CPR & Cables
Explained

FS
cables

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 the majority of cables between Classes Cca and 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 external use, such as telephone or duct grade cable, could be tested and classified to Class Fca, which is perfectly acceptable when used in an appropriate environment.

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) or Approval Body (AB)).

FSC Comment: The same basic test as Clas Fca for vertical flame proagation for a single wire or cable using a 1-kW flame. Note that this test does not measure heat release, toxic fumes or smoke.

CPR FOR CABLES

Most cables designed for permanent installation within domestic, residential and commercial buildings are 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 is a regulation which brings together common classification, criteria and monitoring requirements to form seven Euroclasses. These classes have fire performance assessment processes based on BS EN 60332-1-2, BS EN 50399 and BS EN ISO 1716. There are additional tests for Smoke Production, Flaming Droplets and Acidity.

THE CLASSES

To meet classes Dca, Cca and B2ca the cable must first undergo BS EN 60332-1-2. They also have additional tests to measure **smoke density**, **acidity** of gas given off and **burning droplets** falling from the cable.

Dca

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 classification has relatively little use or acceptance within specifying/contracting organisations. This is because no largescale flamespread growth is measured.

Cca

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 than Class Dca but with additional 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 do not meet Class Cca though avaliability is improving.

B2ca

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 lower acceptable heat release rate and burn measurement. The additional tests are most relevant to Classes Cca, B2ca and B1ca, in practice, this is likely to be the highest class cables will meet.
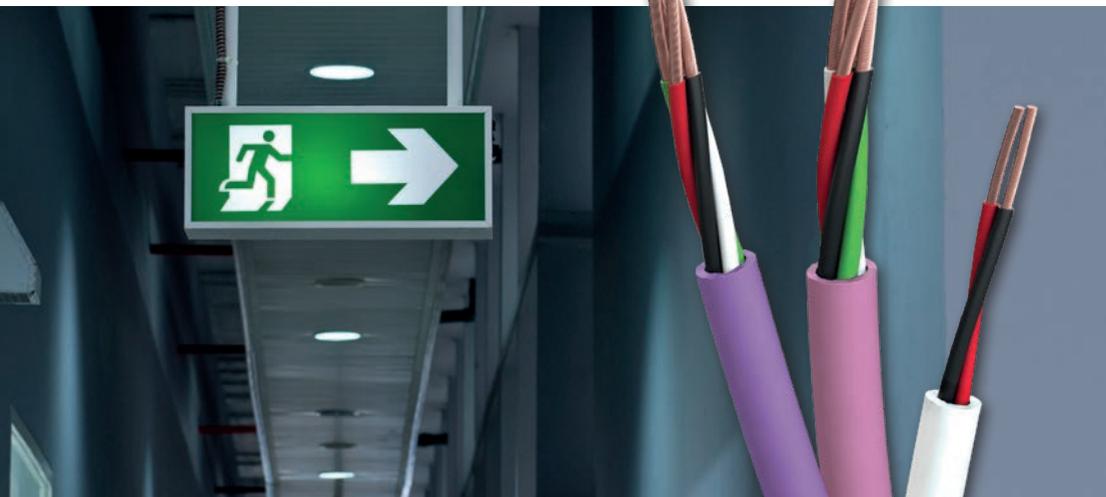
THE CLASSES

It is unlikely that many 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.

Aca
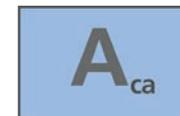
Fire performance: practically impossible to burn.

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.

Summary of Euroclass test results for CPR-rated cables

Reaction to Fire BS EN ISO 1716		FSC Comment
Aca	**Does not contribute to the fire**	It will be almost impossible for a cable to meet Class Aca and due to availability, they should only be specified with extreme caution.
Reaction to Fire BS EN 50399		
B1ca	**Minimum contribution to the fire**	It's very unlikely that commonly-used cables will be classified to Class B1ca.
B2ca	**Combustible, low flame spread & heat release contribution to the fire**	Similar to Class Cca although a lower acceptable heat release rate and burn measurement. In practice, this is likely to be the highest class cables will meet.
Cca	**Combustible, moderate flame spread & heat release**	A more rigorous test than Class Dca this is widely accepted across Europe as the 'go to' classification, but be aware, many cables do not meet Class Cca though avalilability is improving.
Dca	**Combustible, moderate flame spread & high levels of heat generated**	This classification has relatively little use or acceptance within specifying/contracting organisations. This is because no large scale fire growth is measured.
Reaction to Fire BS EN 60332-1-2		
Eca	**Combustible, limited fire spread of less than 425mm**	A basic test for vertical flame propagation for a single insulated wire or cable using a 1-kW pre-mixed flame. Note: This test does not measure heat release, toxic fumes or smoke.
Fca	**Combustible, fire spread of more than 425mm**	Cables classified to Class Fca may have high levels of flammabiitly due to the materials they are made of. This does not mean that the cable can not be used, it is more likely to be used in external applications.

Additional Classifications for Euroclasses B to D

	Smoke Production BS EN 50399 / BS EN 61034-2	Flaming Droplets BS EN 50399	Smoke Acidity BS EN 60754-2
B1ca **B2**ca **C**ca **D**ca	**s1a:** s1 + transmittance >=80% (BS EN 61034-2) **s1b:** s1 + transmittance >=60% <80%(BS EN 61034-2) **s1:** Low production & slow propagation of smoke **s2:** Intermediate production & propagation of smoke **s3:** None of the above	**d0:** No fall of droplets or flaming particles, timed for 1200 seconds **d1 :** Fall of droplets or flaming particles that persist for less than 10 seconds, timed for 1200 seconds **d2:** None of the above	**a1:** - Very low acidity (conductivity <2.5 µS/mm & pH >4.3) **a2:** Low acidity (conductivity <10 µS/mm & pH >4.3 **a3:** None of the above

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.

Classes A to E have to be tested by an independent authorised laboratory. 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 on-going factory audits.

WHICH CLASS?

In some parts of Europe, the national regulatory review body is defining which class should be used in a specific application; the UK Government 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 and optional** to the IET Wiring Regulations (BS 7671).

The 18th Edition IET Wiring Regulations (BS 7671) does not specify Euroclasses for specific applications so 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.

Both BS 7671 and BS 6701 are not legal requirements according to MHCLG. The building owner is fully entitled to find safe solutions for installations without reference to these publications. However, they may need to demonstrate compliance with Building Regulations and the Electricity at Work Regulations by other means e.g. BS 9999 and BS 9991:2015.

The 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), will eventually be covered by CPR - however this is likely to be some time away.

WHO'S RESPONSIBLE?

Specifiers and installers need to ensure the cables they select are appropriate for the fire risks in the building or applications and any contractual terms. The CPR covers the way in which product is placed on the market. Crucially, it does not say what class of product should be used in any given circumstance.

The 18th edition of BS 7671 recognises that where applicable, cables need to meet CPR requirements and carry a Euroclass for fire performance. BS 7671 does not specify or recommend which Euroclass to use in an environment or application. Nor does it outlaw using cables that emit toxic fumes and smoke in the event of fire.

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:

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

FS Cables DoP document

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:

NB0832   17
BRE Global Ltd

FS Cables	AL4 0JX	GB
DoP Reference	CPR01865	
Product Type	CPR01865	
Standard	EN 50575:2014	
Reaction to Fire	Eca	
Dangerous substances	NPD	

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

FSC Part Code	**39200502H-E00**
FSC Description	16-2-2A Def-Standard LSHF Multicore Unscreened 0.5mm² Black

CE MARK

DoP reference

Unique Product Type

Euroclass

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 850 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.

BS EN 13501-6:2014
Fire classification of construction products and building elements. Classification using data from reaction to fire tests on electric cables.

BS 6701:2016+A1:2017
Telecommunications equipment and telecommunications cabling. Specification for installation, operation and maintenance.

BS EN 61034-2:2005+A1:2013
Measurement of smoke density of cables burning under defined conditions.

BS EN 60754-2:2014
Test on gases evolved during combustion of materials from cables.

BS 7671:2018, 18TH EDITION
18th Edition IET Wiring Regulations

FS cables

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CONSTRUCTION PRODUCTS REGULATION
BS EN 50575
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