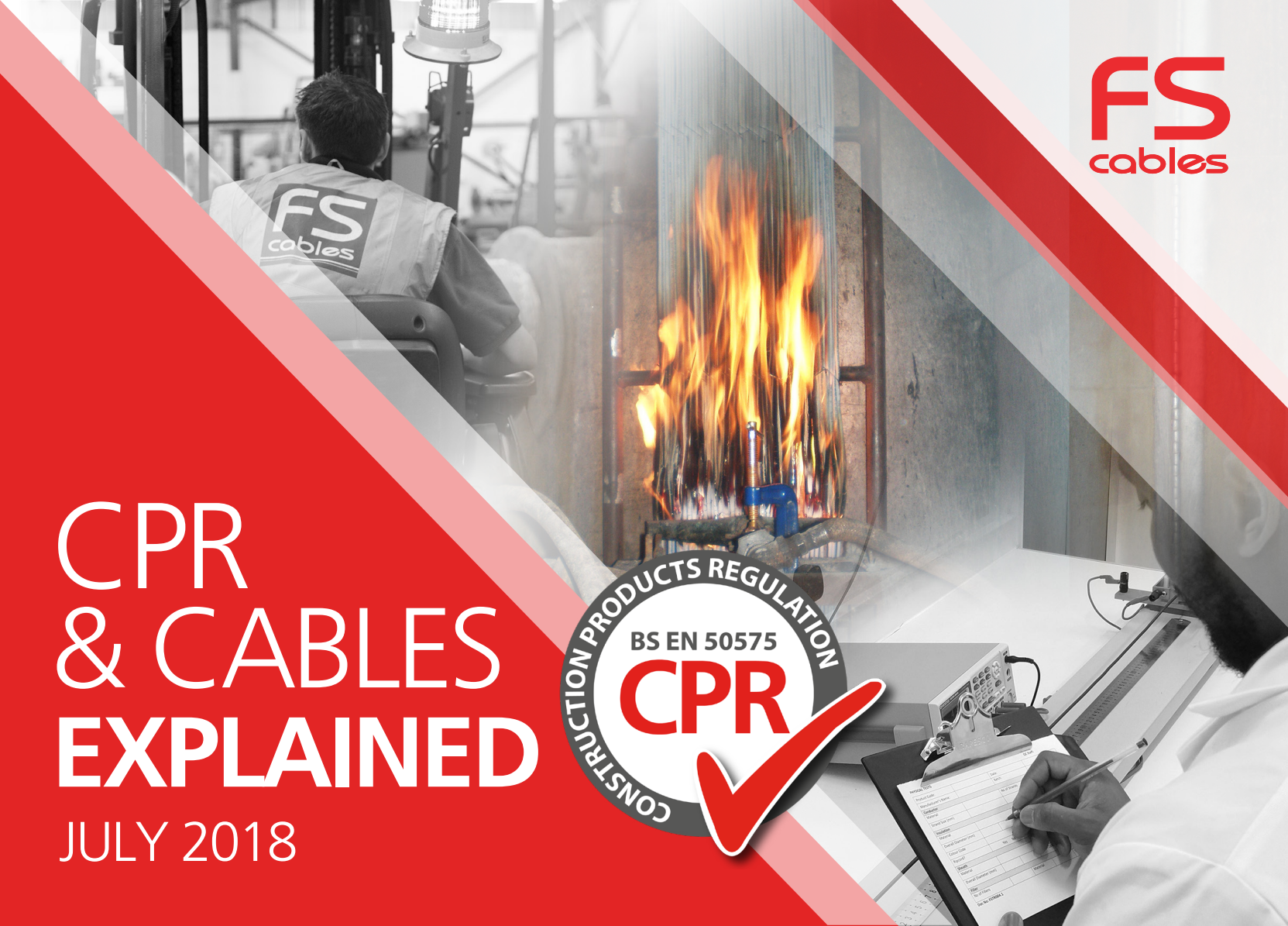
CPR & CABLES **EXPLAINED**

JULY 2018



CPR FOR CABLES

Most cables designed for permanent installation within domestic, residential and commercial buildings are now subject to the Construction Products Regulation (CPR), covered by BS EN 50575. This became a legal requirement in July 2017 so it's important you understand how to stay compliant.

BS EN 50575 enables designers and installers to consider the contribution that cables make to the spread of fire. Cables are a particular concern as they run between rooms and floors, above ceilings and are often made from flammable materials. They can also be a source of ignition if badly installed, damaged or faulty.

FS cables

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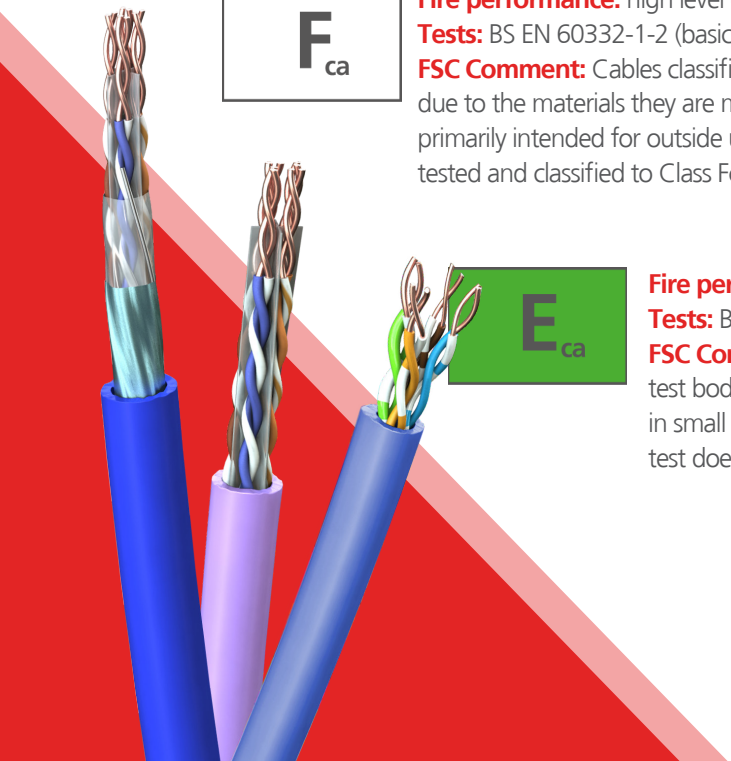
THE CLASSES

The regulation classifies products into one of seven Euroclasses, but in most instances only five will apply to cables. You are likely to see a lot of cables to Class Eca and some to Class Fca.



F_{ca}

Fire performance: high level of flammability under test and burns over 425mm.
Tests: BS EN 60332-1-2 (basic vertical flame test by factory or lab).
FSC Comment: Cables classified to Class Fca may have high levels of flammability due to the materials they are made of. For example, cables with a PE sheath that are primarily intended for outside use, such as telephone or duct grade cable, could be tested and classified to Class Fca.

E_{ca}

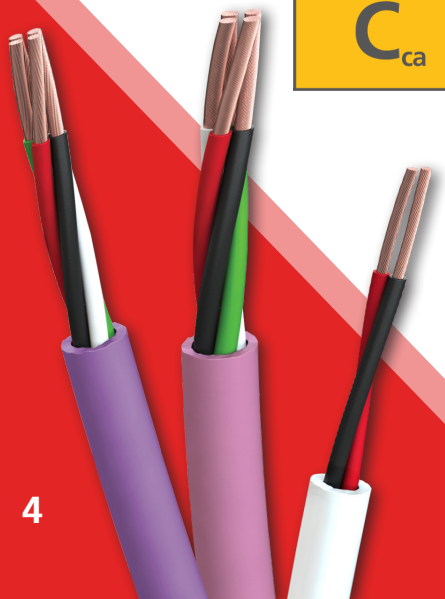
Fire performance: limited fire spread under test and burns less than 425mm.
Tests: BS EN 60332-1-2 (by an authorised test house, known as a Notified Body (NB)).
FSC Comment: Although this is the least expensive test by an approved independent test body (NB), it still costs many hundreds of pounds. It is likely that many cables sold in small volumes will only be tested to this class for commercial reasons. Note that this test does not measure heat release, toxic fumes or smoke.

THE CLASSES

Classes Dca, Cca and B2ca also apply to cables. The following classes also have additional tests to measure **smoke density**, **acidity** of gas given off and **burning droplets** falling from the cable.

D_{ca}

Fire performance: moderate fire spread and high levels of heat generated.
Tests: BS EN 60332-1-2 and BS EN 50399, including smoke generation.
Additional tests: Optional flaming droplets; acidity tests, and additional smoke test.
FSC Comment: This is an expensive test, possibly costing thousands of pounds, and has relatively little use or acceptance within specifying/contracting organisations.



C_{ca}

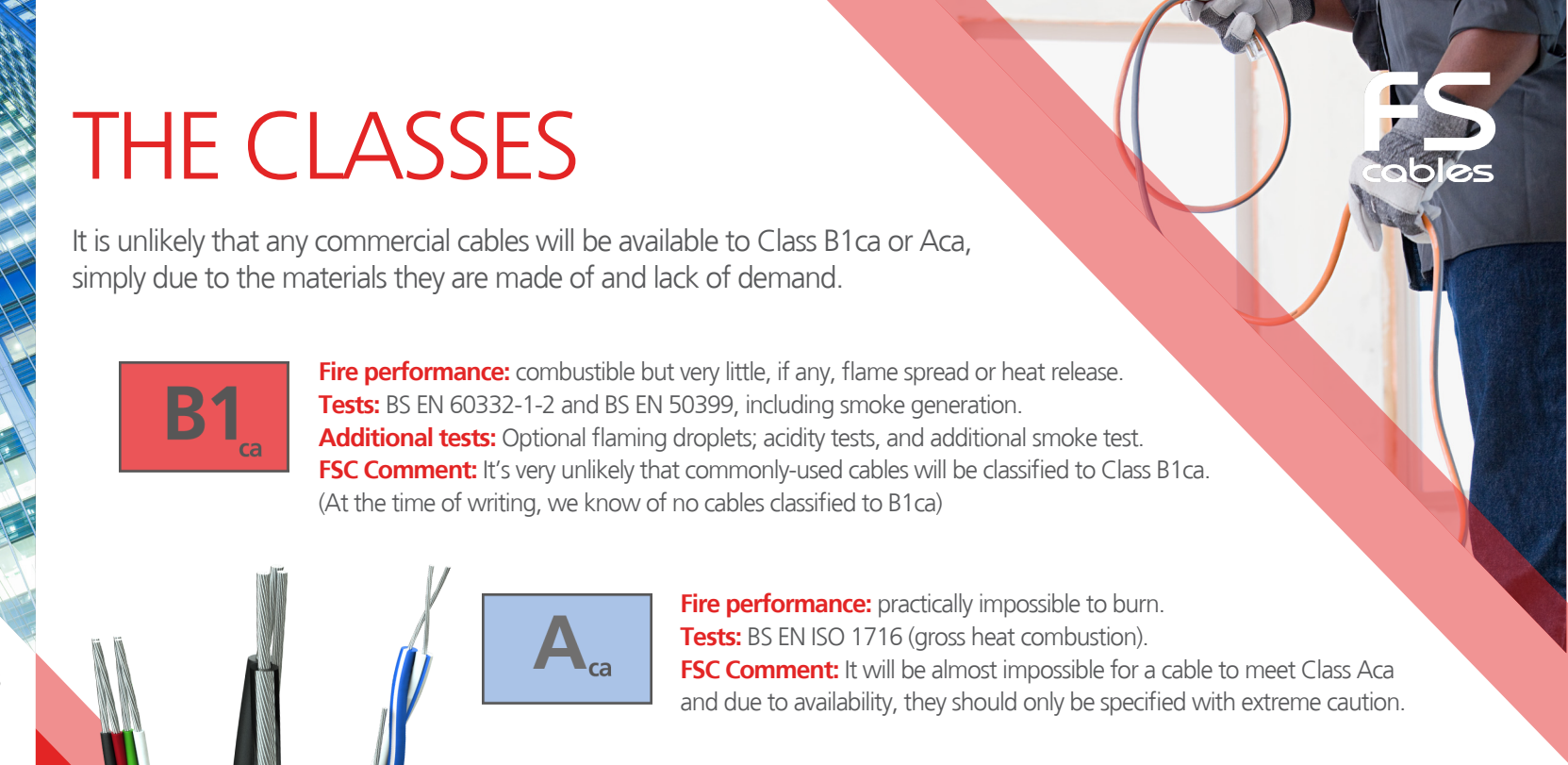
Fire performance: reduced flame spread, limited fire growth/heat release rate.
Tests: BS EN 60332-1-2 and BS EN 50399, including smoke generation.
Additional tests: Optional flaming droplets; acidity tests, and additional smoke test.
FSC Comment: More rigorous test and higher cost than Class Dca but with the additional cost of regular, independent factory inspections, audits and periodic retesting. This is widely accepted across Europe as the 'go to' standard, but be aware that many cables in their current form will not meet Class Cca without costly redesign.

$B2_{ca}$

Fire performance: low flame spread, fire growth & heat release.
Tests: BS EN 60332-1-2 and BS EN 50399, including smoke generation.
Additional tests: Optional flaming droplets; acidity tests, and additional smoke test.
FSC Comment: Similar to Class Cca although a different acceptable heat release rate and burn measurement. The additional optional tests are most relevant to Classes Cca, B2ca and B1ca but add further to the cost. In practice, this is likely to be the highest class cables will meet.

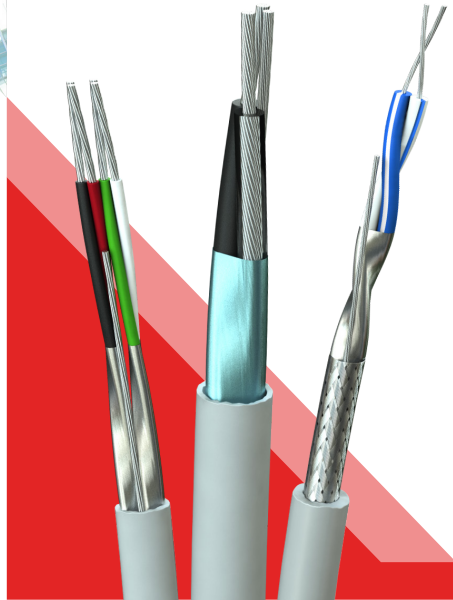
THE CLASSES

It is unlikely that any commercial cables will be available to Class B1ca or Aca, simply due to the materials they are made of and lack of demand.



B1ca

Fire performance: combustible but very little, if any, flame spread or heat release.
Tests: BS EN 60332-1-2 and BS EN 50399, including smoke generation.
Additional tests: Optional flaming droplets; acidity tests, and additional smoke test.
FSC Comment: It's very unlikely that commonly-used cables will be classified to Class B1ca. (At the time of writing, we know of no cables classified to B1ca)



Aca

Fire performance: practically impossible to burn.
Tests: BS EN ISO 1716 (gross heat combustion).
FSC Comment: It will be almost impossible for a cable to meet Class Aca and due to availability, they should only be specified with extreme caution.

At Classes Cca and above, the factories manufacturing the cable will be regularly audited and cables periodically retested by an approved third party at a significant additional cost.

TABLE 1: OUTLINE OF THE EUROCLASS TABLES FOR CPR-RATED PRODUCTS

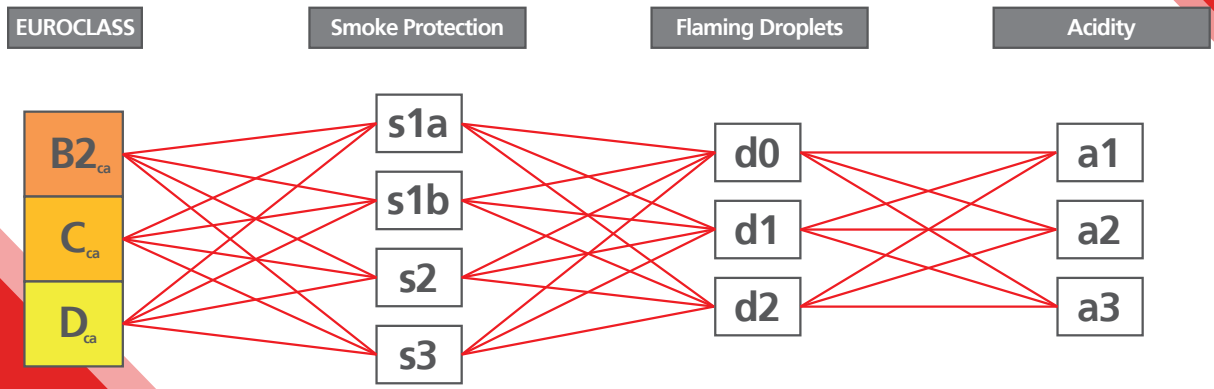
EUROCLASS	Reaction to Fire			
A_{ca}	Gross heat of combustion to BS EN ISO 1716	It's unlikely any cables will meet Class Aca or Class B1ca		
		Smoke Production	Flaming Droplets	Acidity
$B1_{ca}$	Flame Spread & Heat Release to BS EN 50399 (also known as a ladder test) and BS EN 60332-1-2 (Single cable vertical flame test)	Mandatory test for smoke production monitored during ladder test for s1, s2 and s3 If it passes s1 it can also undergo an additional higher level of test for s1a and s1b BS EN 61034-2 Also known as the 3m³ test for smoke production	Optional additional observation during the ladder fire test to monitor flaming droplets d0 - best d1 - middle d2 - worst BS EN 50399	Optional separate test to measure the acidity of gasses given off. Measured as pH and conductivity µS/mm a1 - best a2 - middle a3 - worst BS EN 60754-2
$B2_{ca}$				
C_{ca}				
D_{ca}	Heat Release BS EN 50399 and BS EN 60332-1-2 (single cable vertical flame test)			
E_{ca}	BS EN 60332-1-2 (single cable vertical flame test)	Basic test by independent authorised laboratory (notified body)		
F_{ca}	BS EN 60332-1-2 (single cable vertical flame test)	Factory or laboratory test (not necessarily notified body) but does not meet the requirements of class Eca		

Classes A to E have to be tested by an independent authorised laboratory, (notified body). Most cables will fall into classes B2ca to Eca. For a cable to meet Aca, B1ca, B2ca or Cca, there also needs to be regular factory audits

ADDITIONAL TESTS

Cables can be submitted for additional tests at Classes Dca, Cca, B2ca.
Warning: do not specify a class or take on a job until you have checked the availability and price of the cable. The product may not be available or cost several times what you may have expected.

TABLE 2: POTENTIAL CABLE PERFORMANCE PERMUTATIONS UNDER THE S.D.A CLASSIFICATION



Smoke Production: This is mandatory for Classes Dca, Cca, B2ca and measures smoke production, which is monitored during the ladder test (BS EN 50399). There is a further, optional smoke test to BS EN 61034-2.

Flaming Droplets: This is an optional observation to monitor flaming droplets during the ladder test to BS EN 50399.

Acidity: This is an optional separate test to BS EN 60754-2 which measures the acidity of gases given off.

WHO'S RESPONSIBLE?

It is up to the designer, specifier or installer to satisfy themselves that the products chosen are appropriate for the application and meet any contractual requirements. It is important to note that at the moment, CPR-classified products can be used, whatever their Euroclass - providing that they are contractually acceptable.

When specifying cable, take care to assess the risk of fire within a building and the potential ease of evacuation. Airports, hospitals, prisons, tunnels and high rise buildings all offer their own unique challenges and should be assessed individually.

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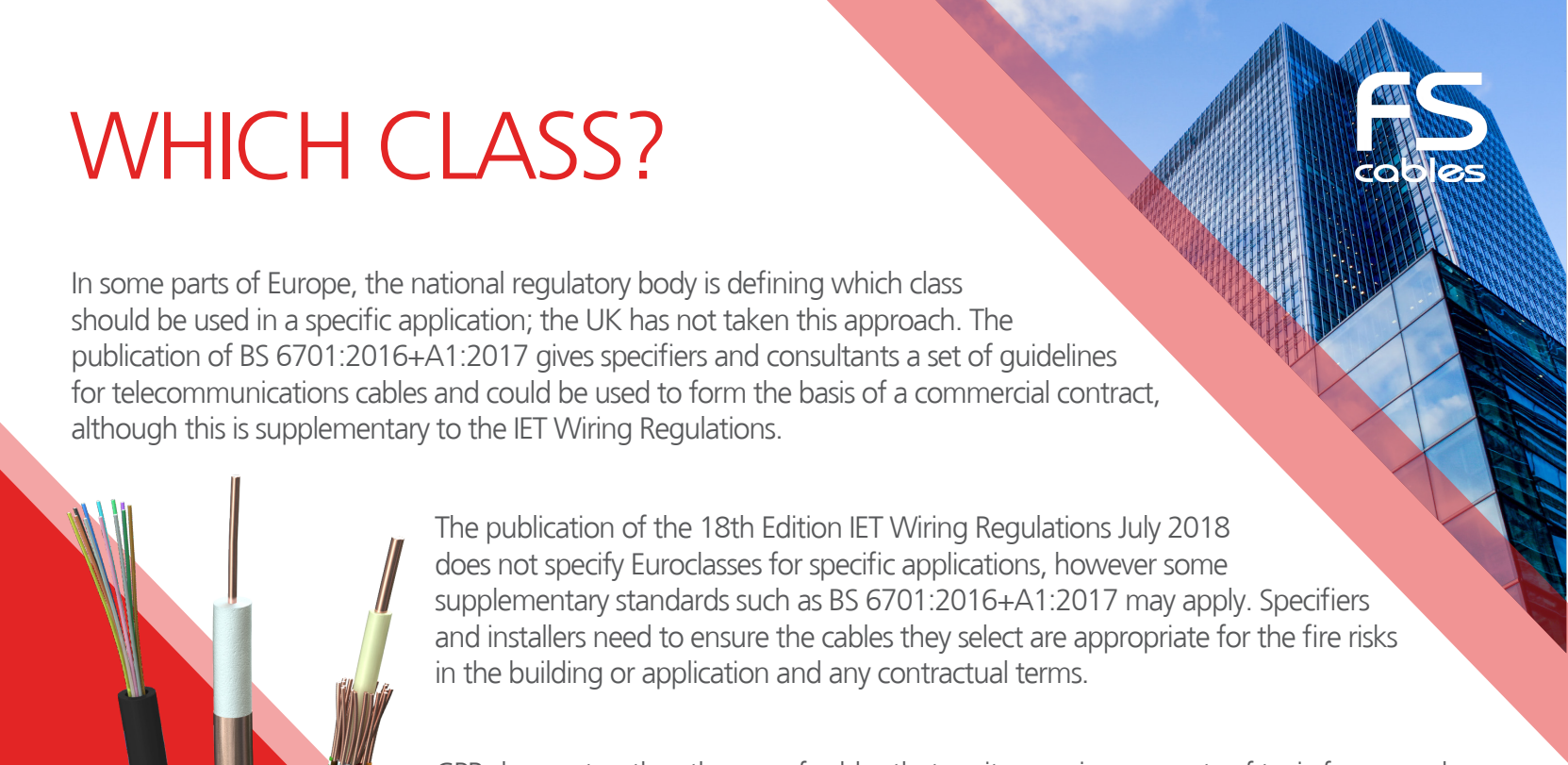
WHICH CLASS?



In some parts of Europe, the national regulatory body is defining which class should be used in a specific application; the UK has not taken this approach. The publication of BS 6701:2016+A1:2017 gives specifiers and consultants a set of guidelines for telecommunications cables and could be used to form the basis of a commercial contract, although this is supplementary to the IET Wiring Regulations.

The publication of the 18th Edition IET Wiring Regulations July 2018 does not specify Euroclasses for specific applications, however some supplementary standards such as BS 6701:2016+A1:2017 may apply. Specifiers and installers need to ensure the cables they select are appropriate for the fire risks in the building or application and any contractual terms.

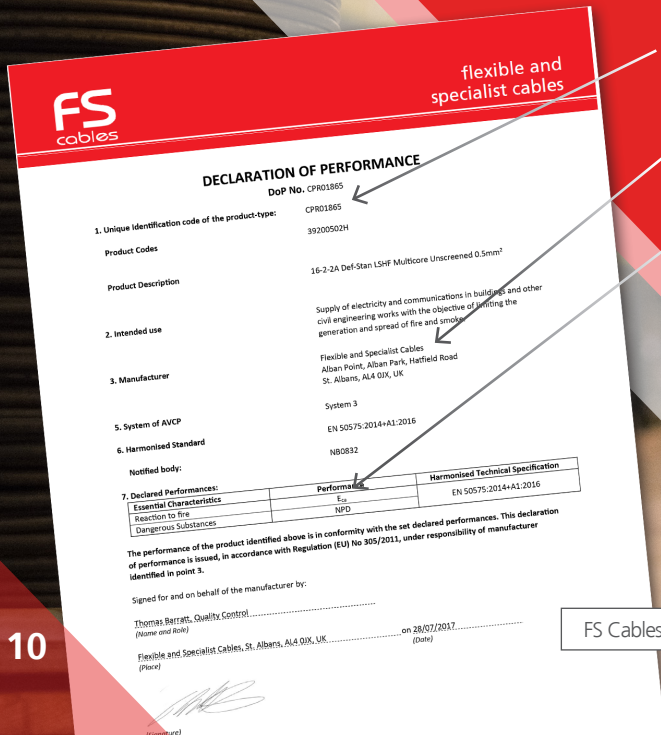
CPR does not outlaw the use of cables that emit excessive amounts of toxic fumes and smoke in the event of a fire. It is down to the specifier to select suitable product, such as Low Smoke Halogen Free (LSHF) versions.

Circuit integrity cables, such as fire alarm cable (i.e. FP200), are not covered by CPR - this is likely to be some years away.

STAY COMPLIANT

1. DECLARATION OF PERFORMANCE

Cables manufactured after July 2017 intended for permanent installation within a domestic, residential or commercial building, or any other civil structure, should have a Declaration of Performance (DoP) available. This document shows critical information such as:



FS cables — flexible and specialist cables

DECLARATION OF PERFORMANCE

DoP No. CPR01865

1. Unique Identification code of the product-type:	CPR01865
Product Codes	39200502H
Product Description	16-2-2A Def-Stan LSHF Multicore Unscreened 0.5mm²
2. Intended use	Supply of electricity and communications in buildings and other civil engineering works with the objective of limiting the generation and spread of fire and smoke
3. Manufacturer	Flexible and Specialist Cables Alban Point, Alban Park, Hatfield Road St. Albans, AL4 0JX, UK
5. System of AVCP	System 3
6. Harmonised Standard	EN 50575:2014+A1:2016
Notified body:	NB0832

7. Declared Performances:

Essential Characteristics	Performance	Harmonised Technical Specification
Reaction to fire	E_{ca}	EN 50575:2014+A1:2016
Dangerous Substances	NPD	

The performance of the product identified above is in conformity with the set declared performances. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under responsibility of manufacturer identified in point 3.

Signed for and on behalf of the manufacturer by:

Thomas Barratt, Quality Control (Name and Role)

Flexible and Specialist Cables, St. Albans, AL4 0JX, UK (Place) on 28/07/2017 (Date)

(Signature)

FS Cables DoP document

PRODUCT TYPE

MANUFACTURER'S NAME

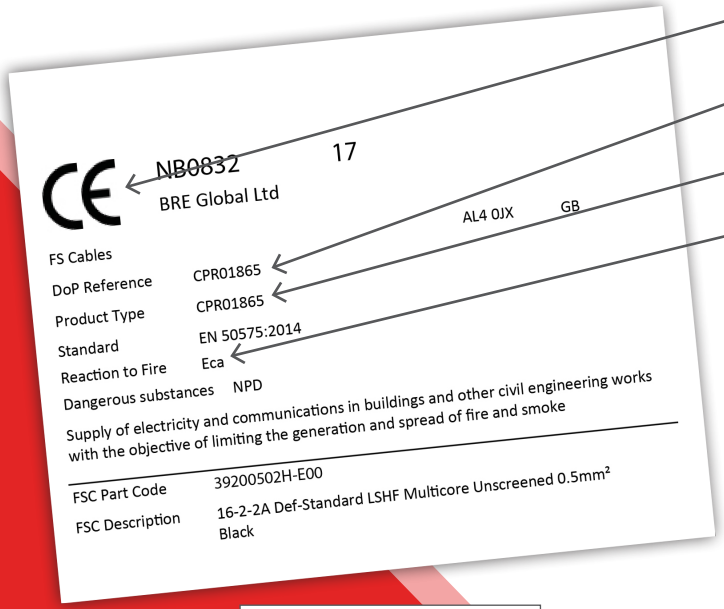
CLASS MET

By law, manufacturers or anyone importing cables from outside the EU need to keep records of CPR compliant cables sold and be able to provide DoP documentation for up to 10 years after it was first sold. If purchasing FSC or Tru brand CPR compliant cable, you can easily download your CPR documentation straight to your mobile, tablet or desktop through our CPR downloads tool.

VISIT:
fscables.com/cpr-downloads

2. CPR PRODUCT LABEL

The cable itself does not have to be printed or embossed to show CPR compliance, however the regulation is very clear that the packaging (usually a drum, spool or box), needs to be clearly marked with specific information, invariably on a label. This will include:

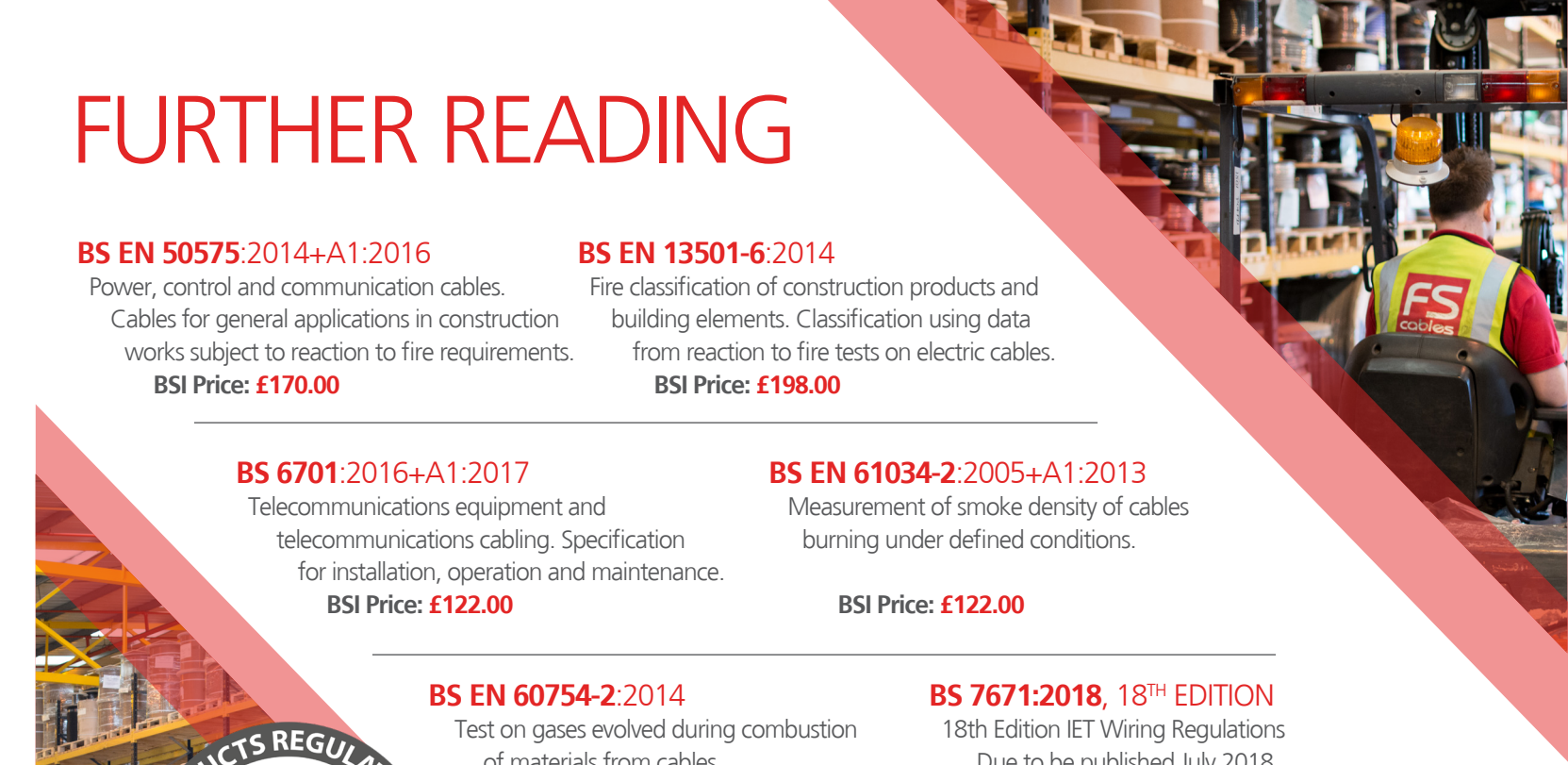


FS Cables CPR product label

All FSC-marked cables carry a batch number to give full traceability regarding when and where the cable was made and also the materials used to manufacture that specific batch.

As part of the commitment to meet current regulations, FS Cables stock over 600 CPR compliant cables including Alternative to Belden cables, structured wiring, fibre, coax, signal & control and power cables.

FURTHER READING



BS EN 50575:2014+A1:2016

Power, control and communication cables. Cables for general applications in construction works subject to reaction to fire requirements.

BSI Price: £170.00

BS EN 13501-6:2014

Fire classification of construction products and building elements. Classification using data from reaction to fire tests on electric cables.

BSI Price: £198.00

BS 6701:2016+A1:2017

Telecommunications equipment and telecommunications cabling. Specification for installation, operation and maintenance.

BSI Price: £122.00

BS EN 61034-2:2005+A1:2013

Measurement of smoke density of cables burning under defined conditions.

BSI Price: £122.00

BS EN 60754-2:2014

Test on gases evolved during combustion of materials from cables.

BSI Price: £170.00

BS 7671:2018, 18TH EDITION

18th Edition IET Wiring Regulations Due to be published July 2018.

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