: 70°C

Number of cores x nominal cross section n x mm²	Class of conductor	Nominal thickness of insulation mm	Nominal thickness of sheath mm	Nominal overall diameter min mm	Nominal overall diameter max mm	Current carrying capacity of cable A	Approximate weight of cable kg/km
NYM-O							
2 x 1.5	1	0.6	1.4	7.8	9.4	20	117
2 X 2.5	1	0.7	1.4	8.9	10.8	27	160
NYM-J							
3 X 1.5	1	0.6	1.4	8.2	9.9	17	136
3 X 2.5	1	0.7	1.4	9.4	11.4	24	189
3 X 4	1	0.8	1.4	10.8	13.0	31	250
4 X 1.5	1	0.6	1.4	8.8	10.7	18	161
4 X 2.5	1	0.7	1.4	10.2	12.3	25	228
4 X 4	1	0.8	1.6	12.1	14.6	33	322
4 X 6	1	0.8	1.6	13.3	16.1	41	400
4 X 10	1	1.0	1.6	16.1	19.5	60	620
5 X 1.5	1	0.6	1.4	9.5	11.5	18	188
5 X 2.5	1	0.7	1.4	11.0	13.3	25	280
5 X 4	1	0.8	1.6	13.2	16.0	33	380
5 X 6	1	0.8	1.6	14.5	17.5	41	482
5 X 10	1	1.0	1.6	17.7	21.3	60	735
7 X 1.5	1	0.6	1.4	10.5	12.6	13	240
7 X 2.5	1	0.7	1.6	12.6	15.2	18	365

Type 8, Type 16

OVERHEAD LINE

STANDARD: BS 6485

VOLTAGE RATING:
Type 8 is intended for use only where the operating voltage of the power lines does not exceed 650V between conductors or 250V to earth.

Type 16 is intended for use only where the operating voltage of the power lines exceed 650V between conductors and 250V to earth, but does not normally exceed 11000V between conductors or 6600V to earth.

APPLICATION:
Overhead power lines, Particularly suitable where power lines cross telecommunication lines. Also Type 8 is intended to provide protection to the public against accidental contact with low voltage power line, for short periods.

CONSTRUCTION:
Single core. Hard drawn plain copper stranded conductor, PVC Covered. Type 8 - 0.8mm radial thickness. Type 16 - 1.6mm radial thickness.

COLOURS: Type 8: Black. Type 16 Green.

MAXIMUM CONDUCTOR TEMPERATURE: 70°C

CURRENT RATING: Available on request.

Alternative conductor stranding to BS 7884 available to order.

Reference number	Nominal area of conductor	Nominal number and diameter of wires in conductor	Conductor resistance at 20°C	Conductor overall diameter	Approx. breaking load	Approx. overall diameter		Approx. nett weight	
						Type 8	Type 16	Type 8	Type 16
	mm^2	no/mm	Ω/km	mm	kN	mm	mm	kg/km	kg/km
Type 8	14	7/1.60	1.298	4.80	5.744	6.8	8.4	160	190
and	16	3/2.65	1.104	5.69	6.59	7.7	9.3	180	220
Type 16	32	3/3.75	0.5514	8.05	12.71	10.5	12.1	350	390
	35	7/2.50	0.5319	7.50	14.097	9.9	11.5	360	400
	70	7/3.55	0.2637	10.65	26.88	13.5	14.7	690	750
	100	7/4.30	0.1804	12.90	37.64	15.7	16.9	990	1060

CAT 5E

DATA TRANSMISSION CABLE

STANDARD: EIA/TIA 568A, ISO/IEC 11801 2ND ED, IEC 61156-5, EN50173, EN 50288-3-1

VOLTAGE RATING:

APPLICATION:
Category 5e is a twisted pair cable designed for high signal integrity with added specification over Cat 5 for far end cross talk. This cable is used for computer networks such as ethernet and is also used to carry many other signals (basic vioce services, Token ring, ATM etc)

CONDUCTOR: Bare copper wire 0.5mm diameter (AWG24)

INSULATION: Polyethylene 0.9mm diameter

TWISTING: 2 cores to the pair

CABLE LAY UP: 4 pairs to the core

SHEATH: PVC grey, OHLS violet

MINIMUM BENDING RADIUS: Installation 8D, Installed 4D

TEMPERATURE RANGE:
During operation -20˚C upto +60˚C
During installation 0˚C upto +50˚C

DC LOOP RESISTANCE: ≤ 190 Ω/km

RESISTANCE UNBALANCE: ≤ 2%

INSULATION RESISTANCE (500V): ≥ 2000 MΩ/km

CAPACITANCE AT 800Hz: nom. 48nF/km

CAPACITANCE UNBALANCE (PAIR TO GROUND): ≤ 1500 pF/km

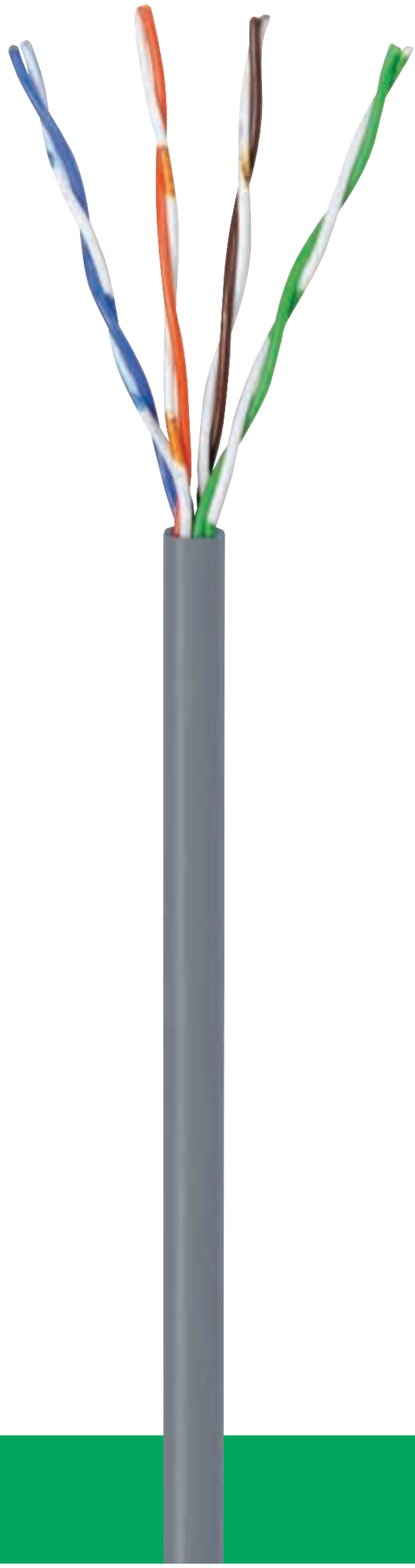
CHARACTERISTIC IMPEDANCE (1-100 MHz): (100 ± 15)Ω

NOMINAL VELOCITY OF PROPAGATION: Approx 67%

PROPAGATION DELAY: Nominal ≤ 535 ns/100m

DELAY SKEW: Nominal ≤ 20 ns/100m

TEST VOLTAGE (DC, 1 min) CORE/CORE: 1000V



CAT 6

DATE TRANSMISSION CABLE

STANDARD: EIA/TIA 568A, ISO/IEC 11801 2ND ED, IEC 61156-5, EN50173, EN 50288-3-1

VOLTAGE RATING:

APPLICATION:
Twisted pair cable for gigabite ethernet and other network protocols. Backward compatible with Cat 5e performance of upto 250Mhz is achieved.

CONDUCTOR: Bare copper wire 0.57mm diameter (AWG23)

INSULATION: Polyethylene 1mm diameter

TWISTING: 2 cores to the pair

CABLE LAY UP: 4 pairs to the core. Non metallic cross separator (spline)

SHEATH: PVC grey, OHLS violet

MINIMUM BENDING RADIUS: Installation 8D, Installed 4D

TEMPERATURE RANGE:
During operation -20˚C upto +60˚C
During installation 0˚C upto +50˚C

DC LOOP RESISTANCE: ≤ 176 Ω/km

RESISTANCE UNBALANCE: ≤ 2%

INSULATION RESISTANCE (500V): ≥ 5000 MΩ/km

CAPACITANCE AT 800Hz: nom. 48nF/km

CAPACITANCE UNBALANCE (PAIR TO GROUND): ≤ 1500 pF/km

CHARACTERISTIC IMPEDANCE (1-100 MHz): (100 ± 15) Ω

CHARACTERISTIC IMPEDANCE (100-250 MHz): (100 ± 22) Ω

NOMINAL VELOCITY OF PROPAGATION: Approx 67%

PROPAGATION DELAY: Nominal ≤ 535 ns/100m

DELAY SKEW: Nominal ≤ 20 ns/100m

TEST VOLTAGE (DC, 1 min) CORE/CORE: 1000V

TV 4425

75OHM SEMI-AIRSPACED CO-AXIAL TV DOWNLEADS

STANDARD: BS 6360, BS 6234, BS 6746

APPLICATION:
The 75 ohm downleads in this range are designed for the interconnection of TV aerials and receivers. They are suitable for most reception conditions in VHF and UHF installation areas. These cables must not be connected to the public mains power supply.

CONSTRUCTION:
Plain annealed copper conductor. 5 cell semi-airspaced polythene dielectric. Plain annealed copper wire braid.

SHEATH: PVC sheath

MINIMUM BENDING RADIUS: 6D

BS 6622

POWER DISTRIBUTION MV CABLES

STANDARD: BS 6622

VOLTAGE RATING: 6350/11000V

APPLICATION:
Power cables for power networks, underground, outdoors and in cable ducting.

CONDUCTOR SCREEN:
Extruded Semi Conducting Layer

INSULATION SCREEN:
Extruded Semi Conducting Layer and Copper Tape Screen.

INSULATION: XLPE (Type GP8 to BS7655)

BEDDING: PVC (Type 9 to BS7655)

ARMOURING:
Single core - aluminium wire armoured (AWA)
Multicore - Steel Wire Amoured (SWA)

SHEATH: PVC (Type 9 to BS7655), red

MINIMUM BENDING RADIUS: 13D

MAXIMUM CONDUCTOR TEMPERATURE: 90°C

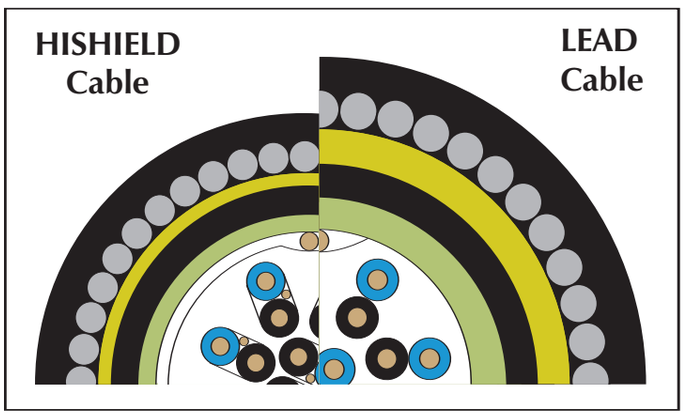
OHLS bedded and sheathed cables to BS7835 are available upon request.

HISHIELD

HYDROCARBON RESISTANT CABLE

In applications where cables may be subjected to attack from oils, solvents, gases or other chemicals, designers and installers of critical cabling systems have historically relied upon using conventional lead-sheathed cable to provide maximum protection. However, the use of lead sheathed cable is often unsatisfactory due to its weight, large bending radius and cost.

For applications prone to hydrocarbon attack and moisture penetration, especially relevant to the on-shore oil, gas and petrochemical industries, Draka has developed a new generation of non-permeable cables, utilising a combination of modern materials allied to novel production techniques. This new Hishield® cabling system provides excellent resistance to hydrocarbons, its performance being similar to lead alloy, but with significant advantages.



Cable weight is reduced by up to 70%

Overall diameter is reduced by up to 20%

Bending radius is reduced by up to 25%

Termination time is reduced by up to 50%

Less hazardous to health

In addition to mechanical abuse and attack by aggressive hydrocarbons, cables carrying important data signals and communications may in industrial environments also be subject to Electro-Magnetic Interference (EMI). Draka has recognised this problem and has, therefore, also included an effective metallic screening layer in all Hishield® cables.

TYPICAL CONSTRUCTION:

HI SHIELD®

Protective Layers

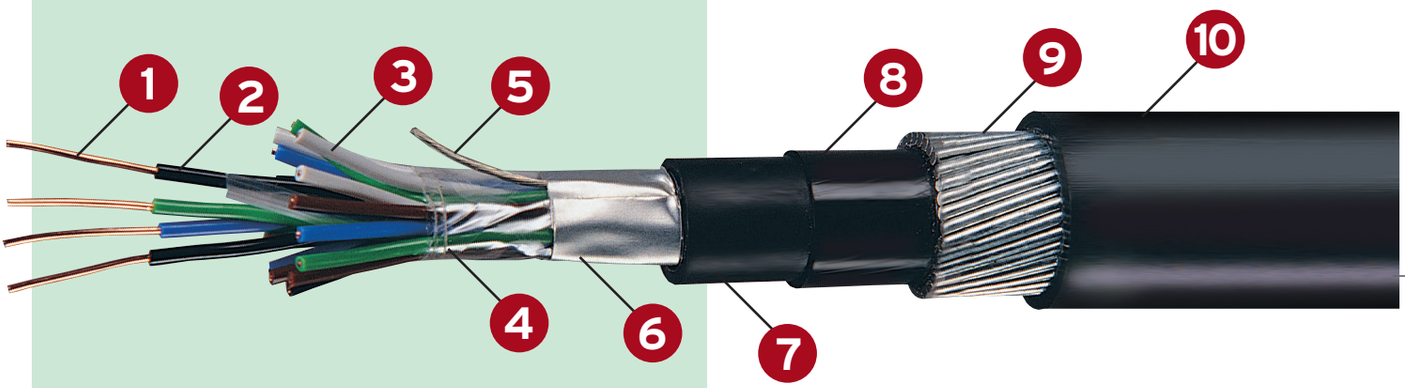
1 Plain annealed copper conductor.

2 PVC/Low Density Polyethylene/Cross-linked Polyethylene (XLPE) insulation.

3 Individual pair screen (optional).

4 Polyester tape.

5 Tinned soft copper drain wire.



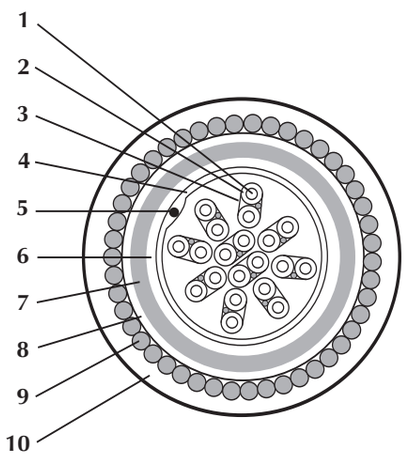
6 Aluminium/Polymer foil tape,
- Impermeable to moisture.
- Protection against EMI.

7 High Density Polyethylene (HDPE) bedding,
- Resistant to inorganic chemicals.

8 Extruded polyamide layer (Nylon),
- Resistant to organic chemicals.

9 Galvanised steel wire armour.

10 HDPE/Fire retardant PVC.



CHEMICAL ATTACK

The often unseen, yet persistent assault from aggressive liquid and air borne chemicals can be a major cause of cable failure.

Chemicals can effect the cable in a variety of ways:

(1) By attacking the sheathing and insulating materials leading to embrittlement and cracking, or causing swelling associated with a dramatic reduction in mechanical strength and physical properties. In both cases premature cable failure is the result.

(2) By disrupting the electrical performance of the cable leading to corruption of transmitted information and ultimate electrical breakdown.

Chemical attack is reduced by the introduction of the Hishield® protective system.

MOISTURE PENETRATION

The additional threat of moisture penetration to the cable core assembly may result in the corruption of transmitted information.

Moisture can cause corruption of the signal by:

(1) Increasing the capacitance and deterioration of other electrical properties.
(2) Increasing the mismatch of information due to the changing characteristic impedance.

Moisture penetration is reduced by the introduction of the Hishield® system.

ELECTRO-MAGNETIC INTERFERENCE (EMI)

This increasingly common form of electrical disturbance occurs when faulty equipment* switching or external interference causes spikes or electrical noise to appear in the power supply. This electrical distortion can effect vital transmission, leading to corrupted or even lost data. Although filters and suppression products are available to reduce the likelihood of EMI, additional protection is recommended to minimise its damaging effects and to help maintain signals free from electro-magnetic interference.

* some correctly functioning equipment also gives rise to EMI.

Draka's Hishield® advanced cabling system can be applied to most types of (BS 5308) instrumentation and control cables, offering non-hazardous protection from chemicals, water, solvents and also effective screening against radio frequency interference (RFI) and EMI. The same protective sheath combination can be applied to most types of control and light power cables.

The Hishield® system reduces the effect of electro-magnetic interference on the cable.

Technical Data for Cables Complying to BS 5308

	POLYETHYLENE Type 03 to BS 6234	PVC Type TI1 to BS 7655 part 3
Maximum conductor operating temp:	+65˚C	+65˚C
Minimum ambient temp:	-20˚C after installation and only when cable is in a fixed position	-20˚C after installation and only when cable is in a fixed position
*** Maximum working voltage:**	300/500V r.m.s.	300/500V r.m.s.
Test voltage:	1000V r.m.s. between conductors and between conductors and screen/armour	1000V r.m.s. between conductors and between conductors and screen/armour.
Maximum d.c. conductor resistance:	Conductor size Ω/km at 20C 0.5mm² Class 1 36.8 0.5mm² Class 5 39.7 1.0mm² Class 1 18.4 1.5mm² Class 2 12.3	Conductor size Ω/km at 20C Multicore Multipair 0.5mm² Class 5 39.0 39.7 0.75mm² Class 5 26.0 26.5 1.5mm² Class 2 12.1 12.3
Minimum insulation resistance:	Individual cores - 5000 MΩ/km at 20C Between individual screens-1MΩ/km at 20˚C	Individual cores-25 MΩ/km at 20C Between individual screens-1MΩ/km at 20˚C
Maximum mutual capacitance:	Cables without individual pair screens, 0.5mm² and 1.0mm² - 75pF/m,1.5mm² -85pF/m. All cables with individual pair screens and 1 or 2 pair cables collectively screened, 115 pF/m, except 7/0.53mm (1.5mm²), 120 pF/m.	Pair or adjacent cores - 250 pF/m at 1KHz
Maximum capacitance unbalance:	250 pF/250mm at 1KHz	
Maximum capacitance conductor To screen:		450 pF/m at 1KHz
Maximum L/R ratio:	Conductor size μH/Ω 0.5mm² 25 1.0mm² 25 1.5mm² 40	Conductor size μH/Ω 0.5mm² 25 1.75mm² 25 1.5mm² 40
Minimum bending radius:	8 x overall diameter	8 x overall diameter

* Cables using this composite sheath should not be connected to a low impedance source i.e. the mains power voltage supply.

Please refer to pages 66-73 for the core sizes and configurations.
The new HISHIELD system is also suitable for applications requiring termite and rodent protection.

For further information on specific applications please contact your local sales office.

CONTROL AND INSTRUMENTATION

POLYETHYLENE INSULATED

This specification covers multipair cables used in the provision of voice and data services and the interconnection of electrical equipment and instruments, particularly in and around process plants, where transducer generated signals are transmitted through marshalled circuits to panels, controllers and associated devices.

Cables to Part 1 are widely used throughout the petroleum industry, while Part 2 are more common to the chemical and petrochemical industries.

Type 1 unarmoured cables are generally for indoor applications.
Type 2 armoured cables are suitable for burial underground
Type 3 lead sheathed cables are recommended for burial underground where there is a high concentration of hydrocarbons in the soil.

These cables are designed for use in Group II intrinsically safe systems. However it must be noted that cables used when installing an intrinsically safe system are required to conform to any relevant requirement on the certication documents, either for the system or for the intrinsically safe and associated apparatus forming parts of the system.

Cables should also be suitable for the environment in which they are going to be used.

AVAILABILITY:

Cables in this range are manufactured to customer order. Reduced propagation or reduced propagation with reduced HCL emission PVC sheaths can be supplied when requested. Alternative constructions e.g. other conductor sizes or pair/core combinations, generally to this specification, can also be produced to order. Specifications to suit individual customer requirements, based on the BS 5308 specification, can also be manufactured. Our technical personnel are available to provide information and assistance in designing cables for your specific installation and operating requirements.

RP, RPLHCL.
For applications where flame spread and the emission of acid gas is critical, Draka offer a range of bedding and sheathing compounds with an Oxygen Index between 30 and 35 and, on selected materials acid gas emission of less than 15% by volume at 800°C.

CUSTOMERS SHOULD SPECIFY IF THEY REQUIRE:

RP -	LOI greater than 30
RPLHCL -	LOI greater than 30, acid gas emission less than 15% by volume at 800°C.

Please state a particular LOI if required.

ZERO HALOGEN, LOW SMOKE
For applications where minimal smoke and acid gas emissions are critical, Draka's proprietary OHLS® compounds are rated Zero Halogen, Low Smoke to BSEN 50267 (IEC 60754) and BSEN 50268 (IEC 61034).

Where any of these options are ordered customers should specify if the compound is required on the bedding (where applicable), the sheath, or both (where applicable).
Draka offer designs utilising these materials that can comply with the appropriate category for the cable size in BS 4066 : Part 3 (IEC 332-3, EN 50266).
Please contact us to discuss your particular requirements.

TECHNICAL DATA:

MAXIMUM CONDUCTOR OPERATING TEMP: +65°C

MINIMUM AMBIENT TEMP:
-20°C after installation and only when cable is in a fixed position.

MAXIMUM WORKING VOLTAGE: 300/500V r.m.s.

TEST VOLTAGE:
1000V r.m.s. between conductors and between conductors and screen/armour.

MAXIMUM CONDUCTOR D.C. RESISTANCE:

Conductor Size	Ω/km at 20°C
1/0.80mm (0.5mm²)	36.8
16/0.20mm (0.5mm²)	39.7
1/1.13mm (1.0mm²)	18.4
7/0.53mm (1.5mm²)	12.3

MINIMUM INSULATION RESISTANCE:
Individual conductors - 5000 MΩ/km at 20°C. Between individual screens - 1 MΩ/km at 20°C

MAXIMUM MUTUAL CAPACITANCE AT 1KHZ:
Cables without individual pair screens, 0.5mm² and 1.0mm² - 75 pF/m, 1.5mm² - 85 pF/m. All cables with individual pair screens and 1 or 2 pair cables collectively screened, 115 pF/m.

MAXIMUM CAPACITANCE UNBALANCE:
250pF/250m at 1kHz

MAXIMUM L/R RATIO:

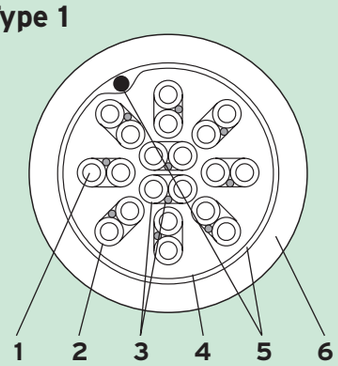
Conductor Size	μH/Ω
0.5mm²	25
1.0mm²	25
1.5mm²	40

SPREAD OF FLAME:
Type 1 complies with EN50265, IEC 60332-1. Type 2 complies as type 1 additionally with EN 50266, NMV 1.5, IEC 60332-3C. Type 3 complies as Type 2

MINIMUM BENDING RADIUS:
Type 1 - 5 x overall diameter. Type 2 - 6 x overall diameter.
Type 3 - 15 x overall diameter.

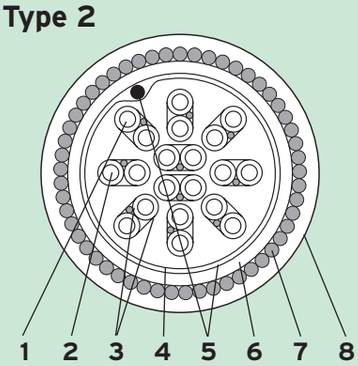
CONSTRUCTION:

Type 1



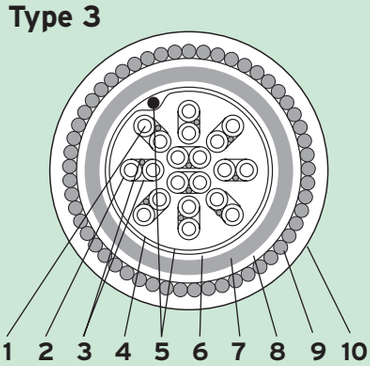
Type 1 -
1 Plain annealed copper wire conductors to BS 6360.
2 Type 03 polyethylene insulation to BS 6234
3 Individual pair screen (optional):-
a) Aluminium/polyester tape, metallic side down, in contact with minimum 0.5mm² tinned copper drain wire.
b) Polyester isolating tape(s) numbered for identification
4 Polyester binder tape.
5 Collective screen (optional) - Aluminium/polyester tape, metallic side down, in contact with minimum 0.5mm² tinned copper drain wire.
6 Type TM1 or Type 6 PVC sheath to BS 7655.

Type 2



Type 2 -
1 Plain annealed copper wire conductors to BS 6360.
2 Type 03 polyethylene insulation to BS 6234
3 Individual pair screen (optional):-
a) Aluminium/polyester tape, metallic side down, in contact with minimum 0.5mm² tinned copper drain wire.
b) Polyester isolating tape(s) numbered for identification
4 Polyester binder tape.
5 Collective screen (optional) - Aluminium/polyester tape, metallic side down, in contact with minimum 0.5mm² tinned copper drain wire.
6 Type 03C black polyethylene bedding to BS 6234.
7 Single layer galvanised steel wire armour to BS EN 10257-1
8 Type TM1 PVC sheath to BS 7655.

Type 3



Type 3 -
1 Plain annealed copper wire conductors to BS 6360.
2 Type 03 polyethylene insulation to BS 6234
3 Individual pair screen (optional):-
a) Aluminium/polyester tape, metallic side down, in contact with minimum 0.5mm² tinned copper drain wire.
b) Polyester isolating tape(s) numbered for identification
4 Polyester binder tape.
5 Collective screen (optional) - Aluminium/polyester tape, metallic side down, in contact with minimum 0.5mm² tinned copper drain wire.
6 Type TM1 PVC bedding to BS 7655.
7 Lead alloy sheath to BS 801.
8 Type TM1 PVC bedding to BS 7655.
9 Single layer galvanised steel wire armour to BS EN 10257-1.
10 Type TM1 PVC sheath to BS 7655.

PHYSICAL DATA

BS 5308 Part 1 Type 1 collectively screened, unarmoured

Number of Pairs	Number and Diameter of Wires no./mm	Nominal Conductor Cross-Sectional Area mm²	Nominal Radial Thickness of Insulation mm	Nominal Diameter of Cable mm	Approx. Nett Weight kg/km
1	1/0.80	0.5	0.5	6.3	50
2	1/0.80	0.5	0.5	7.1	75
5	1/0.80	0.5	0.5	11.6	200
10	1/0.80	0.5	0.5	15.0	270
15	1/0.80	0.5	0.5	17.1	370
20	1/0.80	0.5	0.5	19.4	440
30	1/0.80	0.5	0.5	23.0	630
50	1/0.80	0.5	0.5	28.9	980
1	16/0.20	0.5	0.6	7.0	60
2	16/0.20	0.5	0.6	7.9	80
5	16/0.20	0.5	0.6	13.1	210
10	16/0.20	0.5	0.6	17.2	340
15	16/0.20	0.5	0.6	19.8	440
20	16/0.20	0.5	0.6	22.3	570
30	16/0.20	0.5	0.6	26.9	780
50	16/0.20	0.5	0.6	33.9	1130
1	1/1.13	1.0	0.6	7.4	85
2	1/1.13	1.0	0.6	8.4	115
5	1/1.13	1.0	0.6	14.2	290
10	1/1.13	1.0	0.6	17.4	500
15	1/1.13	1.0	0.6	21.3	670
20	1/1.13	1.0	0.6	24.4	950
30	1/1.13	1.0	0.6	29.0	1030
50	1/1.13	1.0	0.6	37.3	1750
1	7/0.53	1.5	0.6	8.3	100
2	7/0.53	1.5	0.6	9.7	150
5	7/0.53	1.5	0.6	16.4	360
10	7/0.53	1.5	0.6	21.6	690
15	7/0.53	1.5	0.6	25.2	880
20	7/0.53	1.5	0.6	28.5	1230
30	7/0.53	1.5	0.6	34.3	1560
50	7/0.53	1.5	0.6	37.3	2400

NOTE: For cable without a collective screen the nominal cable diameter is reduced by 1mm.

PHYSICAL DATA

BS 5308 Part 1 Type 1 individually and collectively screened, unarmoured

Number of Pairs	Number and Diameter of Wires no./mm	Nominal Conductor Cross-Sectional Area mm²	Nominal Radial Thickness of Insulation mm	Nominal Diameter of Cable mm	Approx. Nett Weight kg/km
2	1/0.8	0.5	0.5	10.3	150
5	1/0.8	0.5	0.5	13.5	250
10	1/0.8	0.5	0.5	18.3	380
15	1/0.8	0.5	0.5	21.1	490
20	1/0.8	0.5	0.5	23.5	640

Number of Pairs	Number and Diameter of Wires no./mm	Nominal Conductor Cross-Sectional Area mm^2	Nominal Radial Thickness of Insulation mm	Nominal Diameter of Cable mm	Approx. Nett Weight kg/km
30	1/0.8	0.5	0.5	27.9	970
50	1/0.8	0.5	0.5	36.1	1470
2	16/0.2	0.5	0.6	12.0	100
5	16/0.2	0.5	0.6	15.2	250
10	16/0.2	0.5	0.6	21.1	480
15	16/0.2	0.5	0.6	24.5	570
20	16/0.2	0.5	0.6	27.3	780
30	16/0.2	0.5	0.6	32.3	1020
50	16/0.2	0.5	0.6	41.7	1680
2	1/1.13	1.0	0.6	12.8	200
5	1/1.13	1.0	0.6	16.2	290
10	1/1.13	1.0	0.6	22.6	580
15	1/1.13	1.0	0.6	26.2	780
20	1/1.13	1.0	0.6	29.8	1010
30	1/1.13	1.0	0.6	35.4	1430
50	1/1.13	1.0	0.6	44.9	2360
2	7/0.53	1.5	0.6	14.7	250
5	7/0.53	1.5	0.6	18.8	460
10	7/0.53	1.5	0.6	26.5	760
15	7/0.53	1.5	0.6	30.8	1020
20	7/0.53	1.5	0.6	34.4	1350
30	7/0.53	1.5	0.6	41.0	1900
50	7/0.53	1.5	0.6	52.2	3060

NOTE: For cable without a collective screen the nominal cable diameter is reduced by 1mm.

PHYSICAL DATA

BS 5308 Part 1 Type 2 collectively screened, armoured

Number of Pairs	Number and Diameter of Wires no./mm	Nominal Conductor Cross-Sectional Area mm^2	Nominal Insulation Thickness mm	Nominal Diameter over Bedding mm	Nominal Armour Wire Diameter mm	Nominal Diameter of Cable kg/km	Approx. Nett Weight
1	1/0.8	0.5	0.5	6.3	0.9	10.7	200
2	1/0.8	0.5	0.5	7.1	0.9	11.5	260
5	1/0.8	0.5	0.5	11.6	0.9	16.2	460
10	1/0.8	0.5	0.5	15.0	1.25	20.7	790
15	1/0.8	0.5	0.5	17.1	1.25	22.8	1100
20	1/0.8	0.5	0.5	19.4	1.6	26.0	1280
30	1/0.8	0.5	0.5	23.0	1.6	29.8	1520
50	1/0.8	0.5	0.5	28.9	1.6	26.1	2100
1	16/0.2	0.5	0.6	7.0	0.9	11.4	250
2	16/0.2	0.5	0.6	7.9	0.9	12.3	300
5	16/0.2	0.5	0.6	13.1	0.9	17.9	560
10	16/0.2	0.5	0.6	17.2	1.25	22.9	970
15	16/0.2	0.5	0.6	19.8	1.6	26.4	1240
20	16/0.2	0.5	0.6	22.3	1.6	29.1	1640
30	16/0.2	0.5	0.6	26.9	1.6	33.9	1770
50	16/0.2	0.5	0.6	33.9	2.0	42.1	2770

NOTE: For cable without a collective screen the nominal cable diameter is reduced by 1mm.

(cont'd from page 69)

Number of Pairs	Number and Diameter of Wires no./mm	Nominal Conductor Cross-Sectional Area mm²	Nominal Insulation Thickness mm	Nominal Diameter over Bedding mm	Nominal Armour Wire Diameter mm	Nominal Diameter of Cable kg/km	Approx. Nett Weight
1	1/1.13	1.0	0.6	7.4	0.9	11.8	290
2	1/1.13	1.0	0.6	8.4	0.9	13.0	345
5	1/1.13	1.0	0.6	14.2	1.25	19.7	790
10	1/1.13	1.0	0.6	17.4	1.6	24.3	1310
15	1/1.13	1.0	0.6	21.3	1.6	28.1	1740
20	1/1.13	1.0	0.6	24.4	1.6	31.2	2040
30	1/1.13	1.0	0.6	29.0	1.6	36.2	2180
50	1/1.13	1.0	0.6	37.3	2.0	45.7	3500
1	7/0.53	1.5	0.6	8.3	0.9	12.9	320
2	7/0.53	1.5	0.6	9.7	0.9	14.3	420
5	7/0.53	1.5	0.6	16.4	1.25	22.1	940
10	7/0.53	1.5	0.6	21.6	1.6	28.4	1500
15	7/0.53	1.5	0.6	25.2	1.6	32.2	1970
20	7/0.53	1.5	0.6	28.5	2.0	36.5	2400
30	7/0.53	1.5	0.6	34.3	2.0	42.5	3170
50	7/0.53	1.5	0.6	43.6	2.5	53.4	5020

NOTE: For cable without a collective screen the nominal cable diameter is reduced by 1mm.

PHYSICAL DATA

BS 5308 Part 1 Type 2 individually and collectively screened, armoured

Number of Pairs	Number and Diameter of Wires no./mm	Nominal Conductor Cross-Sectional Area mm²	Nominal Insulation Thickness mm	Nominal Diameter over Bedding mm	Nominal Armour Wire Diameter mm	Nominal Diameter of Cable kg/km	Approx. Nett Weight
2	1/0.80	0.5	0.5	10.3	0.9	14.9	380
5	1/0.80	0.5	0.5	13.5	1.25	19.0	640
10	1/0.80	0.5	0.5	18.3	1.25	24.2	890
15	1/0.80	0.5	0.5	21.2	1.6	27.7	1350
20	1/0.80	0.5	0.5	23.5	1.6	30.3	1470
30	1/0.80	0.5	0.5	27.9	1.6	34.9	1870
50	1/0.80	0.5	0.5	36.1	2.0	44.5	3000
2	16/0.2	0.5	0.6	12.0	0.9	16.8	460
5	16/0.2	0.5	0.6	15.2	1.25	20.9	760
10	16/0.2	0.5	0.6	21.1	1.6	27.9	1300
15	16/0.2	0.5	0.6	24.5	1.6	31.3	1440
20	16/0.2	0.5	0.6	27.3	1.6	34.3	1870
30	16/0.2	0.5	0.6	32.3	2.0	40.5	2400
50	16/0.2	0.5	0.6	41.7	2.5	51.5	3930

NOTE: For cable without a collective screen the nominal cable diameter is reduced by 1mm.

(cont'd from page 70)

Number of Pairs	Number and Diameter of Wires no./mm	Nominal Conductor Cross-Sectional Area mm²	Nominal Insulation Thickness mm	Nominal Diameter over Bedding mm	Nominal Armour Wire Diameter mm	Nominal Diameter of Cable kg/km	Approx. Nett Weight
2	1/1.13	1.0	0.6	12.8	0.9	17.6	515
5	1/1.13	1.0	0.6	16.2	1.25	21.9	950
10	1/1.13	1.0	0.6	22.6	1.6	29.4	1330
15	1/1.13	1.0	0.6	26.2	1.6	33.2	1680
20	1/1.13	1.0	0.6	29.8	2.0	37.8	2540
30	1/1.13	1.0	0.6	35.4	2.0	43.8	2900
50	1/1.13	1.0	0.6	44.9	2.5	54.9	4800
2	7/0.53	1.5	0.6	14.7	1.25	20.4	730
5	7/0.53	1.5	0.6	18.8	1.6	25.4	1180
10	7/0.53	1.5	0.6	26.5	1.6	33.5	1820
15	7/0.53	1.5	0.6	30.8	1.6	38.8	2350
20	7/0.53	1.5	0.6	34.4	2.0	42.6	3030
30	7/0.53	1.5	0.6	41.0	2.5	50.8	4050
50	7/0.53	1.5	0.6	52.2	2.5	62.6	5960

NOTE: For cable without a collective screen the nominal cable diameter is reduced by 1mm.

PHYSICAL DATA

BS 5308 Part 1 Type 3 collectively screened, lead sheathed, armoured

Number of pairs	Number and Diameter of wires no./mm	Nominal Conductor Cross-Sectional Area mm²	Nominal Insulation Thickness mm	Nominal Diameter under Lead mm	Nominal Diameter over Lead mm	Nominal Diameter over Bedding mm	Nominal Armour Wire Diameter mm	Nominal Diameter of Cable mm	Approx Nett Weight kg/km
1	1/0.80	0.5	0.5	6.3	8.5	10.1	0.9	14.7	610
2	1/0.80	0.5	0.5	7.1	9.3	10.9	0.9	15.4	685
5	1/0.80	0.5	0.5	11.6	13.8	15.4	1.25	21.1	1190
10	1/0.80	0.5	0.5	15.0	17.2	19.2	1.6	25.8	1720
15	1/0.80	0.5	0.5	17.1	19.5	21.5	1.6	28.3	2100
20	1/0.80	0.5	0.5	19.4	22.0	24.0	1.6	30.8	2420
30	1/0.80	0.5	0.5	23.0	25.8	27.8	1.6	34.8	3180
50	1/0.80	0.5	0.5	28.9	31.9	34.3	2.0	42.5	4600
1	16/0.2	0.5	0.6	7.0	9.2	10.8	0.9	15.4	680
2	16/0.2	0.5	0.6	7.9	10.1	11.7	0.9	16.3	760
5	16/0.2	0.5	0.6	13.1	15.3	16.9	1.25	22.6	1350
10	16/0.2	0.5	0.6	17.2	19.6	21.6	1.6	28.4	2115
15	16/0.2	0.5	0.6	19.8	22.4	24.4	1.6	31.2	2500
20	16/0.2	0.5	0.6	22.3	24.9	26.9	1.6	33.9	2895
30	16/0.2	0.5	0.6	26.9	29.9	32.3	2.0	40.5	4100
50	16/0.2	0.5	0.6	33.9	37.3	40.1	2.5	49.7	6000
1	1/1.13	1.0	0.6	7.4	9.6	11.2	0.9	15.8	730
2	1/1.13	1.0	0.6	8.4	10.6	12.2	0.9	17.0	830
5	1/1.13	1.0	0.6	14.2	16.4	18.4	1.6	25.0	1720
10	1/1.13	1.0	0.6	17.4	20.8	22.8	1.6	29.6	2370
15	1/1.13	1.0	0.6	21.3	23.9	25.9	2.0	32.9	2750
20	1/1.13	1.0	0.6	24.4	27.2	29.6	2.0	37.6	3870
30	1/1.13	1.0	0.6	29.0	32.0	34.4	2.0	42.6	4600
50	1/1.13	1.0	0.6	37.3	40.9	43.7	2.5	53.5	7400
1	7/0.53	1.5	0.6	8.3	10.5	12.1	0.9	16.9	810
2	7/0.53	1.5	0.6	9.7	11.9	13.5	1.25	19.0	1060
5	7/0.53	1.5	0.6	16.4	18.8	20.8	1.6	27.4	1915
10	7/0.53	1.5	0.6	21.6	24.2	26.2	1.6	33.2	2935
15	7/0.53	1.5	0.6	25.2	28.0	30.4	2.0	38.4	3900
20	7/0.53	1.5	0.6	28.5	31.5	33.9	2.0	42.1	4730
30	7/0.53	1.5	0.6	34.3	37.7	40.5	2.5	50.1	6600
50	7/0.53	1.5	0.6	43.6	47.6	50.8	2.5	61.0	9300

NOTE: For cable without a collective screen the nominal cable diameter is reduced by 1mm.

PHYSICAL DATA

BS 5308 Part 1 Type 3 individually and collectively screened, lead sheathed, armoured

Number of pairs	Number and Diameter of wires no./mm	Nominal Conductor Cross-Sectional Area mm²	Nominal Insulation Thickness mm	Nominal Diameter under Lead mm	Nominal Diameter over Lead mm	Nominal Diameter over Bedding mm	Nominal Armour Wire Diameter mm	Nominal Diameter of Cable mm	Approx Nett Weight kg/km
2	1/0.80	0.5	0.5	10.3	12.5	14.1	1.25	19.6	1055
5	1/0.80	0.5	0.5	13.5	15.7	17.3	1.25	23.0	1390
10	1/0.80	0.5	0.5	18.3	20.7	22.7	1.6	29.3	2175
15	1/0.80	0.5	0.5	21.1	23.7	25.7	1.6	32.7	2600
20	1/0.80	0.5	0.5	23.5	26.3	28.7	2.0	36.5	3400
30	1/0.80	0.5	0.5	27.9	30.9	33.3	2.0	41.3	4060
50	1/0.80	0.5	0.5	36.1	39.7	42.5	2.5	52.1	6400
2	16/0.2	0.5	0.6	12.0	14.2	15.8	1.25	21.5	1250
5	16/0.2	0.5	0.6	15.2	17.4	19.4	1.6	26.0	1770
10	16/0.2	0.5	0.6	21.1	23.7	25.7	1.6	32.7	2695
15	16/0.2	0.5	0.6	24.5	27.3	29.7	2.0	37.7	3760
20	16/0.2	0.5	0.6	27.3	30.3	32.7	2.0	40.9	4155
30	16/0.2	0.5	0.6	32.3	35.5	37.9	2.0	46.3	4790
50	16/0.2	0.5	0.6	41.7	45.5	48.3	2.5	58.5	7500
2	1/1.13	1.0	0.6	12.8	15.0	16.6	1.25	22.3	1330
5	1/1.13	1.0	0.6	16.2	18.6	20.6	1.6	27.2	1940
10	1/1.13	1.0	0.6	22.6	25.2	27.2	1.6	34.2	2920
15	1/1.13	1.0	0.6	26.2	29.2	31.6	2.0	39.8	4000
20	1/1.13	1.0	0.6	29.8	33.0	35.4	2.0	43.8	4780
30	1/1.13	1.0	0.6	35.4	38.8	41.6	2.5	51.4	6100
50	1/1.13	1.0	0.6	44.9	48.9	52.1	2.5	62.5	9300
2	7/0.53	1.5	0.6	14.7	16.9	18.9	1.6	25.5	1670
5	7/0.53	1.5	0.6	18.8	21.2	23.2	1.6	30.0	2280
10	7/0.53	1.5	0.6	26.5	29.5	31.9	2.0	40.1	4070
15	7/0.53	1.5	0.6	30.8	34.0	36.4	2.0	44.8	5150
20	7/0.53	1.5	0.6	34.4	37.8	40.6	2.5	50.2	6345
30	7/0.53	1.5	0.6	41.0	44.8	47.6	2.5	57.6	7600
50	7/0.53	1.5	0.6	52.2	56.5	59.8	2.5	70.6	11400

NOTE: For cable without a collective screen the nominal cable diameter is reduced by 1mm.

PHYSICAL DATA

Unscreened pairs: Are identified by means of coloured insulation in the sequence detailed below

Pair No.	a-wire	b-wire	Pair No.	a-wire	b-wire
1	Black	Blue	26	White	Yellow
2	Black	Green	27	Red	Yellow
3	Blue	Green	28	Orange	Yellow
4	Black	Brown	29	Black	Grey
5	Blue	Brown	30	Blue	Grey
6	Green	Brown	31	Green	Grey
7	Black	White	32	Brown	Grey
8	Blue	White	33	White	Grey
9	Green	White	34	Red	Grey
10	Brown	White	35	Orange	Grey
11	Black	Red	36	Yellow	Grey
12	Blue	Red	37	Black	Violet
13	Green	Red	38	Blue	Violet
14	Brown	Red	39	Green	Violet
15	White	Red	40	Brown	Violet
16	Black	Orange	41	White	Violet
17	Blue	Orange	42	Red	Violet
18	Green	Orange	43	Orange	Violet
19	Brown	Orange	44	Yellow	Violet
20	White	Orange	45	Grey	Violet
21	Red	Orange	46	Black	Turquoise
22	Black	Yellow	47	Blue	Turquoise
23	Blue	Yellow	48	Green	Turquoise
24	Green	Yellow	49	Brown	Turquoise
25	Brown	Yellow	50	White	Turquoise

Screened Pairs: Are identified by numbered polyester tapes with each pair having one Black and one Blue core. Two pair unscreened cables are cabled in a quad formation and colour coded in rotation, Black, Blue, Green, Brown.

Printing of cores: On request. Screened and unscreened pairs can be identified by the printing of both words and numerals in a contrasting colour, throughout the length of each core. However where it is used instead of numbered polyester tapes on screened pairs or with a different colour code to that given above, the cable is marked as generally to the standard.

CONTROL AND INSTRUMENTATION

PVC INSULATED

This specification covers multicore and multipair cables used in the provision of communication services and the interconnection of electrical equipment and instruments, particularly in and around process plants, where transducer generated signals are transmitted through marshalled circuits to panels, controllers and associated devlces.

Cables to Part 1 are widely used throughout the petroleum industry, while Part 2 are more common to the chemical and petrochemical industries.

Type 1 unarmoured cables are generally for indoor applications.

Type 2 armoured cables are suitable for burial underground

These cables are designed for use in intrinsically safe systems. However it must be noted that cables used when installing an intrinsically safe system are required to conform to any relevant requirement on the certication documents, either for the system or for the intrinsically safe and associated apparatus forming parts of the system. Cables should also be suitable for the environment in which they are going to be used.

AVAILABILITY:

Cables in this range are manufactured to customer order. Alternative constructions e.g. other conductor sizes or pair combinations, generally to this specification, can also be produced to order, as can a range of thermocouple, extension and compensating cables. Specifications to suit individual customer requirements, based on the BS 5308 specification, can also be manufactured. Our technical personnel are available to provide information and assistance in designing cables for your specific installation and operating requirements.

RP, RPLHCL.
For applications where flame spread and the emission of acid gas is critical, Draka offer a range of bedding and sheathing compounds with an Oxygen Index between 30 and 35 and, on selected materials acid gas emission of less than 15% by volume at 800°C.

Customers should specify if they require:

RP-	LOI greater than 30
RPLHCL -	LOI greater than 30, acid gas emission less than 15% by volume at 800°C.

Please state a particular LOI if required.

ZERO HALOGEN, LOW SMOKE
For applications where minimal smoke and acid gas emissions are critical, Draka UK's proprietary OHLS® compounds are rated Zero Halogen, Low Smoke to BSEN 50267 (IEC 754) and BSEN 50268 (IEC 61034).

Where any of these options are ordered customers should specify if the compound is required on the bedding (where applicable), the sheath, or both (where applicable). Draka offer designs utilising these materials that can comply with the appropriate category for the cable size in BSEN 50266 : Part 3 (IEC 60332-3).

Please contact us to discuss your particular requirements.

TECHNICAL DATA:

MAXIMUM CONDUCTOR OPERATING TEMP: +65°C.

MINIMUM AMBIENT TEMP: -20°C after installation and only when cable is in a fixed position.

MAXIMUM WORKING VOLTAGE: 300/500V r.m.s.

TEST VOLTAGE: 1000V r.m.s. between conductors and between conductors and screen/armour.

MAXIMUM CONDUCTOR D.C. RESISTANCE:
MΩkm at 20°C

Conductor Size	Multicore	Multipair
16/0.20mm (0.5mm²)	39.0	39.7
24/0.20mm (0.75mm²)	26.0	26.5
7/0.53mm (1.5mm²)	12.1	12.3

MINIMUM INSULATION RESISTANCE: Individual conductors - 25 MΩ/km at 20°C. Between individual screens - 1 MΩ/km at 20°C

MAXIMUM MUTUAL CAPACITANCE AT 1KHZ:
Pair of adjacent cores - 250 pF/m at 1kHz.

MAXIMUM CAPACITANCE TO SCREEN:
450pF/m at 1kHz

MAXIMUM L/R RATIO:

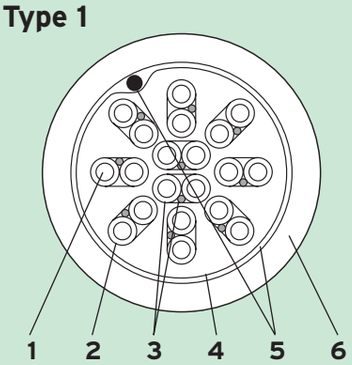
Conductor Size	μH/Ω
0.5mm²	25
1.0mm²	25
1.5mm²	40

SPREAD OF FLAME:
Type 1 complies with EN 50265, IEC 60332-1. Type 2 complies as type 1 additionally with EN50266 NMV 1.5, IEC 60332-3C.

MINIMUM BENDING RADIUS:
Type 1 - 5 x overall diameter. Type 2 - 6 x overall diameter. Type 3 -15 x overall diameter.

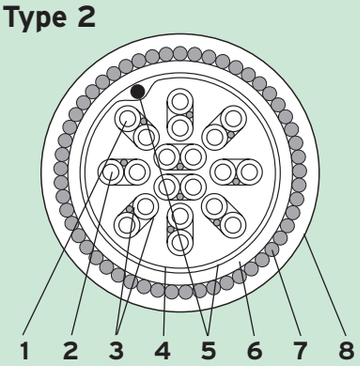
CONSTRUCTION:

Type 1



Type 2 -
1 Plain annealed copper conductors to BS 6360.
2 Type TI1 PVC insulation to BS 7655
3 Individual pair screen (optional)-
a) Aluminium/polyester tape, metallic side down, in contact with minimum 0.5mm² tinned copper drain wire.
b) Polyester isolating tape(s) numbered for identification.
4 Polyester binder tape.
5 Collective screen (optional) - Aluminium/polyester tape, metallic side down, in contact with minimum 0.5mm² tinned copper drain wire.
6 Type TM1 or Type 6 PVC sheath to BS 7655.

Type 2



Type 2 -
1 Plain annealed copper wire conductors to BS 6360.
2 Type TI1 PVC insulation to BS 7655
3 Individual pair screen (optional)-
a) Aluminium/polyester tape, metallic side down, in contact with minimum 0.5mm² tinned copper drain wire.
b) Polyester isolating tape(s) numbered for identification
4 Polyester binder tape.
5 Collective screen (optional) - Aluminium/polyester tape, metallic side down, in contact with minimum 0.5mm² tinned copper drain wire.
6 Type TM1 PVC bedding to BS 7655.
7 Single layer galvanised steel wire armour to BS EN 10257-1.
8 Type TM1 PVC sheath to BS 7655.

PHYSICAL DATA

BS 5308 Part 2 Type 1 multicore, collectively screened, unarmoured

Number of Pairs	Number and Diameter of Wires no./mm	Nominal Conductor Cross-Sectional Area mm²	Nominal Radial Thickness of Insulation mm	Nominal Diameter of Cable mm	Approx. Nett Weight kg/km
2	16/0.2	0.5	0.6	7.0	60
3	16/0.2	0.5	0.6	7.3	75
4	16/0.2	0.5	0.6	7.9	80
6	16/0.2	0.5	0.6	9.3	110
10	16/0.2	0.5	0.6	11.9	180
20	16/0.2	0.5	0.6	14.9	310
40	16/0.2	0.5	0.6	20.1	570
80	16/0.2	0.5	0.6	26.3	1080
2	24/0.2	0.75	0.6	7.3	75
3	24/0.2	0.75	0.6	7.7	90
4	24/0.2	0.75	0.6	8.3	100
6	24/0.2	0.75	0.6	9.9	140
10	24/0.2	0.75	0.6	12.7	220
20	24/0.2	0.75	0.6	16.0	390
40	24/0.2	0.75	0.6	21.7	710
80	24/0.2	0.75	0.6	28.5	1350
2	7/0.53	1.5	0.6	8.3	105
3	7/0.53	1.5	0.6	8.9	135
4	7/0.53	1.5	0.6	9.7	150
6	7/0.53	1.5	0.6	11.7	205
10	7/0.53	1.5	0.6	14.7	330
20	7/0.53	1.5	0.6	18.7	580
40	7/0.53	1.5	0.6	24.6	1065
80	7/0.53	1.5	0.6	33.6	2025

NOTE: For cable without a collective screen the nominal cable diameter is reduced by 1mm.

PHYSICAL DATA

BS 5308 Part 2 Type 1 multipair, collectively screened, unarmoured

Number of Pairs	Number and Diameter of Wires no./mm	Nominal Conductor Cross-Sectional Area mm²	Nominal Radial Thickness of Insulation mm	Nominal Diameter of Cable mm	Approx. Nett Weight kg/km
1	16/0.2	0.5	0.6	7.0	60
2	16/0.2	0.5	0.6	7.9	80
5	16/0.2	0.5	0.6	12.1	200
10	16/0.2	0.5	0.6	17.2	340
15	16/0.2	0.5	0.6	19.8	480
20	16/0.2	0.5	0.6	22.3	570
30	16/0.2	0.5	0.6	26.9	880
50	16/0.2	0.5	0.6	33.9	1310
1	24/0.2	0.75	0.6	7.3	75
2	24/0.2	0.75	0.6	8.3	100
5	24/0.2	0.75	0.6	14.3	250
10	24/0.2	0.75	0.6	18.7	450
15	24/0.2	0.75	0.6	21.4	600
20	24/0.2	0.75	0.6	24.5	800
30	24/0.2	0.75	0.6	29.5	1080
50	24/0.2	0.75	0.6	37.4	1860
1	7/0.53	1.5	0.6	8.3	100
2	7/0.53	1.5	0.6	9.7	150
5	7/0.53	1.5	0.6	16.4	360
10	7/0.53	1.5	0.6	21.6	670
15	7/0.53	1.5	0.6	25.2	970
20	7/0.53	1.5	0.6	28.5	1230
30	7/0.53	1.5	0.6	34.3	1730
50	7/0.53	1.5	0.6	43.6	2740

NOTE: For cable without a collective screen the nominal cable diameter is reduced by 1mm.

PHYSICAL DATA

BS 5308 Part 2 Type 1 multipair, individually and collectively screened, unarmoured

Number of Pairs	Number and Diameter of Wires no./mm	Nominal Conductor Cross-Sectional Area mm²	Nominal Radial Thickness of Insulation mm	Nominal Diameter of Cable mm	Approx. Nett Weight kg/km
2	16/0.2	0.5	0.6	12.0	170
5	16/0.2	0.5	0.6	15.2	270
10	16/0.2	0.5	0.6	21.1	520
15	16/0.2	0.5	0.6	24.5	650
20	16/0.2	0.5	0.6	27.3	860
30	16/0.2	0.5	0.6	32.3	1130
50	16/0.2	0.5	0.6	41.7	1880
2	24/0.2	0.75	0.6	12.8	200
5	24/0.2	0.75	0.6	16.3	355
10	24/0.2	0.75	0.6	22.7	560
15	24/0.2	0.75	0.6	26.4	770
20	24/0.2	0.75	0.6	29.8	990
30	24/0.2	0.75	0.6	35.5	1380
50	24/0.2	0.75	0.6	45.0	2225
2	7/0.53	1.5	0.6	14.7	265
5	7/0.53	1.5	0.6	18.8	490
10	7/0.53	1.5	0.6	26.5	820
15	7/0.53	1.5	0.6	30.8	1110
20	7/0.53	1.5	0.6	34.4	1470
30	7/0.53	1.5	0.6	41.0	2070
50	7/0.53	1.5	0.6	52.2	3340

NOTE: For cable without a collective screen the nominal cable diameter is reduced by 1mm.

PHYSICAL DATA

BS 5308 Part 2 Type 2 multicore, collectively screened, armoured

Number of Pairs	Number and Diameter of Wires no./mm	Nominal Conductor Cross-Sectional Area mm²	Nominal Insulation Thickness mm	Nominal Diameter over Bedding mm	Nominal Armour Wire Diameter mm	Nominal Diameter of Cable kg/km	Approx. Nett Weight
2	16/0.2	0.5	0.6	7.0	0.9	11.4	255
3	16/0.2	0.5	0.6	7.3	0.9	11.7	280
4	16/0.2	0.5	0.6	7.9	0.9	12.3	305
6	16/0.2	0.5	0.6	9.3	0.9	13.9	360
10	16/0.2	0.5	0.6	11.9	0.9	16.7	510
20	16/0.2	0.5	0.6	14.9	1.25	20.6	960
40	16/0.2	0.5	0.6	20.1	1.6	26.7	1440
80	16/0.2	0.5	0.6	26.3	1.6	33.3	2200
2	24/0.2	0.75	0.6	7.3	0.9	11.7	280
3	24/0.2	0.75	0.6	7.7	0.9	12.1	305
4	24/0.2	0.75	0.6	8.3	0.9	12.9	335
6	24/0.2	0.75	0.6	9.9	0.9	14.5	400
10	24/0.2	0.75	0.6	12.7	0.9	17.5	565
20	24/0.2	0.75	0.6	16.0	1.25	21.7	950
40	24/0.2	0.75	0.6	21.7	1.6	28.5	1590
80	24/0.2	0.75	0.6	28.5	1.6	35.7	2450
2	7/0.53	1.5	0.6	8.3	0.9	12.9	330
3	7/0.53	1.5	0.6	8.9	0.9	13.5	380
4	7/0.53	1.5	0.6	9.7	0.9	14.3	420
6	7/0.53	1.5	0.6	11.7	0.9	16.3	540
10	7/0.53	1.5	0.6	14.7	1.25	20.4	750
20	7/0.53	1.5	0.6	18.7	1.6	25.3	1260
40	7/0.53	1.5	0.6	24.6	1.6	31.6	2140
80	7/0.53	1.5	0.6	33.6	2.0	41.8	3300

NOTE: For cable without a collective screen the nominal cable diameter is reduced by 1mm.

PHYSICAL DATA

BS 5308 Part 2 Type 2 multipair, collectively screened, armoured

Number of Pairs	Number and Diameter of Wires no./mm	Nominal Conductor Cross-Sectional Area mm²	Nominal Insulation Thickness mm	Nominal Diameter over Bedding mm	Nominal Armour Wire Diameter mm	Nominal Diameter of Cable kg/km	Approx. Nett Weight
1	16/0.2	0.5	0.6	7.0	0.9	11.4	255
2	16/0.2	0.5	0.6	7.9	0.9	12.3	305
5	16/0.2	0.5	0.6	13.1	0.9	17.9	610
10	16/0.2	0.5	0.6	17.2	1.25	22.9	1060
15	16/0.2	0.5	0.6	19.8	1.6	26.4	1330
20	16/0.2	0.5	0.6	22.3	1.6	29.1	1800
30	16/0.2	0.5	0.6	26.9	1.6	33.9	1980
50	16/0.2	0.5	0.6	33.9	2.0	42.1	3070
1	24/0.2	0.75	0.6	7.3	0.9	11.7	305
2	24/0.2	0.75	0.6	8.3	0.9	12.9	360
5	24/0.2	0.75	0.6	14.3	1.25	19.8	820
10	24/0.2	0.75	0.6	18.7	1.6	25.3	1250
15	24/0.2	0.75	0.6	21.4	1.6	28.2	1600
20	24/0.2	0.75	0.6	24.5	1.6	31.3	1800
30	24/0.2	0.75	0.6	29.5	2.0	37.5	2570
50	24/0.2	0.75	0.6	37.4	2.0	45.8	3800
1	7/0.53	1.5	0.6	8.3	0.9	12.9	360
2	7/0.53	1.5	0.6	9.7	0.9	14.3	460
5	7/0.53	1.5	0.6	16.4	1.25	22.1	1040
10	7/0.53	1.5	0.6	21.6	1.6	28.4	1610
15	7/0.53	1.5	0.6	25.2	1.6	32.2	2060
20	7/0.53	1.5	0.6	28.5	1.6	35.7	2630
30	7/0.53	1.5	0.6	34.3	2.0	42.5	3460
50	7/0.53	1.5	0.6	43.6	2.0	53.4	5520

NOTE: For cable without a collective screen the nominal cable diameter is reduced by 1mm.

PHYSICAL DATA

BS 5308 Part 2 Type 2 multipair, individually and collectively screened, armoured

Number of Pairs	Number and Diameter of Wires no./mm	Nominal Conductor Cross-Sectional Area mm²	Nominal Insulation Thickness mm	Nominal Diameter over Bedding mm	Nominal Armour Wire Diameter mm	Nominal Diameter of Cable kg/km	Approx. Nett Weight
2	16/0.2	0.5	0.6	12.0	0.9	16.8	505
5	16/0.2	0.5	0.6	15.2	1.25	20.9	830
10	16/0.2	0.5	0.6	21.1	1.6	27.9	1420
15	16/0.2	0.5	0.6	24.5	1.6	31.3	1570
20	16/0.2	0.5	0.6	27.3	1.6	34.3	2040
30	16/0.2	0.5	0.6	32.3	2.0	40.5	2610
50	16/0.2	0.5	0.6	41.7	2.5	51.5	4270
2	24/0.2	0.75	0.6	12.8	0.9	17.6	545
5	24/0.2	0.75	0.6	16.3	1.25	22.0	1005
10	24/0.2	0.75	0.6	22.7	1.6	29.5	1400
15	24/0.2	0.75	0.6	26.4	1.6	33.4	1750
20	24/0.2	0.75	0.6	29.8	2.0	37.8	2300
30	24/0.2	0.75	0.6	35.5	2.0	43.9	2460
50	24/0.2	0.75	0.6	45.0	2.5	55.0	4800
2	7/0.53	1.5	0.6	14.7	1.25	20.4	800
5	7/0.53	1.5	0.6	18.8	1.6	25.4	1290
10	7/0.53	1.5	0.6	26.5	1.6	33.5	1990
15	7/0.53	1.5	0.6	30.8	2.0	38.8	2590
20	7/0.53	1.5	0.6	34.4	2.0	42.6	3310
30	7/0.53	1.5	0.6	41.0	2.5	50.8	4380
50	7/0.53	1.5	0.6	52.2	2.5	62.6	6260

NOTE: For cable without a collective screen the nominal cable diameter is reduced by 1mm.

PHYSICAL DATA

A: Pairs **Unscreened pairs: Are identified by means of coloured insulation in the sequence detailed below**

Pair No.	a-wire	b-wire	Pair No.	a-wire	b-wire
1	White	Blue	26	RED/Blue	Blue
2	White	Orange	27	RED/Blue	Orange
3	White	Green	28	RED/Blue	Green
4	White	Brown	29	RED/Blue	Brown
5	White	Grey	30	RED/Blue	Grey
6	Red	Blue	31	BLUE/Black	Blue
7	Red	Orange	32	BLUE/Black	Orange
8	Red	Green	33	BLUE/Black	Green
9	Red	Brown	34	BLUE/Black	Brown
10	Red	Grey	35	BLUE/Black	Grey
11	Black	Blue	36	YELLOW/Blue	Blue
12	Black	Orange	37	YELLOW/Blue	Orange
13	Black	Green	38	YELLOW/Blue	Green
14	Black	Brown	39	YELLOW/Blue	Brown
15	Black	Grey	40	YELLOW/Blue	Grey
16	Yellow	Blue	41	WHITE/Orange	Blue
17	Yellow	Orange	42	WHITE/Orange	Orange
18	Yellow	Green	43	WHITE/Orange	Green
19	Yellow	Brown	44	WHITE/Orange	Brown
20	Yellow	Grey	45	WHITE/Orange	Grey
21	WHITE/Blue	Blue	46	ORANGE/Red	Blue
22	WHITE/Blue	Orange	47	ORANGE/Red	Orange
23	WHITE/Blue	Green	48	ORANGE/Red	Green
24	WHITE/Blue	Brown	49	ORANGE/Red	Brown
25	WHITE/Blue	Grey	50	ORANGE/Red	Grey

NOTE: For bi- coloured cores the base colour is shown in capitals

Screened pairs: Are identified by numbered polyester tapes with each pair having one White and one Blue core. Two pair unscreened or collectively screened cables are cabled in a quad formation and colour coded in rotation, Blue, Green, Orange, Brown.

Printing of cores: On request, screened and unscreened pairs can be identified by the printing of both words and numerals in a contrasting colour, throughout the length of each core. However where it is used instead of numbered polyester tapes on screened pairs or with a different colour code to that given above, the cable is marked as generally to the standard.

B: Cores

Cores are numbered for identification as follows.

Up to 40 cores: All Yellow and identified 1 to 40 with both printed numbers and written word, in Black, e.g. Core 10 would be coloured Yellow and identified by number "10, TEN" in Black.

41 to 80 cores: All cores Black and identified 1 to 40 with both printed numbers and written word, in Yellow, e.g. Core 50 would be coloured Black and identified by number "50, FIFTY" in Yellow.

HEALTH AN
SAFE HANDLING AND ST

It is recommended that the safety rules relative to handling and storage of cable drums at any establishment should follow the guidance given here unless equivalent or better practices are already in force.

GENERAL PRINCIPLES

The following general principles should govern handling operations:

- Lifting and transporting devices should only be used within their rated (safe working load - SWL) capacity.
- Professional approval should be sought before any lifting or transporting device is used for a purpose for which it was not originally intended.
- Before transporting any object, first ensure it is properly stacked and secured - taking into consideration its nature, the construction of the transport and the journey to be made. Rough or uneven surfaces create extra hazards.
- Where a load is unusual and likely to need special care, ensure all precautions are properly checked and adequately supervised before the load is allowed to move.
- Only authorised personnel should be permitted to use any lifting or transporting devices. Where there is a legal requirement or when driving certain types of equipment or transport, the personnel should be certified or licensed. Typical examples are fork lift truck and crane drivers.

- The use of unauthorised equipment for handling, lifting or transporting cable drums should be prohibited.
- Under no circumstances should case grabs be used for lifting cable drums.

HANDLING AND ROLLING OF DRUMS

Operatives should be properly instructed in the safe rolling of drums, both full and empty, i.e.:

- Always keep a look-out.
- Always push in the direction of travel.
- Never pull with your back to the direction of travel.
- When pushing drums, wearing stout gloves is advised (see recommendations concerning gloves in Section 18.2.1 of the BCA health and safety manual).
- Wherever possible, use a turntable to change the direction of travel. Turntables should be relocked after use. Other methods should only be used if they constitute a safe working practice and the operatives involved have been trained accordingly.
- Take special care to ensure drum movement is always under control on a ramp.
- Avoid rolling drums on inclines where the drum cannot be adequately controlled.
- Under no circumstances should a drum be pushed and then released so that it travels uncontrolled.
- Drums marked 'Roll this way' should always be rolled in the direction indicated.
- To avoid the operative having to stoop, small drums and bobbins should be rolled with a suitable runner. A runner is an L-shaped bar approximately 1.2 m (4 ft) long with a loop handle at the top of the upright. The cross-piece is inserted into the spindle hole of the drum/bobbin (but should not protrude so far out that it becomes a hazard).
- Ensure that only authorised equipment is used when rolling drums. DIY equipment should be prohibited.

D SAFETY
ORAGE OF CABLE DRUMS

BATTENS AND LAGS

The use of strapping or tape to fix battens around drums requires special care. One method of restraining the strapping or tape is the use of a slipping rope strap around the strapping or tape. If it is necessary to remove the strapping or tape then, to prevent lashing or springing ends causing injury, a special tool which holds the two ends of the strapping or tape should be used.

Eye and hand protection should be worn when handling or cutting strapping or tape.

Protruding nails/staples in timbers or battens should be removed during removal of the battens/lags from a drum.

DRUM STORAGE

Cable drums for storage should be securely chocked at floor level, taking into account the following factors. In deciding upon storage areas and methods of stacking, consideration should be given to the evenness and firmness of the ground, the sizes and weights of the drums and the need to prevent any unintended movement when stored. Account should be taken of environmental conditions that may affect the surface of the ground, the serviceability of the drums, battens or chocks and, if applicable, the stability of drum stacks.

WHEN DRUMS ARE STACKED:

- Drums of cable should not be stored or stacked with their flanges in the horizontal position.
- Where drums are stacked vertically, upper layers should rest in the valleys of the flanges in the layer below.
- Where drums are stacked two or more high, every drum on the ground should be chocked on either side.
- The stability of stacks should be checked periodically.

When moving drums in and out of store, the recommendations given in Section 18.2.1 of the BCA health and safety manual should be followed.

A system of inspection should be implemented to ensure that empty drums are fit for their next intended use. As drums stored in the open may deteriorate over a period of time, a similar system of inspection should be followed. Any drums that have deteriorated to a point that makes them unfit for use should be disposed of in a safe manner. If they have been manufactured from chemically treated timber, disposal should be through a licensed waste disposal contractor.

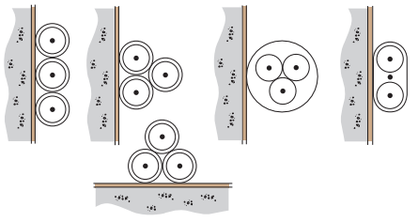
Current Ratings and Volt Drops

CABLE INSTALLATION

Typical cable installations to be used in accordance with BS 7671. Appropiate reference methods for determining current-carrying capacity

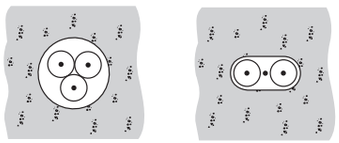
Open and clipped direct

Method 1: Sheathed cables clipped direct to or lying on a non-metallic surface.



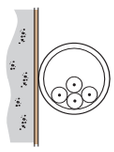
Cables embedded direct in building materials

Method 1: Sheathed cables embedded directly in masonry, brickwork, concrete, plaster or the like (other than thermally insulating materials).

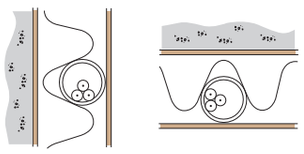


In conduit

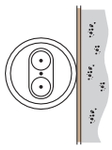
Method 3: Single-core non-sheathed cables in metallic or non-metallic conduit on a wall or ceiling.



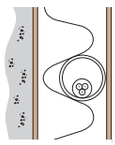
Method 4: Single-core non-sheathed cables in metallic or non-metallic conduit in a thermally insulating wall or above a thermally insulating wall or above a thermally insulating ceiling, the conduit being in contact with a thermally conductive surface on one side.



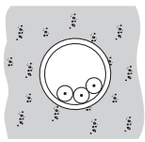
Method 3: Single-core non-sheathed cables in metallic or non-metallic conduit on a wall or ceiling.



Method 4 (or method 6 for table 4D5A): Single-core non-sheathed cables in metallic or non-metallic conduit in a thermally insulating wall or above a thermally insulating wall or above a thermally insulating ceiling, the conduit being in contact with a thermally conductive surface on one side.

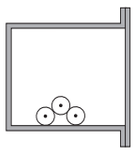


Method 3: Cables in conduit embedded in masonry, brickwork, concrete, plaster or the like (other than thermally insulating materials).

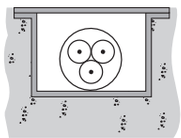


In trunking

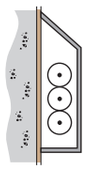
Method 3: Cables in trunking on a wall or suspended in the air.



Method 3: Cables in flush floor trunking.

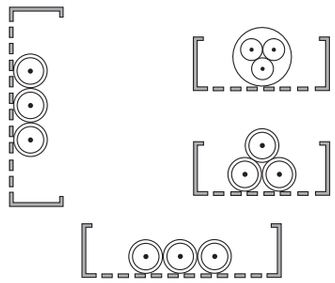


Method 3: Single-core cables in shirting trunking.



In trays

Method 11: Sheathed cables on a perforated cable tray, bunched & unenclosed. A perforated cable tray is considered as a tray in which the holes occupy at least 30% of the surface area.



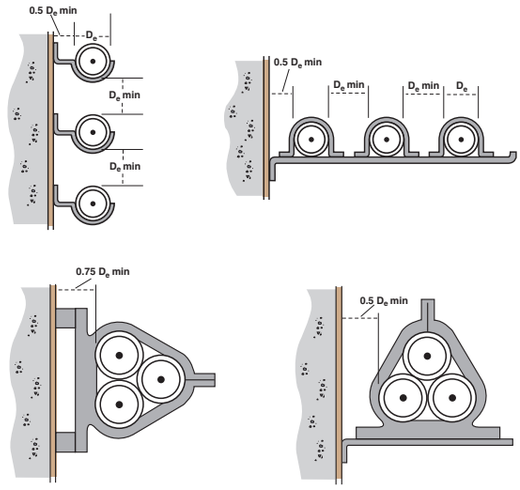
In free air, on cleats, brackets or a ladder

Method 12: In free air, on cleats, brackets or a ladder: Sheathed single-core cables in free air (any supporting metal work under the cables occupying less than 10% of the plan area):

Two or three cables vertically one above the other, minimum distance between cable surfaces equal to the overall cable diameter (D_e): distance from the wall not less than $0.5D_e$.

Two or three cables horizontally, with spacings as above.

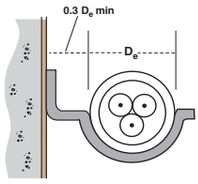
Three cables in trefoil, distance between wall and surface of nearest cable $0.5D_e$ or nearest cables $0.75D_e$.



Method 13: Sheathed multicore cables on ladder or brackets, separation greater than $2D_e$.

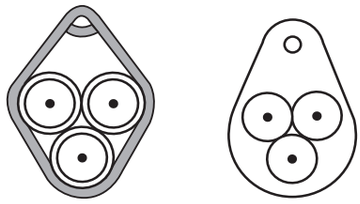
Sheathed multicore cables in free air distance between wall and cable surface not less than $0.3D_e$.

Any supporting metalwork under the cables occupying less than 10% of the plan area.



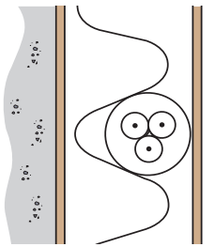
Method 12 or 13: Cables suspended from or incorporating a catenary wire.

NOT RECOMMENDED FOR UNARMOURED CABLES



Cables in building voids

Method 4 (or method 15 for table 4D5A): Sheathed cables installed directly in a thermally insulating wall or above a thermally insulating ceiling, the cable being in contact with a thermally conductive surface on one side (otherwise as Ref Method No 4)



Method 4 and 3

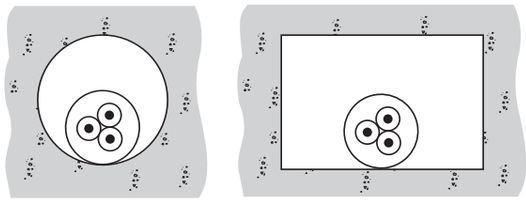
Sheathed cables in ducts or voids formed by the building structure, other than thermally insulating materials.

Method 4: Where the cable has a diameter D_e and the duct has a diameter not greater than $5D_e$ or a perimeter not greater than $20D_e$.

Method 3: Where the duct has either a diameter greater than $5D_e$ or a perimeter greater than $20D_e$.

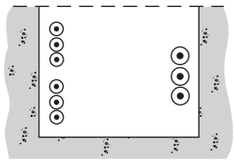
NOTE 1 - Where the perimeter is greater than $60D_e$, installation Methods 18 to 20, as appropriate, should be used.

NOTE 2 - D_e is the overall cable diameter. For groups of cables D_e is the sum of the cable diameters.



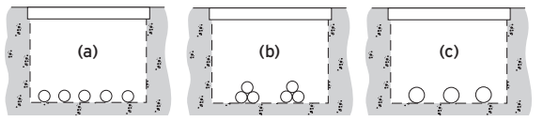
Cables in trenches

Method 12 or 13: Cables supported on the wall of an open or ventilated trench, with spacings as indicated for Ref Method 12 or 13 as appropriate.



Method 18: Cables in enclosed trench 450 mm wide by 300 mm deep (minimum dimensions) including 100 mm cover.

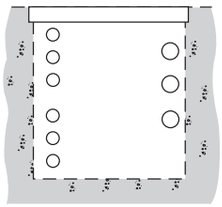
(a)Two single-core cables with surfaces separated by a minimum of one cable diameter;
(b)three single-core cables in trefoil and touching throughout.
(c)Multicore cables or groups of single-core cables with surfaces separated by a minimum of 50 mm.



Method 19: Cables in enclosed trench 450 mm wide by 600 mm deep (minimum dimensions) including 100 mm cover.

Single-core cables arranged in flat groups of two or three on the vertical trench wall with surfaces separated by one diameter with a minimum distance of 50 mm between groups.

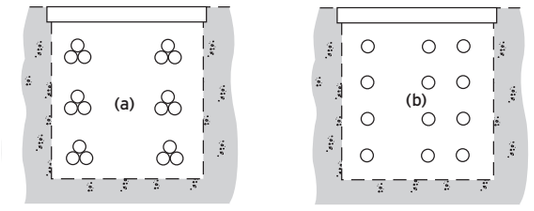
Multicore cables installed with surfaces separated by a minimum* of 75 mm. All cables spaced at least 25 mm from the trench wall



Method 20: Cables in enclosed trench 600 mm wide by 760 mm deep (minimum dimensions) including 100 mm cover.

(a) Single-core cables arranged in groups of two or three in flat formation with the surfaces separated by one diameter or in trefoil formation with cables touching.

(b) Groups separated by a minimum*
of 50 mm either horizontally or vertically. Multicore cables installed with surfaces separated by a minimum* of 75 mm either horizontally or vertically. All cables spaced at least 25 mm from the trench wall.



CALCULATION OF INSTALLED CONTINUOUS CURRENT RATING OF A CABLE

The following information should not be considered a substitute for BS 7671, which should always be consulted.

1. Consider the installation arrangement i.e. BS 7671 installation or ERA 69-30 part V parameters.

2. Ascertain the maximum ambient temperature where the cables will be installed and select the appropriate temperature correction factor from table 4C1 for BS 7671 installation or table ERA-1 for ERA parameters.

3. Consider any grouping arrangement and select the appropriate grouping factor from table 4B1 or 4B3 for BS7671 installation or refer to ERA report 69-30 part III.

4. For auxiliary cables, (with more than 5 cores) select the appropriate factor from table "A" according to the number of loaded cores.

5. Select a tabulated current rating for the appropriate reference installation method, cable type and size from tables 4D1A to 4E4A for BS 7671 installation or tables ERA-2 and ERA-3, for ERA parameters.

6. Multiply the tabulated current and the various factors together to obtain the continuous current rating.

Note:

BS7671 regulation 525-01-02 requires that the voltage drop between the origin of an installation and a socket outlet or the terminals of fixed equipment does not exceed 4% of the nominal voltage of the supply. Voltage drop may be checked using tables 4D1B to 4E4B and 4D5A.

CURRENT RATING CORRECTION FACTORS FOR AMBIENT TEMPERATURE

Table 4C1 - taken from BS 7671, IEE Wiring Regulations:

Ambient Temperature	Correction factor		
	PVC Insulated (70ºC)	HR PVC* Insulated (90ºC)	Thermosetting Insulated (90ºC)
25	1.03	1.03	1.02
30	1.00	1.00	1.00
35	0.94	0.97	0.96
40	0.87	0.94	0.91
45	0.79	0.91	0.87
50	0.71	0.87	0.82
55	0.61	0.84	0.76
60	0.5	0.8	0.71
65	0.35	0.76	0.65
70	-	0.71	0.58
75	-	0.61	0.5
80	-	0.5	0.41
85	-	0.35	0.29

* Factors Applicable to methods 3 and 4 or table 4D1A only.

Table ERA 1 - taken from ERA 69-30 Part V

XLPE insulated cables ambient Temperature °C	Correction factor Laid direct	in ducts Insulated	In air
10	1.03	1.03	1.11
15	1.00	1.00	1.07
20	0.97	0.97	1.04
25	0.93	0.93	1.00
30	0.89	0.89	0.96
35	0.86	0.86	0.92
40	0.82	0.82	0.88
45	0.77	0.77	0.83
50	0.73	0.73	0.78
55	0.68	0.68	0.73
60	0.63	0.63	0.68
65	0.58	0.58	0.62
70	-	-	0.55
75	-	-	0.48
80	-	-	0.39
85	-	-	0.28

TABLE 4B1 - CURRENT RATING CORRECTION FACTORS

FROM BS 7671 - 16th EDITION WIRING REGULATIONS

Correction factors for groups of more than one circuit of single-core cables, or more than one multicore cable (to be applied to the corresponding current-carrying capacity for a single circuit.

Reference method of installation		Correction Factor C_g Number of circuits or multicore cables 2	3	4	5	6	7	Correction Factor C_g Number of circuits or multicore cables 8	9	10	12	14	16	18	20
Enclosed (Method 3 or 4) or bunched and clipped direct to a non-metallic surface (Method 1)		0.80	0.70	0.65	0.60	0.57	0.54	0.52	0.50	0.48	0.45	0.43	0.41	0.39	0.38
Single layer clipped to a non-metallic surface (Method 1)	Touching	0.85	0.79	0.75	0.73	0.72	0.72	0.71	0.70	-	-	-	-	-	-
	Spaced*	0.94	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Single layer multicore on a perforated metal cable tray, vertical or horizontal (Method 11)	Touching	0.86	0.81	0.77	0.75	0.74	0.73	0.73	0.72	0.71	0.70	-	-	-	-
	Spaced*	0.91	0.89	0.88	0.87	0.87	-	-	-	-	-	-	-	-	-
Single layer, single core on a perforated metal cable tray, touching (Method 11)	Horizontal	0.90	0.85	-	-	-	-	-	-	-	-	-	-	-	-
	Vertical	0.85	-	-	-	-	-	-	-	-	-	-	-	-	-
Single layer multicore touching on ladder supports (Method 13)		0.86	0.82	0.80	0.79	0.78	0.78	0.78	0.77	-	-	-	-	-	-

1. The factors in the table are applicable to groups of cables all of one size. The value of current derived from application of the appropriate factors is the maximum current to be carried by any of the cables in the group.

2. If, due to known operating conditions, a cable is expected to carry not more than 30% of its grouped rating, it may be ignored for the purpose of obtaining the rating factor for the rest of the group. For Example, a group of N loaded cables would normally require a group reduction factor of C_g applied to the tabulated I_t. However, if M cables in the group carry loads which are not greater than $0.3C_gI_t$ amperes the other cables can be sized by using the group rating factor corresponding to (N-M) cables.

*3. Spaced by a clearance between adjacent surfaces of at least one cable diameter (D_e). Where the horizontal clearances between adjacent cables exceeds $2D_e$, no correction factors need be applied.

**4. When cables having differing conductor operating temperatures are grouped together, the current rating shall be based on the lowest operating temperature of any cable in the group.

TABLE 4B3 - CURRENT RATING CORRECTION FACTORS

FROM BS 7671 - 16th EDITION WIRING REGULATIONS

Correction factors for cables installed in enclosed trenches (Installation Methods 18, 19 and 20)*

The correction factors tabulated below relate to the disposition of cables illustrated and are applicable to the current-carrying capacities for Reference Methods 12 or 13.

	Correction Factor									
	Installation Method 18				Installation Method 19			Installation Method 20		
Conductor cross-sectional area (mm^2)	2 single core cables, or 1 three or four core cable	3 single core cables, or 2 two core cables	4 single core cables, or 2 three or four core cables	6 single core cables, 4 two core cables, or 3 three or four core cables	6 single core cables, 4 two core cables, or 3 three or four core cables	8 single core cables, or 4 three or four core cables	12 single core cables, 8 two core cables, or 6 three or four core cables	12 single core cables, 8 two core cables, or 6 three or four core cables	18 single core cables, 12 two core cables, or 9 three or four core cables	24 single core cables, 16 two core cables, or 12 three or four core cables
1	2	3	4	5	6	7	8	9	10	11
4	0.93	0.90	0.87	0.82	0.86	0.83	0.76	0.81	0.74	0.69
6	0.92	0.89	0.86	0.81	0.86	0.82	0.75	0.80	0.73	0.68
10	0.91	0.88	0.85	0.80	0.85	0.80	0.74	0.78	0.72	0.66
16	0.91	0.87	0.84	0.78	0.83	0.78	0.71	0.76	0.70	0.64
25	0.90	0.86	0.82	0.76	0.81	0.76	0.69	0.74	0.67	0.62
35	0.89	0.85	0.81	0.75	0.80	0.74	0.68	0.72	0.66	0.60
50	0.88	0.84	0.79	0.74	0.78	0.73	0.66	0.71	0.64	0.59
70	0.87	0.82	0.78	0.72	0.77	0.72	0.64	0.70	0.62	0.57
95	0.86	0.81	0.76	0.70	0.75	0.70	0.63	0.68	0.60	0.55
120	0.85	0.80	0.75	0.69	0.73	0.68	0.61	0.66	0.58	0.53
150	0.84	0.78	0.74	0.67	0.72	0.67	0.59	0.64	0.57	0.51
185	0.83	0.77	0.73	0.65	0.70	0.65	0.58	0.63	0.55	0.49
240	0.82	0.76	0.71	0.63	0.69	0.63	0.56	0.61	0.53	0.48
300	0.81	0.74	0.69	0.62	0.68	0.62	0.54	0.59	0.52	0.46
400	0.80	0.73	0.67	0.59	0.66	0.60	0.52	0.57	0.50	0.44
500	0.78	0.72	0.66	0.58	0.64	0.58	0.51	0.56	0.48	0.43
630	0.77	0.71	0.65	0.56	0.63	0.57	0.49	0.54	0.47	0.41
800	0.75	0.69	0.63	0.54	0.61	0.55	0.47	0.52	0.45	0.39
1000	0.73	0.67	0.61	0.52	0.59	0.53	0.45	0.50	0.43	0.37

*When cables having different conductor operating temperatures are grouped together the current rating shall be based on the lowest operating temperature of any cable in the group.

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NOTES:
1. The factors in Table 4B3 are applicable to groups of cables all of one size. The value of current derived from application of the appropriate factors is the maximum current to be carried by any of the cables in the group.

2. If, due to known operating conditions, a cable is expected to carry not more than 30% of its GROUPED rating, it may be ignored for the purpose of obtaining the rating factor for the rest of the group.
3. When cables having different conductor operating temperatures are group together the current rating shall be based on the lowest operating temperature of any cable in the group.

4. When the number of cables used differs from those stated in the table, the derating factor for the next higher stated number of cables shall be used.

TABLE A - MULTICORE CONTROL AND AUXILIARY CABLES.

Where more than two cores carry an appreciable current, the rating factors listed below should be applied to the two core values.

Number of cores.	3	4	5	6	7	10	12	14
Rating factor.	0.86	0.72	0.68	0.62	0.57	0.51	0.47	0.46
Number of cores.	19	24	27	30	37	44	46	48
Rating factor.	0.41	0.38	0.37	0.36	0.33	0.33	0.33	0.33

SHORT CIRCUIT CURRENT RATINGS FOR PVC INSULATED CABLE

Short circuit ratings for PVC insulated armoured cables to BS 6346 and non-armoured cables to BS 6004.

Conductor size mm^2	One second rating amp
1	115
1.5	173
2.5	288
4	460
6	690
10	1150
16	1850
25	2875
35	4025
50	5750
70	8050
95	10930
120	13800
150	17250
185	21280
240	27600
300	34500
400	41200
500	51500
630	64900

The ratings are based on a maximum permissable conductor temperature of 160°C for sizes up to 300mm2and 140°C for 400mm^2 and above, the temperature at the commencement of the fault being 70°C. It is assumed that all the heat generated during the fault is retained in the conductor. For fault times other than one second, the appropriate rating given in column 2 above should be divided by the square root of the fault time in seconds.

CONDUCTOR TEMPERATURE

$$T_c = \left[\left(\frac{I_b}{I_t}\right)^2 \times (T_p - TA_R)\right] + TA$$

Where

T_p = Maximum permitted conductor temperature, (°C)
T_c = Conductor temperature for load current
I_b = Design current of circuit
I_t = Tabulated current rating
TA_R = Ambient temperature rating for current I_t
TA = Ambient temperature

NOTE: The above formula enables the system designer to calculate the actual conductor running temperature for current loadings other than those stated in the tables.

SHORT CIRCUIT CURRENT RATINGS FOR THERMOSETTING INSULATED CABLES

Short circuit ratings for XLPE insulated and thermosetting OHLS® insulated cables to BS 5467, BS 6724 and BS 7211.

Conductor size mm^2	One second rating amp
1	140
1.5	210
2.5	350
4	570
6	850
10	1400
16	2200
25	3600
35	5000
50	6800
70	9800
95	13600
120	17200
150	21100
185	26500
240	34900
300	43700
400	55900
500	70600
630	90800

The ratings are based on a maximum permissible conductor temperature of 250°C, the temperature at the commencement of the fault being 90°C. It is assumed that all the heat generated during the fault is retained in the conductor. For fault times other than one second, the appropriate rating given in column 2 above should be divided by the square root of the fault time in seconds.

TABLE 4D1A - SINGLE CORE PVC INSULATED CABLES, NON-ARMOURED, WITH OR WITHOUT SHEATH COPPER CONDUCTORS BS 6004

BS 7671 - 16th edition, IEE Wiring Regulations
Ambient temperature: 30°C
Conductor operating temperature: 70°C
Current-carrying capacity (Amperes):

Conductor cross-sectional area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc.)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (free air)		
									Horizontal Flat Spaced	Vertical Flat Spaced	Trefoil
	2 cables, single-phase A.C or D.C	3 or 4 cables, three -phase A.C	2 cables, single-phase A.C or D.C	3 or 4 cables, three - phase A.C	2 cables, single-phase AC or D.C flat & touching	3 or 4 cables, three-phase A.C flat & touching or trefoil	2 cables, single-phase A.C or D.C flat & touching	3 or 4 cables, three-phase A.C flat & touching or trefoil	2 cables, single-phase A.C or D.C or 3 cables three-phase	2 cables, single-phase A.C or D.C or 3 cables three-phase	3 cables trefoil, three-phase A.C
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1	11	10.5	13.5	12	15.5	14	-	-	-	-	-
1.5	14.5	13.5	17.5	15.5	20	18	-	-	-	-	-
2.5	20	18	24	21	27	25	-	-	-	-	-
4	26	24	32	28	37	33	-	-	-	-	-
6	34	31	41	36	47	43	-	-	-	-	-
10	46	42	57	50	65	59	-	-	-	-	-
16	61	56	76	68	87	79	-	-	-	-	-
25	80	73	101	89	114	104	126	112	146	130	110
35	99	89	125	110	141	129	156	141	181	162	137
50	119	108	151	134	182	167	191	172	219	197	167
70	151	136	192	171	234	214	246	223	281	254	216
95	182	164	232	207	284	261	300	273	341	311	264
120	210	188	269	239	330	303	349	318	396	362	308
150	240	216	300	262	381	349	404	369	456	419	356
185	273	245	341	296	436	400	463	424	521	480	409
240	320	286	400	346	515	472	549	504	615	569	485
300	367	328	458	394	594	545	635	584	709	659	561
400	-	-	546	467	694	634	732	679	852	795	656
500	-	-	626	533	792	723	835	778	982	920	749
630	-	-	720	611	904	826	953	892	1138	1070	855
800	-	-	-	-	1030	943	1086	1020	1265	1188	971
1000	-	-	-	-	1154	1058	1216	1149	1420	1337	1079

1. Where the conductor is to be protected by a semi-enclosed fuse to BS3036, see item 6.2 of the preface to appendix 4 of BS 7671, the 16th Edition of the IEE Wiring Regulations.

2. The current-carrying capacities in columns 2 to 5 are also applicable to flexible cables to BS 6004 Table 1 (c) and to 90°C heat resisting p.v.c. cables to BS 6231 where the cables are used in fixed installations.

TABLE 4D1B - SINGLE CORE PVC INSULATED CABLES, NON-ARMOURED, WITH OR WITHOUT SHEATH, COPPER CONDUCTORS BS 6004

BS 7671 - 16th edition, IEE Wiring Regulations
Conductor operating temperature: 70°C
Voltage drop (millivolts per ampere per metre)

Conductor cross-sectional area	2 cables D.C.	2 cables - single phase A.C. Reference Methods 3 & 4 (Enclosed in conduit etc in or on a wall)			2 cables - single phase A.C. Reference Methods 1 & 11 (Clipped direct or on trays, Touching)			2 cables - single phase A.C. Reference Method 12 (Spaced*)		
1	2	3			4			5		
mm^2	mV/A/m		mV/A/m			mV/A/m			mV/A/m	
1	44		44			44			44	
1.5	29		29			29			29	
2.5	18		18			18			18	
4	11		11			11			11	
6	7.3		7.3			7.3			7.3	
10	4.4		4.4			4.4			4.4	
16	2.8		2.8			2.8			2.8	
		r	x	z	r	x	z	r	x	z
25	1.75	1.80	0.33	1.80	1.75	0.20	1.75	1.75	0.29	1.80
35	1.25	1.30	0.31	1.30	1.25	0.195	1.25	1.25	0.28	1.30
50	0.93	0.95	0.30	1.00	0.93	0.190	0.95	0.93	0.28	0.97
70	0.63	0.65	0.29	0.72	0.63	0.185	0.66	0.63	0.27	0.69
95	0.46	0.49	0.28	0.56	0.47	0.180	0.50	0.47	0.27	0.54
120	0.36	0.39	0.27	0.47	0.37	0.175	0.41	0.37	0.26	0.45
150	0.29	0.31	0.27	0.41	0.30	0.175	0.34	0.29	0.26	0.39
185	0.23	0.25	0.27	0.37	0.24	0.170	0.29	0.24	0.26	0.35
240	0.180	0.195	0.26	0.33	0.185	0.165	0.25	0.185	0.25	0.31
300	0.145	0.160	0.26	0.31	0.150	0.165	0.22	0.150	0.25	0.29
400	0.105	0.130	0.26	0.29	0.120	0.160	0.20	0.115	0.25	0.27
500	0.086	0.110	0.26	0.28	0.098	0.155	0.185	0.093	0.24	0.26
630	0.068	0.094	0.25	0.27	0.081	0.155	0.175	0.076	0.24	0.25
800	0.053		-		0.068	0.150	0.165	0.061	0.24	0.25
1000	0.042		-		0.059	0.150	0.160	0.050	0.24	0.24

* Spacings larger than those specified in Method 12 (see Table 4A of BS 7671, the 16th Edition of the IEE Wiring Regulations) will result in larger voltage drop.

TABLE 4D1B CONTINUED

Conductor cross-sectional area	3 or 4 cables - Three phase A.C.						3 or 4 cables - Three phase A.C.					
	Reference Methods 3 & 4 (Enclosed in conduit etc in or on a wall)			Reference Methods 1, 11 & 12 (In trefoil)			Reference Methods 1 & 11 (Flat & Touching)			Reference Method 12 (Flat Spaced*)		
1	6			7			8			9		
mm^2		mV/A/m			mV/A/m			mV/A/m			mV/A/m	
1		38			38			38			38	
1.5		25			25			25			25	
2.5		15			15			15			15	
4		9.5			9.5			9.5			9.5	
6		6.4			6.4			6.4			6.4	
10		3.8			3.8			3.8			3.8	
16		2.4			2.4			2.4			2.4	
	r	x	z	r	x	z	r	x	z	r	x	z
25	1.50	0.29	1.55	1.50	0.175	1.50	1.50	0.25	1.55	1.50	0.32	1.55
35	1.10	0.27	1.10	1.10	0.170	1.10	0.24	1.10	1.10	1.10	0.32	1.15
50	0.81	0.26	0.85	0.80	0.165	0.82	0.80	0.24	0.84	0.80	0.32	0.86
70	0.56	0.25	0.61	0.55	0.160	0.57	0.55	0.24	0.60	0.55	0.31	0.63
95	0.42	0.24	0.48	0.41	0.155	0.43	0.41	0.23	0.47	0.40	0.31	0.51
120	0.33	0.23	0.41	0.32	0.150	0.36	0.32	0.23	0.40	0.32	0.30	0.44
150	0.27	0.23	0.36	0.26	0.150	0.30	0.26	0.23	0.34	0.26	0.30	0.40
185	0.22	0.23	0.32	0.21	0.145	0.26	0.21	0.22	0.31	0.21	0.30	0.36
240	0.17	0.23	0.29	0.160	0.145	0.22	0.160	0.22	0.27	0.160	0.29	0.34
300	0.14	0.23	0.27	0.130	0.140	0.190	0.130	0.22	0.25	0.130	0.29	0.32
400	0.12	0.22	0.25	0.105	0.140	0.175	0.105	0.21	0.24	0.100	0.29	0.31
500	0.10	0.22	0.25	0.086	0.135	0.160	0.086	0.21	0.23	0.081	0.29	0.30
630	0.08	0.22	0.24	0.072	0.135	0.150	0.072	0.21	0.22	0.066	0.28	0.29
800		-		0.060	0.130	0.145	0.060	0.21	0.22	0.053	0.28	0.29
1000		-		0.052	0.130	0.140	0.052	0.20	0.21	0.044	0.28	0.28

* Spacings larger than those specified in Method 12 (see Table 4A of BS 7671, the 16th Edition of the IEE Wiring Regulations) will result in larger voltage drop.

TABLE 4D2A - MULTICORE PVC INSULATED CABLES, NON ARMOURED COPPER CONDUCTORS BS 6004

BS 7671 - 16th edition, IEE Wiring Regulations
Ambient temperatue: 30°C
Conductor operating temperature: 70°C
Current carrying capacities (Amperes):

Conductor cross- sectional area	Reference method 4 (enclosed in an insulated wall, etc)		Reference method 3 (enclosed in conduit on a wall or ceiling, or in trunking)		Reference method 1 (clipped direct)		Reference method 11 (on a perforated cable tray), or reference method 13 (free air)	
	1 two core cable,* single phase A.C. or D.C.	1 three or four core cable,* three phase A.C.	1 two core cable,* single phase A.C. or D.C.	1 three or four core cable,* three phase A.C.	1 two core cable,* single phase A.C. or D.C.	1 three or four core cable,* three phase A.C.	1 two core cable,* single phase A.C. or D.C.	1 three or four core cable,* three phase A.C.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
1	11	10	13	11.5	15	13.5	17	14.5
1.5	14	13	16.5	15	19.5	17.5	22	18.5
2.5	18.5	17.5	23	20	27	24	30	25
4	25	23	30	27	36	32	40	34
6	32	29	38	34	46	41	51	43
10	43	39	52	46	63	57	70	60
16	57	52	69	62	85	76	94	80
25	75	68	90	80	112	96	119	101
35	92	83	111	99	138	119	148	126
50	110	99	133	118	168	144	180	153
70	139	125	168	149	213	184	232	196
95	167	150	201	179	258	223	282	238
120	192	172	232	206	299	259	328	276
150	219	196	258	225	344	299	379	319
185	248	223	294	255	392	341	434	364
240	291	261	344	297	461	403	514	430
300	334	298	394	339	530	464	593	497
400	-	-	470	402	634	557	715	597

*With or without protective conductor

Circular conductors are assumed for sizes up to and including 16mm2. Values for larger sizes relate to shaped conductors and may safely be applied to circularconductors.

Note: Where the conductor is to be protected by a semi-enclosed fuse to BS 3036, see item 6.2 of the preface to appendix 4 of BS 7671, the 16th Edition of the IEE Wiring Regulations.

TABLE 4D2B - MULTICORE PVC INSULATED CABLES, NON ARMOURED COPPER CONDUCTORS BS 6004

BS 7671 - 16th edition, IEE Wiring Regulations
Ambient temperatue: 30°C

Conductor cross-sectional area	Two-core cable D.C.	Two-core cable single phase A.C.			Three or four-core cable three phase A.C.		
1	2	3			4		
mm²	mV/A/m	mV/A/m			mV/A/m		
1	44	44			38		
1.5	29	29			25		
2.5	18	18			15		
4	11	11			9.5		
6	7.3	7.3			6.4		
10	4.4	4.4			3.8		
16	2.8	2.8			2.4		
		r	x	z	r	x	z
25	1.75	1.75	0.170	1.75	1.50	0.145	1.5
35	1.25	1.25	0.165	1.25	1.10	0.145	1.1
50	0.93	0.93	0.165	0.94	0.80	0.140	0.81
70	0.63	0.63	0.160	0.65	0.55	0.140	0.57
95	0.46	0.47	0.155	0.50	0.41	0.135	0.43
120	0.36	0.38	0.155	0.41	0.33	0.135	0.35
150	0.29	0.30	0.155	0.34	0.26	0.130	0.29
185	0.23	0.25	0.150	0.29	0.21	0.130	0.25
240	0.180	0.190	0.150	0.24	0.165	0.130	0.21
300	0.145	0.155	0.145	0.21	0.135	0.130	0.185
400	0.105	0.115	0.145	0.185	0.100	0.125	0.160

TABLE 4D5A - 70° C PVC INSULATED AND SHEATHED FLAT CABLE WITH PROTECTIVE CONDUCTOR, COPPER CONDUCTORS BS 6004

BS 7671 - 16th edition, IEE Wiring Regulations
Ambient temperature: 30°C
Conductor operating temperature: 70°C
Current-carrying capacity (Amperes):
Voltage drop (millivolts per ampere per metre)

Conductor cross-sectional area	Installation Method 6* (Enclosed in conduit in an insulated wall)	Installation Method 15* (Installed directly in an insulated wall)	Reference Method 1 (clipped direct)	Voltage drop
	1 two-core cable, single phase a.c. or d.c.	1 two-core cable, single phase a.c. or d.c.		
(mm²)	(A)	(A)	(A)	(mV/A/m)
1	11.5	12	16	44
1.5	14.5	15	20	29
2.5	20	21	27	18
4	26	27	37	11
6	32	35	47	7.3
10	44	47	64	4.4
16	57	63	85	2.8

Notes:

1. Where the conductor is to be protected by a semi-enclosed fuse to BS 3036, see item 6.2 of the preface to appendix 4 of BS 7671, the IEE Wiring Regulations, 16th Edition.

2. * These methods are regarded as Reference Methods for the cable types specified by the table.

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TABLE 4E1A - SINGLE CORE CABLES HAVING THERMOSETTING INSULATION, NON-ARMOURED, WITH OR WITHOUT SHEATH, COPPER CONDUCTORS BS 7211 & BS 7889

BS 7671 - 16th edition, IEE Wiring Regulations
Ambient temperature: 30°C
Conductor operating temperature: 90°C):
Current-carrying capacity (Amperes):

Conductor cross-sectional area	Reference Method 4 (enclosed in conduit in thermally insulating wall etc.)		Reference Method 3 (enclosed in conduit on a wall or in trunking etc)		Reference Method 1 (clipped direct)		Reference Method 11 (on a perforated cable tray, horizontal or vertical)		Reference Method 12 (free air)		
									Horizontal Flat Spaced	Vertical Flat Spaced	Trefoil
	2 cables, single-phase A.Co r D.C	3 or 4 cables, three -phase A.C	2 cables, single-phase A.C or D.C	3 or 4 cables, three - phase A.C	2 cables, single-phase AC or D.C flat & touching	3 or 4 cables, three-phase A.C flat & touching or trefoil	2 cables, single-phase A.C or D.C flat & touching	3 or 4 cables, three-phase A.C flat & touching or trefoil	2 cables, single-phase A.C or D.C or 3 cables three-phase	2 cables, single-phase A.C or D.C or 3 cables three-phase	3 cables trefoil, three-phase A.C
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
1	14	13	17	15	19	17.5	-	-	-	-	-
1.5	18	17	22	19	25	23	-	-	-	-	-
2.5	24	23	30	26	34	31	-	-	-	-	-
4	33	30	40	35	46	41	-	-	-	-	-
6	43	39	51	45	59	54	-	-	-	-	-
10	58	53	71	63	81	74	-	-	-	-	-
16	76	70	95	85	109	99	-	-	-	-	-
25	100	91	126	111	143	130	158	140	183	163	138
35	124	111	156	138	176	161	195	176	226	203	171
50	149	135	189	168	228	209	293	215	274	246	209
70	189	170	240	214	293	268	308	279	351	318	270
95	228	205	290	259	355	326	375	341	426	389	330
120	263	235	336	299	413	379	436	398	495	453	385
150	300	270	375	328	476	436	505	461	570	524	445
185	341	306	426	370	545	500	579	530	651	600	511
240	400	358	500	433	644	590	686	630	769	711	606
300	459	410	573	493	743	681	794	730	886	824	701
400	-	-	683	584	868	793	915	849	1065	994	820
500	-	-	783	666	990	904	1044	973	1228	1150	936
630	-	-	900	764	1130	1033	1191	1115	1423	1338	1069
800	-	-	-	-	1288	1179	1358	1275	1581	1485	1214
1000	-	-	-	-	1443	1323	1520	1436	1775	1671	1349

Note: Where the conductor is to be protected by a semi-enclosed fuse to BS 3036, see Item 6.2 of the preface to appendix 4 of BS 7671 of the 16th Edition of the IEE Wiring Regulations.

The current-carrying capacity in columns 2 to 5 are also applicable to flexible cables to BS 7211 Table 3(b) where the cables are used in fixed installations.

For cable in rigid p.v.c. conduit the values stated in Table 4D1 of BS 7671of the 16th Edition of the IEE Wiring Regulations are applicable(See Regulations 521-05).

Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductor is suitable for theconductor operating temperature (See Regulation 512-02 of BS 7671 of the 16th Edition of the IEE Wiring Regulations).

TABLE 4E1B - SINGLE CORE CABLES HAVING THERMOSETTING INSULATION, NON-ARMOURED, WITH OR WITHOUT SHEATH, COPPER CONDUCTORS BS 7211 & BS 7889

BS 7671 - 16th edition, IEE Wiring Regulations
Conductor operating temperature: 90°C
Voltage drop (millivolts per ampere per metre)

Conductor cross-sectional area	2 cables D.C.	2 cables - single phase A.C. Reference Methods 3 & 4 (Enclosed in conduit etc in or on a wall)			2 cables - single phase A.C. Reference Methods 1 & 11 (Clipped direct or on trays, Touching)			2 cables - single phase A.C. Reference Method 12 (Spaced*)		
1	2	3			4			5		
mm^2	mV/A/m		mV/A/m			mV/A/m			mV/A/m	
1	46		46			46			46	
1.5	31		31			31			31	
2.5	19		19			19			19	
4	12		12			12			12	
6	7.9		7.9			7.9			7.9	
10	4.7		4.7			4.7			4.7	
16	2.9		2.9			2.9			2.9	
		r	x	z	r	x	z	r	x	z
25	1.85	1.85	0.31	1.90	1.85	0.190	1.85	1.85	0.28	1.85
35	1.35	1.35	0.29	1.35	1.35	0.180	1.35	1.35	0.27	1.35
50	0.99	1.00	0.29	1.05	0.99	0.180	1.00	0.99	0.27	1.00
70	0.68	0.70	0.28	0.75	0.68	0.175	0.71	0.68	0.26	0.73
95	0.49	0.51	0.27	0.58	0.49	0.170	0.52	0.49	0.26	0.56
120	0.39	0.41	0.26	0.48	0.39	0.165	0.43	0.39	0.25	0.47
150	0.32	0.33	0.26	0.43	0.32	0.165	0.36	0.32	0.25	0.41
185	0.25	0.27	0.26	0.37	0.26	0.165	0.30	0.25	0.25	0.36
240	0.190	0.21	0.26	0.33	0.20	0.160	0.25	0.195	0.25	0.31
300	0.155	0.175	0.25	0.31	0.160	0.160	0.22	0.155	0.25	0.29
400	0.120	0.140	0.25	0.29	0.130	0.155	0.20	0.125	0.24	0.27
500	0.093	0.120	0.25	0.28	0.105	0.155	0.185	0.098	0.24	0.26
630	0.072	0.100	0.25	0.27	0.086	0.155	0.175	0.078	0.24	0.25
800	0.056		-		0.072	0.150	0.170	0.064	0.24	0.25
1000	0.045		-		0.063	0.150	0.165	0.054	0.24	0.24

Spacings larger than those specified in Method 12 (see Table 4A of the 16th Edition of the IEE Wiring Regulations) will result in larger volt drops.

TABLE 4E1B CONTINUED

Conductor cross-sectional area	3 or 4 cables - Three phase A.C.						3 or 4 cables - Three phase A.C.					
	Reference Methods 3 & 4 (Enclosed in conduit etc in or on a wall)			Reference Methods 1, 11 & 12 (In trefoil)			Reference Methods 1 & 11 (Flat & Touching)			Reference Method 12 (Flat Spaced*)		
1	6			7			8			9		
mm^2		mV/A/m			mV/A/m			mV/A/m			mV/A/m	
1		40			40			40			40	
1.5		27			27			27			27	
2.5		16			16			16			16	
4		10			10			10			10	
6		6.8			6.8			6.8			6.8	
10		4.0			4.0			4.0			4.0	
16		2.5			2.5			2.5			2.5	
	r	x	z	r	x	z	r	x	z	r	x	z
25	1.60	0.27	1.65	1.60	0.165	1.60	1.60	0.190	1.60	1.60	0.27	1.65
35	1.15	0.25	1.15	1.15	0.155	1.15	1.15	0.180	1.15	1.15	0.26	1.20
50	0.87	0.25	0.90	0.86	0.155	0.87	0.86	0.180	0.87	0.86	0.26	0.89
70	0.60	0.24	0.65	0.59	0.150	0.61	0.59	0.175	0.62	0.59	0.25	0.65
95	0.44	0.23	0.50	0.43	0.145	0.45	0.43	0.170	0.46	0.43	0.25	0.49
120	0.35	0.23	0.42	0.34	0.140	0.37	0.34	0.165	0.38	0.34	0.24	0.42
150	0.29	0.23	0.37	0.28	0.140	0.31	0.28	0.165	0.32	0.28	0.24	0.37
185	0.23	0.23	0.32	0.22	0.140	0.26	0.22	0.165	0.28	0.22	0.24	0.33
240	0.185	0.22	0.29	0.170	0.140	0.22	0.170	0.165	0.24	0.170	0.24	0.29
300	0.150	0.22	0.27	0.140	0.140	0.195	0.135	0.160	0.21	0.135	0.24	0.27
400	0.125	0.22	0.25	0.110	0.135	0.175	0.110	0.160	0.195	0.110	0.24	0.26
500	0.100	0.22	0.24	0.090	0.135	0.160	0.088	0.160	0.180	0.085	0.24	0.25
630	0.088	0.21	0.23	0.074	0.135	0.150	0.071	0.160	0.170	0.068	0.23	0.24
800		-		0.062	0.130	0.145	0.059	0.155	0.165	0.055	0.23	0.24
1000		-		0.055	0.130	0.140	0.050	0.155	0.165	0.047	0.23	0.24

Spacings larger than those specified in Method 12 (see Table 4A of the 16th Edition of the IEE Wiring Regulations) will result in larger volt drops.

TABLE 4E2A - MULTICORE CABLE HAVING THERMOSETTING INSULATION, NON-ARMOURED, COPPER CONDUCTORS BS 7211

BS 7671 - 16th edition, IEE Wiring Regulations
Ambient temperature: 30°C
Conductor operating temperature: 90°C
Current carrying capacity (Amperes):

Conductor cross- sectional area	Reference method 4 (enclosed in an insulated wall, etc)		Reference method 3 (enclosed in conduit on a wall or ceiling, or in trunking)		Reference method 1 (clipped direct)		Reference method 11 (on a perforated cable tray), or reference method 13 (free air)	
	1 two core cable,* single phase A.C. or D.C.	1 three or four core cable,* three phase A.C.	1 two core cable,* single phase A.C. or D.C.	1 three or four core cable,* three phase A.C.	1 two core cable,* single phase A.C. or D.C.	1 three or four core cable,* three phase A.C.	1 two core cable,* single phase A.C. or D.C.	1 three or four core cable,* three phase A.C.
1	2	3	4	5	6	7	8	9
mm^2	A	A	A	A	A	A	A	A
1	14.5	13	17	15	19	17	21	18
1.5	18.5	16.5	22	19.5	24	22	26	23
2.5	25	22	30	26	33	30	36	32
4	33	30	40	35	45	40	49	42
6	42	38	51	44	58	52	63	54
10	57	51	69	60	80	71	86	75
16	76	68	91	80	107	96	115	100
25	99	89	119	105	138	119	149	127
35	121	109	146	128	171	147	185	158
50	145	130	175	154	209	179	225	192
70	183	164	221	194	269	229	289	246
95	220	197	265	233	328	278	352	298
120	253	227	305	268	382	322	410	346
150	290	259	334	300	441	371	473	399
185	329	295	384	340	506	424	542	456
240	386	346	459	398	599	500	641	538
300	442	396	532	455	693	576	741	621
400	-	-	625	536	803	667	865	741

1. Where the conductor is to be protected by a semi-enclosed fuse to BS 3036, see item 6.2 of the preface to appendix 4 of BS 7671, the 16th Edition of the IEE Wiring Regulations.

2. Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductor is suitable for the conductor operatingtemperature (See Regulation 512-02).

3. *With or without a protective conductor.

4. For cables in rigid pvc conduit the values stated in table 4D2 of BS 7671, the 16th Edition of the IEE Wiring Regulations. are applicable (see Regulation 521 -05).

5. Where cables in this table are connected to equipment or accessories designed to operate at a temperature not exceeding 70°C, the current ratings given in the equivalent table for 70°C pvc insulated cables (BS 6004, BS 6346) shall be used (see also Regulation 523-01-01).

6. Circular conductors are assumed for sizes up to and including $16mm^2$. Values for larger sizes relate to shaped conductors and may safely be applied to circular conductors.

TABLE 4E2B - MULTICORE CABLE HAVING THERMOSETTING INSULATION, NON-ARMOURED, COPPER CONDUCTORS BS 7211

Voltage drop (millivolts per ampere per metre)
Conductor operating temperature: 90°C

Conductor cross-sectional area	Two-core cable D.C.	Two-core cable single phase A.C.			Three or four-core cable three phase A.C.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
1	46	46			40		
1.5	31	31			27		
2.5	19	19			16		
4	12	12			10		
6	7.9	7.9			6.8		
10	4.7	4.7			4.0		
16	2.9	2.9			2.5		
	r	x	z	r	x	z	
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15
50	0.98	0.99	0.155	1.00	0.86	0.135	0.87
70	0.67	0.67	0.150	0.69	0.59	0.130	0.60
95	0.49	0.50	0.150	0.52	0.43	0.130	0.45
120	0.39	0.40	0.145	0.42	0.34	0.130	0.37
150	0.31	0.32	0.145	0.35	0.28	0.125	0.30
185	0.25	0.26	0.145	0.29	0.22	0.125	0.26
240	0.195	0.200	0.140	0.24	0.175	0.125	0.21
300	0.155	0.160	0.140	0.21	0.140	0.120	0.185
400	0.120	0.130	0.140	0.190	0.115	0.120	0.165

TABLE 4E3A - SINGLE CORE CABLES HAVING THERMOSETTING INSULATION (NON-MAGNETIC ARMOUR), COPPER CONDUCTORS BS 5467 BS 6724

BS 7671 - 16th edition, IEE Wiring Regulations
Ambient temperature: 30°C
Conductor operating temperature: 90°C
Current-carrying capacity (Amperes):

Conductor cross-sectional area	Reference Method 1 (clipped direct)		Reference method 11 (on a perforated cable tray)		Reference method 12 (Free Air)						
					2 cables single phase A.C.		2 cables D.C.		3 or 4 cables, three phase A.C.		
	2 cables single phaseA.C. or D.C. Flat & Touching	3 or 4 cables three phaseA.C. Flat & Touching	2 cables single phase A.C. or D.C.Flat & Touching	3 or 4 cables three phase A.C. Flat & Touching	Horizontal flat spaced	Vertical flat spaced	Horizontal spaced	Vertical spaced	Horizontal flat spaced	Vertical flat spaced	3 cables trefoil
1	2	3	4	5	6	7	8	9	10	11	12
mm^2	A	A	A	A	A	A	A	A	A	A	A
50	237	220	253	232	282	266	284	270	288	266	222
70	303	277	322	293	357	337	356	349	358	331	285
95	367	333	389	352	436	412	446	426	425	393	346
120	425	383	449	405	504	477	519	497	485	449	402
150	488	437	516	462	566	539	600	575	549	510	463
185	557	496	587	524	643	614	688	660	618	574	529
240	656	579	689	612	749	714	815	782	715	666	625
300	755	662	792	700	842	805	943	906	810	755	720
400	853	717	899	767	929	889	1137	1094	848	797	815
500	962	791	1016	851	1032	989	1314	1266	923	871	918
630	1082	861	1146	935	1139	1092	1528	1474	992	940	1027
800	1170	904	1246	987	1204	1155	1809	1744	1042	978	1119
1000	1261	961	1345	1055	1289	1238	2100	2026	1110	1041	1214

1. Where the conductor is to be protected by a semi-enclosed fuse to BS 3036, see item 6.2 of the preface to appendix 4 of BS 7671, the 16th Edition of the IEE Wiring Regulations.

2. Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductor is suitable for the conductor operatingtemperature (See Regulation 512-02).

3. Where cables in this table are connected to equipment or accessories designed to operate at a temperature not exceeding 70°C, the current ratings given in the equivalent table for 70°C pvc insulated cables (BS 6004, BS 6346) shall be used (see also Regulation 523-01-01).

TABLE 4E3B

Conductor operating temperature: 90°C.
Voltage drop (millivolts per ampere per metre)

Conductor cross-sectional area	2 cables D.C.	2 cables - single phase A.C.						3 or 4 cables - Three phase A.C.								
		Reference methods 1 & 11 (touching)			Reference method 12 (spaced*)			Reference methods 1, 11 and 12 (in trefoil touching)			Reference methods 1 & 11 (flat touching)			Reference method 12 (flat spaced*)		
1	2	3			4			5			6			7		
mm^2	mV/A/m	mV/A/m			mV/A/m			mV/A/m			mV/A/m			mV/A/m		
		r	x	z	r	x	z	r	x	z	r	x	z	r	x	z
50	0.98	0.99	0.21	1.00	0.98	0.29	1.00	0.86	0.180	0.87	0.84	0.25	0.88	0.84	0.33	0.90
70	0.67	0.68	0.200	0.71	0.69	0.29	0.75	0.59	0.170	0.62	0.60	0.25	0.65	0.62	0.32	0.70
95	0.49	0.51	0.195	0.55	0.53	0.28	0.60	0.44	0.170	0.47	0.46	0.24	0.52	0.49	0.31	0.58
120	0.39	0.41	0.190	0.45	0.43	0.27	0.51	0.35	0.165	0.39	0.38	0.24	0.44	0.41	0.30	0.51
150	0.31	0.33	0.185	0.38	0.36	0.27	0.45	0.29	0.160	0.33	0.31	0.23	0.39	0.34	0.29	0.45
185	0.25	0.27	0.185	0.33	0.30	0.26	0.40	0.23	0.160	0.28	0.26	0.23	0.34	0.29	0.29	0.41
240	0.195	0.21	0.180	0.28	0.24	0.26	0.35	0.180	0.155	0.24	0.21	0.22	0.30	0.24	0.28	0.37
300	0.155	0.170	0.175	0.25	0.195	0.25	0.32	0.145	0.150	0.21	0.170	0.22	0.28	0.20	0.27	0.34
400	0.115	0.145	0.170	0.22	0.180	0.24	0.30	0.125	0.150	0.195	0.160	0.21	0.27	0.20	0.27	0.33
500	0.093	0.125	0.170	0.21	0.165	0.24	0.29	0.105	0.145	0.180	0.145	0.20	0.25	0.190	0.24	0.31
630	0.073	0.105	0.165	0.195	0.150	0.23	0.27	0.092	0.145	0.170	0.135	0.195	0.24	0.175	0.23	0.29
800	0.056	0.090	0.160	0.190	0.145	0.23	0.27	0.086	0.140	0.165	0.130	0.180	0.23	0.175	0.195	0.26
1000	0.045	0.092	0.155	0.180	0.140	0.21	0.25	0.080	0.135	0.155	0.125	0.170	0.21	0.165	0.180	0.24

*Note: Spacings larger than those specified in Method 12 (See Table 4A, BS7671, the IEE Wiring Regulations, 16th Edition) will result in a larger voltage drop.

TABLE 4E4A - MULTICORE ARMOURED CABLES HAVING THERMOSETTING INSULATION, COPPER CONDUCTORS BS 5467 BS 6724

BS 7671 - 16th edition, IEE Wiring Regulations
Ambient temperature: 30°C
Conductor operating temperature: 90°C
Current-carrying capacity (Amperes):

	Reference method 1 (Clipped direct)		Reference method 11 (on a perforated horizontal or vertical cable tray) or Reference method 13 (Free Air)	
Conductor cross-sectional area	1 two core cable single phase A.C. or D.C.	1 three or four core cable three phase A.C.	1 two core cable single phase A.C.or D.C.	1 three or four core cable three phase A.C.
1	2	3	4	5
mm^2	A	A	A	A
1.5	27	23	29	25
2.5	36	31	39	33
4	49	42	52	44
6	62	53	66	56
10	85	73	90	78
16	110	94	115	99
25	146	124	152	131
35	180	154	188	162
50	219	187	228	197
70	279	238	291	251
95	338	289	354	304
120	392	335	410	353
150	451	386	472	406
185	515	441	539	463
240	607	520	636	546
300	698	599	732	628
400	787	673	847	728

1. Where the conductor is to be protected by a semi-enclosed fuse to BS 3036, see item 6.2 of the preface to appendix 4 of BS 7671, the IEE Wiring Regulations, 16th Edition.

2. Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductor is suitable for the conductor operating temperature (See Regulation 512.02, of BS 7671, the IEE Wiring Regulations, 16th Edition).

3. Where cables in this table are connected to equipment or accessories designed to operate at a temperature not exceeding 70°C, the current ratings given in the equivalent table for 70°C pvc insulated cables (BS 6004, BS 6346) shall be used (see also Regulation 523-01-01).

TABLE 4E4B

Conductor operating temperature: 90°C
Voltage drop (millivolts per ampere per metre)

Conductor cross-sectional area	Two-core cable D.C.	Two-core cable single phase A.C.			Three or four-core cable three phase A.C.		
1	2	3			4		
mm^2	mV/A/m	mV/A/m			mV/A/m		
1.5	31.0	31.0			27.0		
2.5	19.0	19.0			16.0		
4	12.0	12.0			10.0		
6	7.9	7.9			6.8		
10	4.7	4.7			4.0		
16	2.9	2.9			2.5		
		r	x	z	r	x	z
25	1.85	1.85	0.160	1.90	1.60	0.140	1.65
35	1.35	1.35	0.155	1.35	1.15	0.135	1.15
50	0.98	0.99	0.155	1.00	0.86	0.135	0.87
70	0.67	0.67	0.150	0.69	0.59	0.130	0.60
95	0.49	0.50	0.150	0.52	0.43	0.130	0.45
120	0.39	0.40	0.145	0.42	0.34	0.130	0.37
150	0.31	0.32	0.145	0.35	0.28	0.125	0.30
185	0.25	0.26	0.145	0.29	0.22	0.125	0.26
240	0.195	0.20	0.140	0.24	0.175	0.125	0.21
300	0.155	0.16	0.140	0.21	0.140	0.120	0.185
400	0.120	0.13	0.140	0.190	0.115	0.120	0.165

TABLE 4H3A & 4H3B CURRENT RATINGS FOR FLEXIBLE CORDS BS 6500 AND BS 7919

BS 7671 - 16th edition, IEE Wiring Regulations
Conductor operating Temperature: 60°C

Nominal cross-section area of conductor	Current-carrying capacity (Amperes)		Volt drop (millivolts per ampere per metre		Maximum mass supportable by twin flexible cord (see regulation 552-08-06)
	D.C. or single phase A.C.	Three-phase A.C.	D.C. or single phase A.C.	Three-phase A.C.	
1	2	3	4	5	6
mm^2	A	A	mV/A/m	mV/A/m	kg
0.5	3	3	93	80	2
0.75	6	6	62	54	3
1.0	10	10	46	40	5
1.25	13	-	37	-	5
1.5	16	16	32	27	5
2.5	25	20	19	16	5
4.0	32	25	12	10	5

TABLE ERA 2 - SINGLE CORE XLPE INSULATED 600/1000V AND 1900/3300V CABLES WITH COPPER CONDUCTORS, ERA PARAMETERS (ERA 69-30 PT.V)

Sustained current rating (AMP) (50Hz)

Nominal conductor area mm^2	600/1000V three single core cables in trefoil arrangement				1900/3300V three single core cables in trefoil arrangement		
	Direct Armoured	Duct Armoured (Trefoil Ducts)	Air Unarmoured	Air Armoured	Direct Armoured	Duct Armoured (Trefoil Ducts)	Air Armoured
50	231	231	223	231	222	219	240
70	284	278	284	295	271	264	300
95	340	327	352	362	324	310	368
120	386	366	412	420	366	342	428
150	431	396	475	483	409	376	487
185	485	437	551	555	460	414	556
240	558	489	658	654	528	464	656
300	623	534	761	745	589	506	747
400	691	567	887	851	651	535	851
500	765	615	1027	963	720	579	963
630	841	664	1186	1084	789	624	1084
800	888	692	1347	1178	831	650	1178
1000	942	735	1503	1278	880	689	1278

Cables shall only be continuously operated at their tabulated rating if the minimum current at which circuit protection is designed to operate does not exceed 1.45 times (in the case of cables in air or in ducts) or 1.3 times (in the case of cables laid direct in the ground) the values given above.

Standard depth of laying	0.5m for 600/1000 Volt Cables 0.8m for 1900/3300 Volt Cables
Thermal resistivity of soil	1.2 K.m/W
Standard ground temperature	15°C
Ambient air temperature	25°C
Maximum conductor temperature	90°C

TABLE ERA 3 - TWIN AND MULTICORE CORE XLPE INSULATED 600/1000V AND 1900/3300V CABLES WITH COPPER CONDUCTORS, ERA PARAMETERS (ERA 69-30 PT.V)

Sustained current rating (AMP) (50Hz)

Nominal conductor area mm²	600/1000V one twin core armoured cable			600/1000V one three or four core armoured cable			1900/3300V one three core armoured cable		
	Direct	Duct	Air	Direct	Duct	Air	Direct	Duct	Air
1.5	38	31	31	32	26	26	-	-	-
2.5	49	41	41	42	34	35	-	-	-
4	65	53	55	55	45	47	-	-	-
6	81	67	70	69	56	59	-	-	-
10	109	89	95	92	75	82	-	-	-
16	141	115	126	119	96	107	114	96	112
25	183	148	164	152	124	140	147	124	149
35	219	178	202	182	149	172	175	147	177
50	259	211	244	217	177	209	207	174	213
70	317	260	306	266	218	263	254	214	268
95	381	313	378	319	263	324	304	257	328
120	433	357	437	363	300	376	345	293	380
150	485	401	499	406	338	430	387	328	432
185	547	455	576	458	382	495	436	371	496
240	632	527	680	529	442	584	502	428	583
300	708	592	775	592	496	666	563	480	667
400	799	669	892	667	570	766	633	549	765

Cables shall only be continuously operated at their tabulated rating if the minimum current at which circuit protection is designed to operate does not exceed 1.45 times (in the case of cables in air or in ducts) or 1.3 times (in the case of cables laid direct in the ground) the values given above.

Standard depth of laying	0.5m for 600/1000 Volt Cables 0.8m for 1900/3300 Volt Cables
Thermal resistivity of soil	1.2 K.m/W
Standard ground temperature	15°C
Ambient air temperature	25°C
Maximum conductor temperature	90°C

CONDUCTOR RESISTANCE'S FOR COPPER AND ALUMINIUM CONDUCTORS

Maximum Resistance (ohms per km @ 20° C)

Conductor area	Solid Conductor (Class 1)			Stranded (Class 2)			Flexible (class 5 & 6)	
	Copper Plain	Copper Metal Coated	Aluminium	Copper Plain	Copper Metal Coated	Aluminium	Copper Plain	Copper Metal Coated
mm^2	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω
0.22	-	-	-	-	-	-	92.0	92.4
0.5	36.0	36.7	-	36.0	36.7	-	39.0	40.1
0.75	24.5	24.8	-	24.5	24.8	-	26.0	26.7
1.0	18.1	18.2	-	18.1	18.2	-	19.5	20.0
1.5	12.1	12.2	18.1	12.1	12.2	-	13.3	13.7
2.5	7.41	7.56	12.1	7.41	7.56	-	7.98	8.21
4	4.61	4.70	7.41	4.61	4.70	7.41	4.95	5.09
6	3.08	3.11	4.61	3.08	3.11	4.61	3.30	3.39
10	1.83	1.84	3.08	1.83	1.84	3.08	1.91	1.95
16	1.15	1.16	1.91	1.15	1.16	1.91	1.21	1.24
25	0.727	-	1.20	0.727	0.734	1.20	0.78	0.795
35	0.524	-	0.868	0.524	0.529	0.868	0.554	0.565
50	0.387	-	0.641	0.387	0.391	0.641	0.386	0.393
70	0.268	-	0.443	0.268	0.270	0.443	0.272	0.277
95	0.193	-	0.320	0.193	0.195	0.320	0.206	0.210
120	0.153	-	0.253	0.153	0.154	0.253	0.161	0.164
150	0.124	-	0.206	0.124	0.126	0.206	0.129	0.132
185	-	-	0.164	0.0991	0.100	0.164	0.106	0.108
240	-	-	0.125	0.0754	0.0762	0.125	0.081	0.0817
300	-	-	0.100	0.0601	0.0607	0.100	0.0641	0.0654
400	-	-	-	0.0470	0.0475	0.0778	0.0486	0.0495
500	-	-	-	0.0366	0.0369	0.0605	0.0384	0.0391
630	-	-	-	0.0283	0.0286	0.0469	0.0287	0.0292
800	-	-	-	0.0221	0.0224	0.0367	-	-
1000	-	-	-	0.0176	0.0177	0.0291	-	-

RESISTANCE CORRECTION FACTORS FOR TEMPERATURE (FROM 20°C)

Temperature of component	Correction factor For Copper	Correction factor For Aluminium	Correction factor For Steel
20	1.000	1.000	1.000
25	1.020	1.020	1.025
30	1.039	1.040	1.050
35	1.059	1.060	1.075
40	1.079	1.081	1.100
45	1.098	1.101	1.125
50	1.118	1.121	1.150
55	1.138	1.141	1.175
60	1.157	1.161	1.200
65	1.177	1.181	1.225
70	1.197	1.202	1.250
75	1.216	1.222	1.275
80	1.236	1.242	1.300
85	1.256	1.262	1.325
90	1.275	1.282	1.350
95	1.295	1.302	1.375
100	1.314	1.322	1.400
105	1.334	1.343	1.425

REQUIREMENTS FOR INSTALLATION OF CABLES AND FLEXIBLE CORDS

Minimum Bending radius

Cable construction	* Overall diameter or Conductor type	Factor to be applied to the O.D.* of cable to determine the minimum internal bending radius
Non-armoured with circular conductors	≤10mm >10 ≤25 >25	3 (2)† 4 (3)† 6
Non-armoured with shaped conductors	any	8
Armoured with circular conductors	any	6
Armoured with shaped conductors	any	8
Flexible cords	≤25mm ≤25mm	3 (fixed) 6 (flexing)

* To be taken as the major axis for flat cables

† The figure in brackets relates to single core with circular stranded conductors, installed in conduit ducting or trunking.

Maximum spacing of cleats / clips for fixed wiring of single cables

	Non armoured, sheathed cables		Armoured cables	
* Overall diameter of cables (mm)	Horizontal † mm	Vertical † mm	Horizontal † mm	Vertical † mm
Not exceeding 9	250	400	-	-
Exceeding 9 but not 15	300	400	350	450
Exceeding 15 but not 20	350	450	400	550
Exceeding 20 but not 40	400	550	450	600
Exceeding 40 but not 50	600	800	900	1100
Exceeding 50 but not 60	750	1000	950	1100
Exceeding 60 but not 70	900	1200	1000	1200
Exceeding 70	1000	1400	1200	1400

* To be taken as the major axis for flat cables

† The spacings stated for horizontal runs may be applied also to runs at an angle of more than 30° from the vertical. For runs at an angle of 30° or less from the vertical, the vertical spacings are applicable.

Draka

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