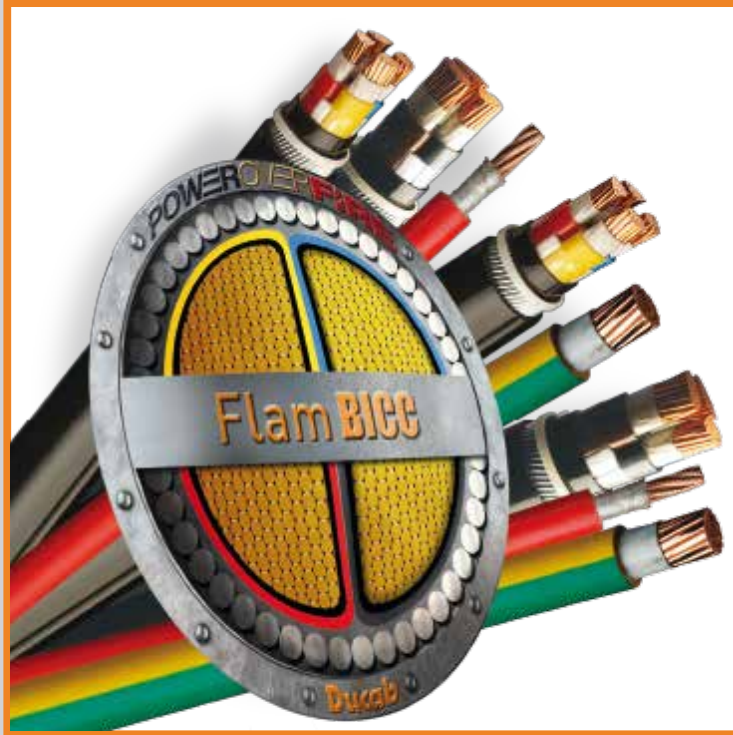


دوكاب Ducab

FlamBICC Cables

COMPLETE FIRE SOLUTION CABLES



حلول متقدمة للكابلات من خلال التقنية والابداع
Advanced Cable Solutions Through Technology and Innovation

BICC

CONTENTS

Page

Introduction 3

Customer Service 4

Complete Fire Solution Cables Introduction 5

Approval Certificates 6

Code of Practice for Cable Selection 6

Fire Performance Cable Selection Guide 7

Ducab FlamBICC 1 8

Ducab FlamBICC 2a 10

Ducab FlamBICC 2a Enhanced 12

Ducab FlamBICC 3 14

Ducab FlamBICC 3 Multicore 16

Ducab FlamBICC 4 18

Ducab MINERAL INSULATED 23

Ducab FlamBICC 6 24

Installation Guide Lines 27

Accessories 28

INTRODUCTION

Ducab is a technologically advanced cable manufacturing company, jointly owned by the Investment Corporation of Dubai and Senaat (General Holding Corporation, Abu Dhabi). Established in 1979, since then the company has become a global leader in the development, design, manufacturing, marketing and distribution of copper and aluminum wire and cable products for a variety of industry verticals. It is the first choice for many prestigious clients and contractors due to its record of quality and customer service. Ducab has 5 manufacturing sites across Abu Dhabi, Dubai and the UK that includes 7 independent manufacturing facilities that support its continuous growth.

The manufacturing capability of Ducab is over 115,000 metal tonnes of high, medium and low voltage cables and 110,000 tonnes of copper rod and wire per annum. The products adhere to strict global standards and address the cabling needs for the energy, general construction, industrial, defence, transport and specialty industry verticals. Ducab cables are approved by the Loss Prevention Certificate Board (LPCB), BASEC, DNV, ABS, UL, and Lloyd's Register amongst many others.

The product range includes copper rods and wires, (EC) grade aluminum alloy rods, wires, and bare overhead conductors. High Voltage cables up to 400kV, Medium Voltage cables up to 33kV, Low Voltage power cables, control & auxiliary, wiring and lead-sheathed cables, Low Smoke Zero Halogen cables, Fire-Performance cables and cable components and cable accessories.

Through expanding its world-class facilities across the Middle East, North Africa, Europe, Australia and India, the innovative journey meets the growing demand of customers. Ducab prides itself on setting and maintaining the highest quality standards of power cables. Experienced and highly skilled employees operate state-of-the-art equipment, and conduct extensive testing at every phase of production.

When it comes to advanced cable solutions, Ducab continues its status as the superbrand across the world in 40 countries. Ducab product range covers strong rate of development in specialised products by introducing product lines that are designed for particular sectors, such as PetroBICC, designed for the Oil, Gas and Petrochemical sector, RuBICC, with flexible rubber cables, MarineBICC for ship wiring cables, FlamBICC the Fire-Performance cable series, and NuBICC, which is our 60-year certified cable range for nuclear power plants.

This catalogue provides general information about the FlamBICC product range for fire performance cables.

ORDERING ADVICE

Due to the wide range of cables in the catalogue, it is advisable, when ordering, to provide as much information as possible. Please use the following table as a guide:

1. Cable standard / specification number.
2. Voltage designation.
3. Number of cores.
4. Conductor size and type / class.
5. Colour of outer sheath.
6. Fire performance / FlamBICC type requirement.
7. Length of cables required and individual drum lengths.*
8. Any other special requirement, e.g. drum weight limitation, etc.

*Cables are normally supplied in lengths of 100 metres, 500 metres and 1000 metres depending on conductor size. Other lengths can be supplied if required.

TECHNICAL ADVISORY SERVICE

For any specialist advice and assistance on the entire Ducab product range contact the Technical Department, Dubai Cable Company (Private) Limited, P. O. Box 11529, Dubai, U. A. E., Tel: 971-4-815 8888, Fax: 971-4-815 8111.

CUSTOMER SERVICE

QUALITY, HEALTH, SAFETY, ENVIRONMENTAL MANAGEMENT SYSTEMS

Ducab is committed to providing the customer with total quality excellence products and services that fully meet the expectations and is superior in value to that which can be obtained elsewhere. All manufacturing plants and business operations of Ducab are certified to ISO 9001, Quality Management System. Ducab strongly promotes sustainability and fully committed to protecting the Health, Safety and Welfare of its employees, as well as minimizing the Environmental impact of its business, products and services. Ducab's Health, Safety and Environmental Management systems are certified to OHSAS 18001 and ISO 14001 standards respectively. All management system certifications are issued and maintained through British Approval Services for Cables (BASEC) UK, a specialist certification body for electric cables.

PRODUCT QUALITY

Reputed certification authorities have approved Ducab products, including BASEC (The British Approvals Service for Cables), Lloyds UK, KEMA (Holland), CPRI (India), ABS, DNV-GL, UL, SGS, LPCB UK (Loss Prevention Certification Board), ESMA (Emirates Authority for Standardization and Metrology) and Dubai/Abu Dhabi Civil Defense. Ducab's business processes and manufacturing process capability are being regularly audited and certified by these certification bodies as part of these product approvals.

As a "learning organization", Ducab has adopted best practices and continually improved Ducab Management systems. Lean Manufacturing Systems, Six Sigma, 5S, TPM, Suggestion Schemes are some of the improvement tools that are being used in Ducab.

PERFORMANCE & RELIABILITY

In recognition to the achievements in the areas of Quality, Health, Safety, Environmental, Business Excellence and Sustainability, Ducab has received several awards. The following are just some of the many examples which reinforce Ducab's continuous pursuit of excellence:

- Dubai Chamber CSR Label annually since 2012
- Sheikh Mohammed Bin Rashid Al Maktoum Business Excellence Award in Manufacturing Category - 2009
- Superbrand for the year 2009, 2010, 2011 and 2012
- Emirates Quality Mark from Emirates Authority for Standardization and Meteorology (ESMA) - 2008
- Dubai Quality Award - 1994, 1998, 2004 including two God category awards
- GCC Award for Environmental Excellence - 2002
- RoSPA UK Safety Award - 25 consecutive years, and Order of Distinction Award from 2005
- Safety at Work Award from Dubai Municipality - 2008
- ICD Chairman's Award for Best Economic Value Creation Award - 2008
- Gulf Excellence Award



FLAMBICC - COMPLETE FIRE SOLUTION CABLES

Ducab FlamBICC cables are special Fire Performance Cables designed to survive and operate during fire conditions. To suit different application requirements Ducab offers a complete range of FlamBICC Fire Performance cables.

The selection of FlamBICC cables need to be in accordance with BS 5266 Part 1, BS 5839 Part 1 and BS 8519 Code of Practice for the selection and installation of fire performance cables.

For detailed product description and characteristics, reference can be made to the respective FlamBICC product catalogues. As a responsible organisation, all the FlamBICC range products from Ducab are designed with Low Smoke and Zero Halogen (LSZH). In the event of fire, the FlamBICC cables shall not emit heavy smoke or toxic halogen gases. Low smoke provides better visibility in a fire situation aiding the rescue operation and enabling the EXIT path to be seen clearly for escape. As there is no halogen or acidic gas emission during burning of the cable, the sensitive equipment in the surrounding areas are not affected adversely.

Ducab range of FlamBICC cables are highly sophisticated and used where Property and Life systems must be maintained in the event of a REAL FIRE. The typical applications are:

Areas where large number of people will remain in occupation for a period of time, and safe evacuation of mass public is critical in the event of fire, i.e schools, shopping malls, mass transit systems metro stations etc..

Services where circuit integrity is vital under fire conditions eg. special equipment in hospitals, airports, etc..

Essential critical safety circuit, fire detection, fire alarm, voice alarm and emergency lighting.

Power supply to equipment used in fire-fighting sprinkler pumps and fire dampers.

In large and complex buildings where fire strategy involves evacuation of occupants in a controlled phased manner.



APPROVAL CERTIFICATES



CODE OF PRACTICE FOR CABLE SELECTION

British Standard Codes of Practice are published to encourage best practice in their area of relevance. Compliance with the code of practice will assure performance of the system.

In order to meet different specification requirements and codes of practices, Ducab offers various fire performance cables under FlamBICC series as per the data provided in this catalogue. Clients can make a choices to suit their performance requirements

For information, various codes of practice as per British Standard are as mentioned below with their title::

- BS 9999:** Code of practice for fire safety in the design, management and use of buildings.
- BS 8519:** Selection and installation of fire-resistant power and control cable systems for life safety and fire-fighting applications. Code of practice.
- BS 5839:** Fire detection and fire alarm systems for buildings, Code of practice for design, installation, commissioning and maintenance of systems in non-domestic premises.
- BS 5266:** Emergency lighting. Code of practice for the emergency escape lighting of premises.

The cable selection guide provides information on appropriate FlamBICC grade meeting these requirements in the form of table.

Important Note: For complete details on code of practice it is advised to refer to relevant specifications.

FIRE PERFORMANCE CABLE SELECTION GUIDE

		FlamBICC 1	FlamBICC 2a	FlamBICC 2a Enhanced	FlamBICC 3	FlamBICC 4	FlamBICC 6
Codes of Practice							
Emergency Lighting	BS 5266 Emergency Lighting cable		√	√		√	√
	BS5266 Enhanced Emergency Lighting cable			√		√	√
	BS 5266 Emergency Lighting cable system	√	√	√	√	√	√
	BS 5266 Enhanced Emergency Lighting cable system	√	√	√	√	√	√
Fire Alarm, Fire detection	BS 5839 Standard Grade		√	√		√	√
	BS 5839 Enhanced Grade			√		√	√
Smoke, Heat & Exhaust Ventilation System (SHEVS)	BS 8519						√
Power and Control for Cables	BS 8519 Category 1 Control		√	√		√	√
	BS 8519 Category 2 Control			√		√	√
	BS 8519 Category 3 Control			√		√	√
	BS 8519 Category 1 Power						√
	BS 8519 Category 2 Power						√
	BS 8519 Category 3 Power						√
	BS 7629		√	√			
	BS 7846 (F2) Power & Control					√	√
	BS 7846 (F120) Power & Control						√
General	BS 9999	√	√	√	√	√	√
Fire Resistance Tests							
	BS 6387 C W & Z	√	√	√	√	√	√
	BS EN 50200 PH30		√	√		√	√
	BS EN 50200 PH60		√	√		√	√
	BS EN 50200 PH120		√	√		√	√
	BS 8434-2			√		√	√
	BS 7846 F2					√	√
	BS 7846 F30, F60, F120						√
	BS 8491						√
	IEC 60331	√	√	√	√	√	√
Fire Reaction Tests							
Low Smoke Zero Halogen (LSZH)	BS EN 50267, (IEC 60754) BS EN 50268, (IEC 61034)	√	√	√	√	√	√

DUCAB FlamBICC 1

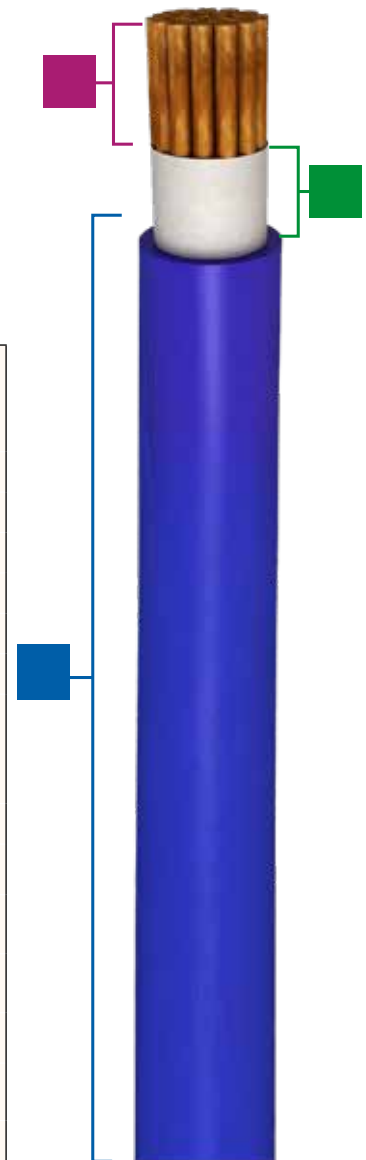
Single core fire resistant cables with approval from Loss Prevention Certification Board (LPCB), UK for use in emergency safety circuits to maintain circuit integrity under fire conditions.

CONSTRUCTION








- **Copper conductor:** Plain annealed stranded class 2 conductor to BS EN 60228
- **Primary Insulation:** Mica Glass tape
- **Secondary Insulation:** Extruded XL-LSZH compound

CHARACTERISTICS

General:	Ducab FlamBICC 1 cables are designed for laying in conduit or in cable trunking where fire resistance is of paramount importance.
Size Range:	1C 1.5 mm ² up to 1000 mm ²
Approvals:	LPCB approved
Voltage grade:	600 / 1000 V
Fire resistance:	BS 8434-2
	BSEN 50200 PH120
	BS 6387 C-W-Z
Flame Propagation:	IEC 60331-21
	Cables comply at increased temperature of 950°C which is higher than that specified by the standard.
Flame Propagation:	IEC / BSEN 60332-3-24 IEC 60332-1-2
Acid gas emission:	Less than 0.5% when tested to IEC/BSEN 60754
Low smoke emission:	As per IEC/BSEN 61034
Operating temperature:	Maximum 90°C
Short circuit temperature	Maximum 250°C
Bending radius:	6 x Cable diameter



CORE IDENTIFICATIONS

			
Green/Yellow	Blue	Black	Grey
			
Red	Brown	White	

PERFORMANCE DETAILS

Nominal Conductor Area (mm ²)	BS 8434-2	BSEN 50200 PH120	BS 6387	IEC 60331-21	IEC / BSEN 60332-3-24	IEC/BSEN 61034	IEC/BSEN 60754
1.5	Comply	Comply	C,W,Z	Comply	-	Comply	Comply
2.5	Comply	Comply	C,W,Z	Comply	-	Comply	Comply
4	Comply	Comply	C,W,Z	Comply	-	Comply	Comply
6	Comply	Comply	C,W,Z	Comply	-	Comply	Comply
10	Comply	Comply	C,W,Z	Comply	Comply	Comply	Comply
16	Comply	Comply	C,W,Z	Comply	Comply	Comply	Comply
25	Comply	Comply	C,W,Z	Comply	Comply	Comply	Comply
35	Comply	Comply	C,W,Z	Comply	Comply	Comply	Comply
50	Comply	Comply	C,W,Z	Comply	Comply	Comply	Comply
70	Comply	Comply	C,W,Z	Comply	Comply	Comply	Comply
95	Comply	Comply	C,W,Z	Comply	Comply	Comply	Comply
120	-	-	C	Comply	Comply	Comply	Comply
150	-	-	C	Comply	Comply	Comply	Comply
185	-	-	C	Comply	Comply	Comply	Comply
240	-	-	C	Comply	Comply	Comply	Comply
300	-	-	C	Comply	Comply	Comply	Comply
400	-	-	C	Comply	Comply	Comply	Comply
500	-	-	-	Comply	Comply	Comply	Comply
630	-	-	-	Comply	Comply	Comply	Comply
800	-	-	-	Comply	Comply	Comply	Comply
1000	-	-	-	Comply	Comply	Comply	Comply

TECHNICAL DATA

Technical data for Ducab Fire Resistant Single Core Cables with stranded copper conductors

600 / 1000 V

Nominal conductor area	Approximate overall diameter	Approximate cable weight	Maximum conductor resistance at 20°C	Current rating (1ø AC)	Current rating (3ø AC)	Voltage drop (1ø AC)	Voltage drop (3ø AC)
mm ²	mm	kg/km	Ohm/km	Amp	Amp	mV/A/m	mV/A/m
1.5	3.5	40	12.1	23	20	31	27
2.5	4.1	55	7.41	31	28	19	16
4	4.7	75	4.61	42	37	12	10
6	5.2	100	3.08	54	48	7.9	6.8
10	6.5	150	1.83	75	66	4.7	4
16	7.4	200	1.15	100	88	2.9	2.5
25	9.4	300	0.727	133	117	1.85	1.60
35	10.5	400	0.524	164	144	1.35	1.15
50	11.9	520	0.387	198	175	1.00	0.87
70	13.6	720	0.268	253	222	0.71	0.61
95	15.5	980	0.193	306	269	0.52	0.45
120	17	1200	0.153	354	312	0.43	0.37
150	18.9	1470	0.124	393	342	0.36	0.31
185	21	1850	0.0991	449	384	0.30	0.26
240	23.6	2400	0.0754	528	450	0.25	0.22
300	26.5	3000	0.0601	603	514	0.22	0.195
400	29.3	3770	0.0470	683	584	0.20	0.175
500	32.7	4830	0.0366	783	666	0.185	0.160
630	36.7	6150	0.0283	900	764	0.175	0.150
800	41.5	7969	0.0221	1288*	1179*	0.170	0.145
1000	46.2	9851	0.0176	1443*	1323*	0.165	0.140

Current rating based on installation “enclosed in conduit on a wall or in trunking” in line with BS 7671 (IEE Wiring Regulations). *For larger sizes 800 & 1000mm² current rating based on clipped direct.

Laying condition: 30°C ambient temperature & 90°C operating temperature. For other ambient temperatures appropriate rating factors should be applied.

TEMPERATURE RATING FACTORS

Ambient Temperature in °C	25	30	35	40	45	50	55	60
Rating factor	1.02	1	0.96	0.91	0.87	0.82	0.76	0.71

CORRECTION FACTORS FOR GROUPING





No of Cables in a group	2	3	4	5	6	7	8	9
Rating factor	0.8	0.7	0.65	0.6	0.57	0.54	0.52	0.5

DUCAB FLAMBICC 2a

These are pliable Fire Performance screened cables having low emission of smoke and corrosive gases when affected by fire which are designed to meet fire resistance test of STANDARD 60 as per BS 7629-1.

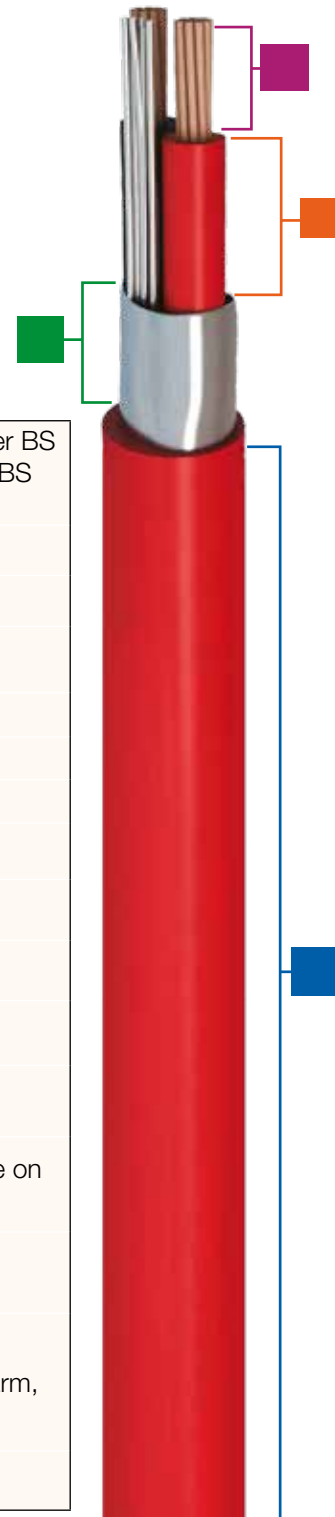
Cables are certified with LPCB and BASEC approvals.

CONSTRUCTION

-  **Conductor:** Plain annealed copper conductor complying with BS EN 60228, class 1 or 2
-  **Insulation:** Special insulation to meet fire resistance characteristics
-  **Screen:** Laminated aluminium tape screen in contact with full size tinned annealed copper circuit protective conductor
-  **Sheath:** Robust LSZH (LSHF / LSOH) sheath

CHARACTERISTICS

General:	Ducab FlamBICC 2a are screened cables designed as per BS 7629 for applications requiring 'standard' fire resistance (BS 5839-1, 26.2-d)
Size Range:	2C,3C & 4C from 1.5 mm ² up to 4 mm ²
Approvals:	LPCB & BASEC Approved
Voltage grade:	300 / 500 V
Fire resistance:	BS 7629-1 STANDARD 60 BSEN 50200 PH120 + Annex E BS 6387 C-W-Z
Flame Propagation test:	IEC 60332-1-2
Acid gas emission:	Less than 0.5% when tested to IEC/BSEN 60754
Low smoke emission:	As per IEC/BSEN 61034
Cable Operating temperature:	Maximum 90°C
Short circuit temperature	Maximum 250°C
Sheath Colours	White or Red sheath are standard, other colours available on request.
Packaging	100 or 500 meter reels: Other packaging and lengths available on request.
Key Applications	The use of cables with 'standard' fire resistance is recommended for general use for fire detection, voice alarm, addressable system and emergency lighting.
Salient features	Highly durable, easy to terminate












TECHNICAL DATA

300 / 500 V

No. of Cores	Nominal conductor area (mm ²)	Class of conductor	Nominal insulation thickness (mm)	Nominal OD (mm)	Minimum bending radius (mm)	Approx cable weight (kg/km)	Max Conductor Resistance at 20° C (ohm/km)	Current rating* (Clipped Direct) (Amps)	Voltage drop* (mV/A/m)
2	1.5	1	0.7	8.8	53	107	12.1	19.5	29
2	2.5	1	0.8	9.6	58	143	7.41	27	18
2	4	2	0.8	10.8	65	193	4.61	36	11
3	1.5	1	0.7	9.4	56	137	12.1	17.5	25
3	2.5	1	0.8	10.2	61	180	7.41	24	15
3	4	2	0.8	11.5	69	244	4.61	32	9.5
4	1.5	1	0.7	10.2	61	166	12.1	17.5	25
4	2.5	1	0.8	11.2	67	222	7.41	24	15
4	4	2	0.8	12.6	76	302	4.61	32	9.5

* - 1Ø for 2 core cables and 3Ø for others

CORE IDENTIFICATIONS

2 CORE				
	Brown	Blue		
3 CORE				
	Brown	Black	Grey	
4 CORE				
	Blue	Brown	Black	Grey

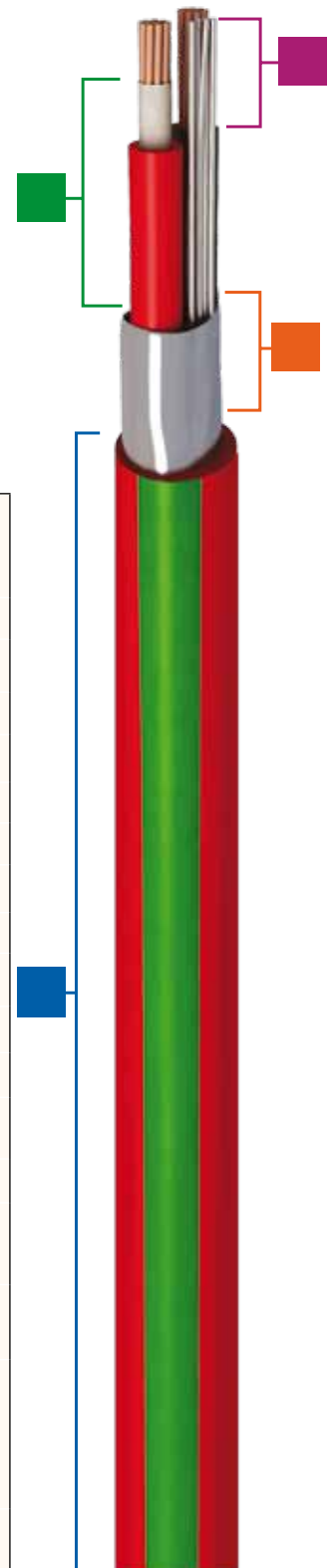
DUCAB FLAMBICC 2a ENHANCED

These are 'ENHANCED' Fire Resistant screened cables having low emission of smoke and corrosive gases when affected by fire. These cables are designed to meet fire resistance test of ENHANCED 120 as per BS 7629-1.

Cables are certified with LPCB and BASEC approvals

CONSTRUCTION

- **Conductor:** Plain annealed copper conductor complying with BS EN 60228, class 1 or 2
 - **Insulation:** Mica Glass tape followed by Special insulation to meet fire performance characteristics
 - **Screen:** Laminated aluminium tape screen in contact with full size tinned annealed copper circuit protective conductor
 - **Sheath:** Robust LSZH (LSHF / LSOH) sheath
- Optional:** Longitudinal GREEN STRIPE Identification on outer sheath.



CHARACTERISTICS

General:	Ducab FlamBICC 2a ENHANCED are screened cables designed as per BS 7629 for applications requiring 'Enhanced' fire resistance (BS 5839-1, 26.2-e)
Size Range:	2C,3C & 4C from 1.5 mm ² up to 4 mm ²
Approvals:	LPCB & BASEC Approved
Voltage grade:	300/500 V
Fire resistance:	BS 7629-1 ENHANCED 120
	BSEN 50200 PH120 + Annex E
	BS 6387 C-W-Z
	BS 8434-2
Flame Propagation test:	BS 8519 cat 3
	IEC 60332 -1-2
Acid gas emission:	Less than 0.5% when tested to IEC/BSEN 60754
Low smoke emission:	As per IEC/BSEN 61034
Cable Operating temperature:	Maximum 90°C
Short circuit temperature	Maximum 250°C
Sheath Colours	White or Red sheath are standard, other colours available on request
Packaging	100 or 500 meter reels: Other packaging and lengths available on request
Key Applications	'ENHANCED' fire resistant cables are recommended for special usage in fire detection, voice alarm, addressable system and emergency lighting in critical signal paths. Essential Critical Control Circuits & Signal paths.
Salient features	Highly durable, easy to terminate. Optional: Longitudinal GREEN STRIPE Identification on outer sheath.










TECHNICAL DATA

300 / 500 V

No. of Cores	Nominal conductor area (mm ²)	Class of conductor	Nominal insulation thickness (mm)	Nominal OD (mm)	Minimum bending radius (mm)	Approx cable weight (kg/km)	Max Conductor Resistance at 20° C (ohm/km)	Current rating* (Clipped Direct) (Amps)	Voltage drop* (mV/A/m)
2	1.5	1	0.7	9	54	97	12.1	19.5	29
2	2.5	1	0.8	10.2	61	150	7.41	27	18
2	4	2	0.8	11.4	68	199	4.61	36	11
3	1.5	1	0.7	9.6	58	137	12.1	17.5	25
3	2.5	1	0.8	11	66	192	7.41	24	15
3	4	2	0.8	12.2	73	255	4.61	32	9.5
4	1.5	1	0.7	10.4	62	164	12.1	17.5	25
4	2.5	1	0.8	12	72	234	7.41	24	15
4	4	2	0.8	13.4	80	322	4.61	32	9.5

* - 1Ø for 2 core cables and 3Ø for others

CORE IDENTIFICATIONS

2 CORE				
	Brown	Blue		
3 CORE				
	Brown	Black	Grey	
4 CORE				
	Blue	Brown	Black	Grey

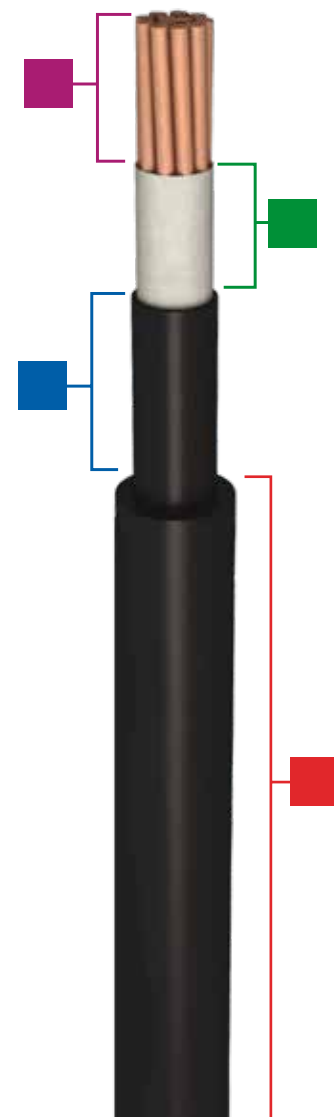
DUCAB FLAMBICC 3

Ducab FlamBICC 3 cables are single and multicore Fire Performance power & control cables with insulation and sheath to meet C-W-Z test as per BS 6387 for small sizes and IEC 60331 for large sizes.

Cables are approved by Loss Prevention Certification Board (LPCB), UK and are suitable for use in emergency safety circuits to maintain circuit integrity under fire conditions.

CONSTRUCTION



- **Copper Conductor:** Plain annealed stranded class 2 conductor to BS EN 60228
- **Primary Insulation:** Mica tape
- **Secondary Insulation:** Extruded XLPE/XL-LSZH compound
- **Outer Sheath:** LSOH / LSZH / LSHF compound



CHARACTERISTICS

General:	Ducab FlamBICC 3 cables are designed for laying in conduit or on trays where fire resistance is of paramount importance.
Approvals:	LPCB approved.
Voltage grade:	600 / 1000 V
Fire resistance:	C-W-Z test as per BS 6387 for small sizes and IEC 60331-21 for large sizes which cannot fit in a conduit. Cables comply IEC 60331-21 fire test at increased temperature of 950°C which is higher than that specified by the standard.
Flame Propagation test:	IEC 60332-1-2
Acid gas emission:	Less than 0.5% when tested to IEC 60754 & BS EN 50267
Low smoke emission:	As per IEC 61034 & BS EN 50268
Cable Operating temperature:	Maximum 90°C
Short circuit temperature	Maximum 250°C
Bending radius:	6 x Cable diameter

CORE IDENTIFICATIONS

<p>STANDARD:</p>  <p>Black (Other colours as per request)</p>	<p>SHEATH COLOUR:</p>  <p>Black (Other colours as per request)</p>
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TECHNICAL DATA

Technical data for Ducab Fire Resistant Single Core Sheathed Cables with stranded copper conductors **600 / 1000 V**

Nominal conductor area	Approximate overall diameter	Approximate cable weight	Maximum conductor resistance at 20°C	Current rating (1Ø AC) Clipped direct	Current rating (3Ø AC) in air	Voltage drop (1Ø AC)	Voltage drop (3Ø AC) In trefoil
mm ²	mm	kg/km	Ohm/km	Amp	Amp	mV/A/m	mV/A/m
1.5	5.5	45	12.1	25	--	31	27
2.5	5.9	60	7.41	34	--	19	16
4	6.4	75	4.61	46	--	12	10
6	7.0	95	3.08	59	--	7.9	6.8
10	7.9	140	1.83	81	--	4.7	4
16	8.8	200	1.15	109	--	2.9	2.5
25	10.7	300	0.727	143	135	1.85	1.6
35	11.8	395	0.524	176	169	1.35	1.15
50	13.1	520	0.387	228	207	1	0.87
70	15.0	725	0.268	293	268	0.71	0.61
95	16.7	975	0.193	355	328	0.52	0.45
120	18.4	1210	0.153	413	383	0.43	0.37
150	20.5	1485	0.124	476	444	0.36	0.31
185	22.6	1850	0.0991	545	510	0.3	0.26
240	25.2	2400	0.0754	644	607	0.25	0.22
300	28.1	2990	0.0601	743	703	0.22	0.195
400	31.0	3765	0.047	868	823	0.2	0.175
500	34.6	4900	0.0366	990	946	0.185	0.16
630	39.4	6180	0.0283	1130	1088	0.175	0.15
800	44.3	8100	0.0221	1288	1214	0.170	0.145
1000	50.0	10050	0.0176	1443	1349	0.165	0.140

Current rating based on installation "enclosed in conduit on a wall or in trunking" in line with BS 7671 (IEE Wiring Regulations)

Laying condition:

30°C ambient temperature & 90°C operating temperature.

For other ambient temperatures appropriate rating factors should be applied.






TEMPERATURE RATING FACTORS

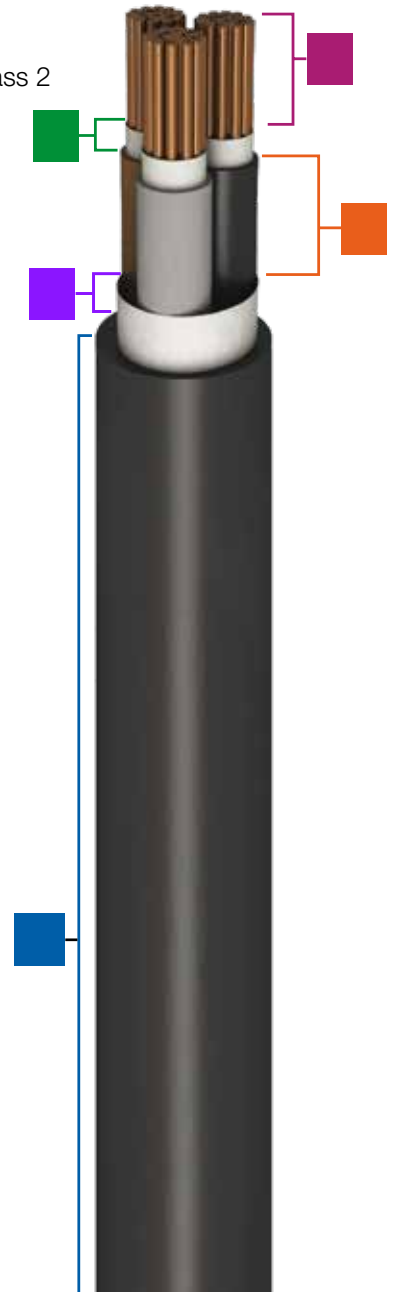
Ambient Temperature in °C	25	30	35	40	45	50	55	60
Rating factor	1.02	1.00	0.96	0.91	0.87	0.82	0.76	0.71

DUCAB FLAMBICC 3 MULTICORE

Ducab FlamBICC 3 Multicore cables are un-armoured Fire Performance power and control cables designed to meet C-W-Z test as per BS 6387 and IEC 60331 test at increased temperature of 950°C. These cables exhibit low emission of smoke and corrosive gases under fire conditions and are suitable for power & control application.

CONSTRUCTION



















-  **Conductor:** Plain annealed copper conductor complying with BS EN 60228, class 2
-  **Primary Insulation:** Mica glass tape
-  **Secondary Insulation:** Extruded XLPE.
-  **Laying up of cores** with suitable binder tape
-  **Sheath:** Robust LSZH (LSHF / LSOH) sheath



CHARACTERISTICS

General:	Ducab FlamBICC 3 Multicore cables are designed as per IEC 60502-1 for applications where fire resistance as per C-W-Z of BS 6387 is required with un-armoured cable construction.
Approvals:	LPCB approved.
Voltage grade:	600 / 1000 V
Fire resistance:	C-W-Z tests as per BS 6387 and IEC 60331-21 fire resistance test at increased temperature of 950°C
Flame Propagation test:	IEC 60332-1-2
Acid gas emission:	Less than 0.5% when tested to IEC 60754 & BS EN 50267
Low smoke emission:	As per IEC 61034 & BS EN 50268
Cable Operating temperature:	Maximum 90°C
Short circuit temperature	Maximum 250°C
Bending radius:	6 x Cable diameter
Colours:	Core identification for 2, 3 and 4 cores as mentioned and Black sheath are standard, other colours available on request.
Key Applications:	Essential safety circuits, fire detection, fire alarm and evacuation. Emergency lighting.

CORE IDENTIFICATIONS

CORES	STANDARD				ALTERNATIVE*			
2 cores								
	Red	Black			Brown	Blue		
3 cores								
	Red	Yellow	Blue		Brown	Black	Grey	
4 cores								
	Red	Yellow	Blue	Black	Blue	Brown	Black	Grey



TECHNICAL DATA

600/1000 V

No. of Cores	Nominal conductor area	Approximate overall diameter	Approximate cable weight	Maximum conductor resistance at 20°C	Current rating on perforated cable tray / free air	Voltage drop* (mV/A/m)
	mm ²	mm	kg/km	Ω/km	Amp	mV/A/m
2 CORE	1	9.8	95	18.1	21	46
	1.5	10.2	110	12.1	26	31
	2.5	11	135	7.41	36	19
	4	12.2	170	4.61	49	12
	6	13.2	215	3.08	63	7.9
	10	15	305	1.83	86	4.7
	16	16.8	460	1.15	115	2.9
3 CORE	1	10.3	115	18.1	18	40
	1.5	10.8	135	12.1	23	27
	2.5	11.6	170	7.41	32	16
	4	12.9	225	4.61	42	10
	6	14	290	3.08	54	6.8
	10	15.9	415	1.83	75	4.0
	16	17.9	620	1.15	100	2.5
4 CORE	1	11.2	140	18.1	18	40
	1.5	11.7	160	12.1	23	27
	2.5	12.6	205	7.41	32	16
	4	14.1	280	4.61	42	10
	6	15.3	365	3.08	54	6.8
	10	17.5	530	1.83	75	4.0
	16	19.7	800	1.15	100	2.5

Laying conditions:

- 30°C ambient temperature & 90°C operating temperature.
- For other ambient temperatures appropriate rating factors should be applied.

TEMPERATURE RATING FACTORS

Ambient Temperature in °C	25	30	35	40	45	50	55	60
Rating factor	1.02	1.00	0.96	0.91	0.87	0.82	0.76	0.71

DUCAB FLAMBICC 4

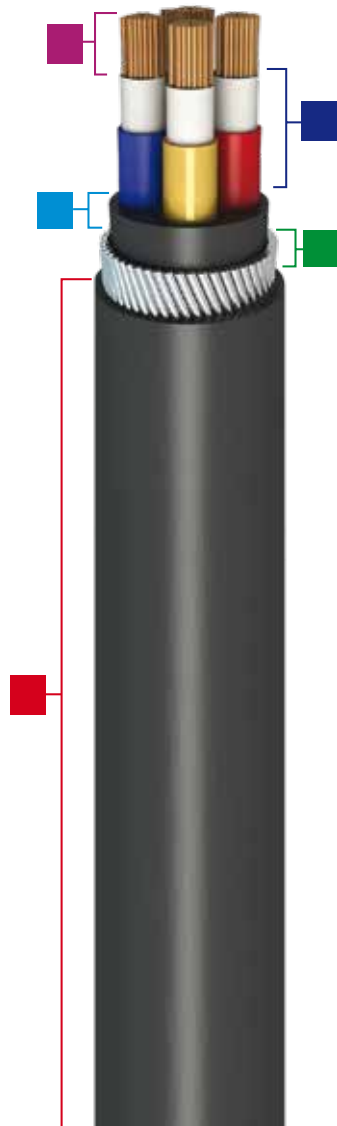
Ducab FlamBICC 4 cables are multi-core armoured power & control cables designed as per BS 7846 with steel wire armour construction to meet category F2 fire test (C-W-Z test as per BS 6387).



















CONSTRUCTION

- **Conductor:** Plain annealed Copper, stranded class 2 conductor to BS EN 60228
- **Dual Insulation:** Special grade of Mica Glass tape + XLPE
- **Bedding:** LSZH
- **Armour:** Galvanised steel wire armoured
- **Outer Sheath:** Robust LSZH sheath with Black colour as standard, other colours upon request

CHARACTERISTICS

General:	Ducab FlamBICC 4 are armoured cables designed as per BS 7846 to meet C-W-Z fire test as per BS 6387.
Approvals:	LPCB and BASEC approved for 2, 3 and 4 core cable designs
Voltage grade:	600 / 1000 V
Fire resistance:	C-W-Z test as per BS 6387
Flame propagation:	BS EN / IEC 60332-1 and BS EN / IEC 60332-3 Categories A, B & C
Acid gas emission:	Less than 0.5% when tested to IEC 60754 & BS EN 50267
Low smoke emission:	As per IEC 61034 & BS EN 50268
Cable operating temperature:	Maximum 90°C
Short circuit temperature	Maximum 250°C
Bending radius:	6 x Cable diameter for circular and 8 x Cable diameter for sector shaped cables



CORE IDENTIFICATIONS								
CORES	STANDARD				ALTERNATIVE*			
2 cores	 Red	 Black			 Brown	 Blue		
3 cores	 Red	 Yellow	 Blue		 Brown	 Black	 Grey	
4 cores	 Red	 Yellow	 Blue	 Black	 Blue	 Brown	 Black	 Grey



TECHNICAL DATA OF 2 CORE CABLES

Fire resistant cables. Two Core Armoured Cables 600/1000 V Grade with stranded copper conductors (BS 7846)

Nominal conductor area	Approximate Diameter			Approximate cable weight	Maximum conductor resistance at 20°C	Maximum armour resistance at 20°C	Current rating on perforated cable trays / free air	Voltage drop (1ϕ AC)
	Under armour	Over armour	Overall diameter					
mm ²	mm	mm	mm	kg/km	Ohm/km	Ohm/km	Amp	mV/A/m
1.5*	8.7	10.5	12.4	315	12.1	10.2	29	31
2.5*	9.9	11.7	13.8	385	7.41	8.8	39	19
4*	11.1	12.9	15.0	460	4.61	7.9	52	12
6*	12.1	13.9	16.0	535	3.08	7.0	66	7.9
10*	13.9	15.7	18.0	690	1.83	6.0	90	4.7
16*	15.7	18.2	20.5	920	1.15	3.7	115	2.9
25*	19.7	22.2	24.7	1270	0.727	3.7	152	1.9
35*	21.9	25.1	27.8	1720	0.524	2.6	188	1.35
50	19.5	22.6	25.4	1810	0.387	2.3	228	1
70	22.1	25.2	28.2	2305	0.268	2.0	291	0.69
95	24.5	28.4	31.6	3105	0.193	1.4	354	0.52
120	29.1	33.0	36.4	3820	0.153	1.3	410	0.42
150	31.1	35.0	38.6	4475	0.124	1.2	472	0.35
185	33.4	38.3	42.2	5675	0.0991	0.82	539	0.29
240	38.0	42.9	47.0	7090	0.0754	0.73	636	0.24
300	43.0	47.8	52.2	8570	0.0601	0.67	732	0.21

* Multi circuit means all conductors are loaded equally and operating in close vicinity

Installation conditions for above rating:

- Ambient Air Temperature 30°C
- Conductor operating temperature 90°C



TECHNICAL DATA OF 3 CORE CABLES

Fire resistant cables. Three Core Armoured Cables 600/1000 V Grade with stranded copper conductors (BS 7846)

Nominal conductor area	Approximate Diameter			Approximate cable weight	Maximum conductor resistance at 20°C	Maximum armour resistance at 20°C	Current rating on perforated cable trays / free air	Voltage drop (3φ AC)
	Under armour	Over armour	Overall diameter					
mm ²	mm	mm	mm	kg/km	Ohm/km	Ohm/km	Amp	mV/A/m
1.5*	9.2	11.0	12.9	345	12.1	9.5	25	27
2.5*	10.5	12.3	14.4	425	7.41	8.2	33	16
4*	11.8	13.6	15.7	515	4.61	7.5	44	10
6*	12.9	14.7	16.8	610	3.08	6.7	56	6.8
10*	14.8	17.3	19.6	910	1.83	4.0	78	4.0
16*	16.8	19.3	21.8	1110	1.15	3.5	99	2.5
25*	21.1	24.3	27.0	1720	0.727	2.5	131	1.65
35*	23.5	26.7	29.6	2105	0.524	2.3	162	1.15
50	24.9	28.0	30.8	2480	0.387	2.0	197	0.87
70	26.9	30.0	33.0	3145	0.268	1.8	251	0.60
95	30.6	34.5	37.9	4310	0.193	1.3	304	0.45
120	33.9	37.8	41.4	5170	0.153	1.2	353	0.37
150	37.8	42.7	46.5	6555	0.124	0.78	406	0.30
185	42.2	47.1	51.0	7915	0.0991	0.71	463	0.26
240	46.4	51.3	55.6	9815	0.0754	0.63	546	0.21
300	52.8	57.6	62.1	12030	0.0601	0.58	628	0.185
400	58.0	62.8	67.7	14740	0.0470	0.52	728	0.165

* Circular conductors, all others are sector shaped
 Installation conditions for above rating:
 • Ambient Air Temperature 30°C
 • Conductor operating temperature 90°C



TECHNICAL DATA OF 4 CORE CABLES

Fire resistant cables. Four Core Armoured Cables 600/1000 V Grade with stranded copper conductors (BS 7846)

Nominal conductor area	Approximate Diameter			Approximate cable weight	Maximum conductor resistance at 20°C	Maximum armour resistance at 20°C	Current rating on perforated cable trays / free air	Voltage drop (3φ A.C)
	Under armour	Over armour	Overall diameter					
mm ²	mm	mm	mm	kg/km	Ohm/km	Ohm/km	Amp	mV/A/m
1.5*	10.1	11.9	13.8	390	12.1	8.8	25	27
2.5*	11.5	13.3	15.4	480	7.41	7.7	33	16
4*	13.0	14.8	16.9	590	4.61	6.8	44	10
6*	14.2	16.7	19.0	825	3.08	4.3	56	6.8
10*	16.4	18.9	21.2	1065	1.83	3.7	78	4.0
16*	18.6	21.1	23.6	1335	1.15	3.1	99	2.5
25*	23.4	26.6	29.3	2070	0.727	2.3	131	1.65
35*	26.1	29.3	32.2	2550	0.524	2.0	162	1.15
50	26.5	29.6	32.6	3015	0.387	1.8	197	0.87
70	30.7	34.6	38.0	4240	0.268	1.2	251	0.60
95	34.5	38.4	42.0	5420	0.193	1.1	304	0.45
120	38.1	43.0	46.8	6935	0.153	0.76	353	0.37
150	42.8	47.7	51.6	8270	0.124	0.68	406	0.30
185	47.2	52.1	56.4	10000	0.0991	0.61	463	0.26
240	52.5	57.3	61.8	12485	0.0754	0.54	546	0.21
300	58.2	63.0	67.9	15175	0.0601	0.49	628	0.185
400	66.5	72.6	78.0	19800	0.0470	0.35	728	0.165

* Circular conductors, all others are sector shaped

Installation conditions for above rating:

- Ambient Air Temperature 30°C
- Conductor operating temperature 90°C

TECHNICAL DATA OF MULTICORE CABLES

Fire resistant cables. Armoured Auxiliary Cables 600/1000 V Grade with stranded copper conductors (BS 7846)

Number of cores	Nominal conductor area	Approximate Diameter			Approximate cable weight	Maximum conductor resistance at 20°C	Maximum armour resistance at 20°C	Current rating on perforated cable trays / free air (Multi circuit operation)	Current rating on perforated cable trays / free air (Single circuit operation)	Voltage drop (3φ AC)
		Under armour	Over armour	Overall diameter						
	mm ²	mm	mm	mm	kg/km	Ohm/km	Ohm/km	Amp	Amp	mV/A/m
7	1.5	12.0	13.7	15.9	485	12.1	7.5	19	29	27
12	1.5	15.8	18.3	20.6	820	12.1	4.0	16	29	27
19	1.5	18.6	21.1	23.6	1060	12.1	3.5	14	29	27
27	1.5	22.4	25.6	28.3	1525	12.1	2.3	12	29	27
37	1.5	25.2	28.4	31.1	1840	12.1	2.0	11	29	27
48	1.5	29.0	32.2	35.1	2240	12.1	1.8	10	29	27
7	2.5	13.8	15.5	17.7	610	7.41	6.3	25	39	16
12	2.5	18.3	20.8	23.3	1040	7.41	3.5	21	39	16
19	2.5	21.6	24.8	27.5	1525	7.41	2.3	18	39	16
27	2.5	26.1	29.3	32.2	1980	7.41	1.9	17	39	16
37	2.5	29.4	32.6	35.5	2425	7.41	1.7	15	39	16
48	2.5	33.9	37.9	41.1	3260	7.41	1.2	14	39	16
7	4	15.6	18.0	20.3	885	4.61	4.0	33	52	10
12	4	20.8	24.0	26.5	1450	4.61	2.3	28	52	10
19	4	24.6	27.8	30.5	1940	4.61	2.0	24	52	10
27	4	29.8	33.0	36.0	2560	4.61	1.7	22	52	10
37	4	33.6	37.6	40.8	3445	4.61	1.2	19	52	10
48	4	38.8	42.8	46.2	4240	4.61	1.0	17	52	10

* Multi circuit means all conductors are loaded equally and operating in close vicinity

Installation conditions for above rating:

- Ambient Air Temperature 30°C
- Conductor operating temperature 90°C

DUCAB MINERAL INSULATED

MICC - Providing data transmission and security of power and control circuits by exceeding the requirements of BS 8519-1 providing circuit integrity to 950°C.

CHARACTERISTICS

Voltage Rating:	500 volts Light Duty. 750 volts Heavy Duty	
Description:	Mineral Insulated cable delivers ultimate fire performance. It guarantees data transmission and security of power and control circuits by exceeding the requirements of BS 8519 -1 providing circuit integrity to 950°C. It also exceeds enhanced grade requirements defined by BS 5839-1 26.2e – the universal cable that satisfies all Cat. 1, 2 & 3 Power, and all Cat 1, 2 & 3 Control requirements defined by BS 8519.	
Construction:	Solid copper conductor. Compressed magnesium oxide powder insulation. Solid copper sheath and optional thermoplastic LSZH sheath.	
Operating Temperature:	-10°C to +250°C	
Minimum Bending Radius:	6 x overall diameter	
Core Identification:	Coloured sleeving available	
Lengths:	LD - 100/500 mtrs. Special lengths available on request HD - Cables available in nominal lengths	
Sheath Colour:	Red, White or Orange. Other colours available	
Manufacturing Standard:	BS EN 60702-1 and BS EN 60702-2 Accessories (BS EN 60079)	
Code of Practice:	BS 5839-1 Clause 26.2e Enhanced BS 5266 Enhanced Emergency Lighting cable	BS 8519 Category 1 & 2 Control For Category 3 and Power applications see Special Notes
Fire Tests:	BS 8434-2 BS EN 50200 PH30, PH60, PH120 BS 6387 C W & Z BS 8491	
Emissions and Flame Propagation:	BS EN 50267 (IEC 60754) Acid Gas Emission BS EN 50268 (IEC 61034) Smoke Emission BS EN 50265, 50266 (IEC 60332) Flame Propagation (In its bare copper form there are no emissions)	



Special Notes:

1. Testing confirms compliance with BS 8519 Cat.3 Control and Cat.1, 2 & 3. Power (Clause II, note 2. For cables <20 mmOD).
2. Methods of cable support should withstand a similar temperature and duration to that of the cable.
3. MICC shall be supplied as AEI group product with all relevant Approvals & Certifications.

DUCAB FLAMBICC 6

Ducab FlamBICC 6 (BS8519 Category 3 Power Cables) are special fire performance cables designed to operate during highly onerous fire conditions. Designed as per BS 7846 standard and LPCB approved for F120 fire test as per BS 8491. These are also approved to BASEC compliance.

As described in BS 8519, fire resistant cables are classified for Life Safety and Fire Fighting system with varying fire survival time of 30 minutes, 60 minutes or 120 minutes. The FlamBICC 6 cables fully comply with 120 minutes fire survival test. During the F120 fire survival test as per BS 8491 the same cable sample is subjected to fire + mechanical shock with direct impact on the cable water jet hitting the cable.

All Fire Fighting cable systems are required to function for 120 minutes.

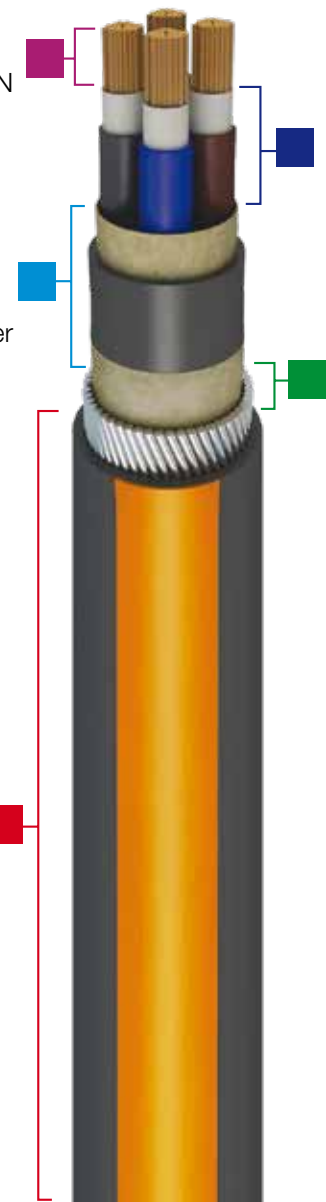
CONSTRUCTION

- **Conductor:** Plain annealed Copper, stranded class 2 conductor to BS EN 60228
- **Dual Insulation:** Special grade of Mica Glass tape + extruded XLPE
- **Bedding:** LSZH along with glass fiber tape/s at appropriate layers
- **Armour:** Galvanised steel wire armoured
- **Outer sheath:** Robust LSZH sheath with Black colour as standard, other colours upon request

Optional: Longitudinal ORANGE STRIPE Identification on outer sheath.

CHARACTERISTICS

General:	Ducab FlamBICC 6 are armoured cables designed as per BS 7846 to meet F120 fire test as per BS 8491.
Approvals:	LPCB and BASEC approved for 3 and 4 core cable designs
Voltage grade:	600 / 1000 V
Fire resistance:	F120 as per BS 8491
Flame propagation:	BS EN / IEC 60332-1 and BS EN / IEC 60332-3 Categories A, B & C
Acid gas emission:	Less than 0.5% when tested to IEC 60754 & BS EN 50267
Low smoke emission:	As per IEC 61034 & BS EN 50268
Cable Operating temperature:	Maximum 90°C
Short circuit temperature:	Maximum 250°C
Bending radius:	6 x Cable diameter for circular and 8 x Cable diameter for sector shaped cables



TECHNICAL DATA OF 3 CORE CABLES















Fire Performance cables. Three Core Armoured Cable 600/1000 V Grade with stranded copper conductors (BS 7846)

Nominal conductor area	Approximate Diameter			Approximate cable weight	Maximum conductor resistance at 20° C	Maximum armour resistance at 20° C	Current rating on perforated cable trays/free air	Voltage drop (3φ AC)
	Under armour	Over armour	Overall diameter					
mm ²	mm	mm	mm	Kg/Km	Ohm/Km	Ohm/Km	Amp	mV/A/m
6*	16	17.8	21.8	940	3.08	6.7	56	6.8
10*	16	18.5	21.5	1100	1.83	4	78	4
16*	18.6	21.5	23.6	1300	1.15	3.5	99	2.6
25*	22	25.2	27.9	1850	0.727	2.5	131	1.6
35*	24.4	27.6	30.5	2260	0.524	2.3	162	1.2
50	25.9	29	31.8	2680	0.387	2	197	0.87
70	27.8	30.9	33.9	3385	0.268	1.8	251	0.61
95	31.6	35.5	38.9	4560	0.193	1.3	304	0.45
120	34.8	38.7	42.3	5450	0.153	1.2	353	0.36
150	38.8	43.7	47.4	6910	0.124	0.78	406	0.3
185	43.1	48	51.9	8285	0.0991	0.71	463	0.25
240	47.4	52.3	56.6	10210	0.0754	0.63	546	0.21
300	53.9	58.8	63.3	12390	0.0601	0.58	628	0.19
400	59.2	64.1	68.9	15155	0.047	0.52	728	0.17

* Circular conductors, all others are sector shaped

Installation condition for above rating:

- Ambient Air Temperature 30°C
- Conductor operating temperature 90°C

CORE IDENTIFICATIONS							
CORES	STANDARD			ALTERNATIVE*			
3 Cores	 Red	 Yellow	 Blue	 Brown	 Black	 Grey	
4 Cores	 Red	 Yellow	 Blue	 Black	 Blue	 Brown	 Black  Grey



TECHNICAL DATA OF 4 CORE CABLES

Fire performance cables. Four Core Armoured Cable 600/1000 V Grade with stranded copper conductors (BS 7846)

Nominal conductor area	Approximate Diameter			Approximate cable weight	Maximum conductor resistance at 20° C	Maximum armour resistance at 20° C	Current rating on perforated cable trays/free air	Voltage drop (3φ AC)
	Under armour	Over armour	Overall diameter					
mm ²	mm	mm	mm	Kg/Km	Ohm/Km	Ohm/Km	Amp	mV/A/m
6*	15.4	17.9	21.9	1000	3.08	7.7	56	6.8
10*	17.6	20.1	22.4	1230	1.83	6.8	78	3.7
16*	19.8	22.3	24.8	1580	1.15	4.3	99	2.6
25*	24.4	27.6	30.3	2385	0.727	3.7	131	1.6
35*	27	30.2	33.1	2930	0.524	3.1	162	1.2
50	27.5	30.6	33.6	3230	0.387	2.3	197	0.87
70	31.7	35.6	39	4520	0.268	2	251	0.61
95	35.4	39.3	42.9	5700	0.193	1.8	304	0.45
120	39	43.9	47.6	7260	0.153	1.2	353	0.36
150	43.7	48.6	52.5	8610	0.124	1.1	406	0.3
185	48.2	53.1	57.4	10370	0.0991	0.76	463	0.25
240	53.5	58.4	62.9	12960	0.0754	0.68	546	0.21
300	59.4	64.3	69.1	15690	0.0601	0.61	628	0.19
400	67.8	73.9	79.3	20300	0.047	0.54	728	0.17

* Circular conductors, all others are sector shaped
 Installation condition for above rating:
 • Ambient Air Temperature 30°C
 • Conductor operating temperature 90°C

INSTALLATION GUIDELINES

FlamBICC 4 & FlamBICC 6 CABLES

Cables Installed in Air

It is anticipated that many of the “in air” installations will be in buildings, and the ratings are therefore given in accordance with IEE Wiring Regulations for Electrical Installations, BS 7671.

It should be noted that all ratings for cables run in free air have been based on the assumption that they are shielded from the direct rays of the sun without restriction of ventilation. The rating for cables subjected to direct sunlight should be reduced to take account of this factor and further guidance on this subject is available on request.

In order to maintain circuit integrity under fire conditions, it should be ensured that accessories used with FlamBICC cables are also fire rated.

Rating factor for ambient air temperatures

Air Temperature	25°C	30°C	35°C	40°C	45°C	50°C	55°C
Rating Factors	1.02	1.0	0.96	0.91	0.87	0.82	0.76

ACCESSORIES

FlamBICC Cable Gland
Ref: FG



available in red, white

LSZH Shroud
Ref: RXG



available in red, orange, white, black

Covered One Hole Clip
Ref: RCHL



available in red, orange, white, black

Covered Two Way Saddle
Ref: RSFL



available in red, orange, white, black

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POWER OVER FIRE

FIRE SAFETY AWARENESS



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