

GUIDE TO CONSTRUCTION PRODUCTS REGULATION (CPR)

CONNECTED ENTERPRISE SOLUTIONS



Background

Combustible construction materials can cause untold amounts of damage, resulting in loss of life as well as assets and income. As a result, fire safety has been and continues to be a major objective when designing a building. The growth of copper and fiber cabling infrastructures in buildings has been recognized as contributing to a greater fire risk with each new installation. Reducing the risk of fire propagation, smoke generation and toxic emissions from power, control and data communications cabling has been incorporated into the EU Construction Products Regulation EU Regulation 305/2011, since 2011.

After the UK's departure from the European Union, the CPR no longer directly applies to the UK. In 2019, UK government implemented its own regulations that mirror the EU CPR, called The UK Construction Products Regulation. At that time all existing harmonized European standards became UK 'designated standards' i.e harmonized European standards and British designated standards are currently identical.



INTRODUCTION

Construction Products Regulation (CPR)

The Construction Products Regulation (CPR) lays down harmonized rules for the marketing of construction products in the EU and UK. The Regulation provides a common technical language to assess the performance of construction products. It ensures that reliable information is available to professionals, public authorities, and consumers, so they can compare the performance of products from different manufacturers. This is to ensure that materials used in "construction works" do not endanger the safety of people, property, or the environment. Under this regulation, all construction products installed in the EU and UK must feature the CE and/or UKCA mark which provides proof of compliance. The CE/UKCA mark does not indicate the quality of the product, it denotes that that the product meets the safety criteria as specified for the product concerned.

Currently (Jan 2024) it is the intention of the UK government to end recognition of the CE mark in UK for power, control, and telecommunications cable at the end of June 2025.

Construction Works - Definition

The CPR states that power control and data telecommunications cable is subject to the rules when installed in "Construction Works". Construction Works as defined by the CPR refer to any permanent or temporary building or civil engineering work. Examples: buildings, bridges, tunnels, and other infrastructure projects.

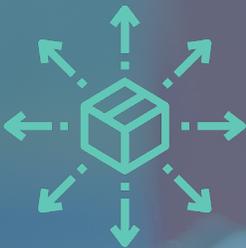
Construction works **are not** ships, trains, buses, cars, aeroplanes etc.

Communications Cabling and the CPR

All data and telecommunications cable, copper, and fiber, supplied to the EU member states and the United Kingdom, which is **permanently installed** in construction works, became subject to the rules of CPR from 1st July, 2017.

The CPR affects communications cabling to ensure the safety of the cable in terms of its fire performance or more accurately it's "reaction to fire". The harmonized European Standard EN 50575:2014+ A1 2016 and the mirrored British standard BS EN 50575:2014+A1:2016 is the reference standard of the CPR in relation to power, control, and communications cables, "reaction to fire" requirements.

BENEFITS OF THE CPR



Free circulation of construction products in the EU's Single Market and Britain



National authorities can set performance requirements using the harmonized European/British standards



Users of construction products can better define their performance demands



Market surveillance can rely on one common information structure

COMMUNICATIONS CABLING REACTION TO FIRE CLASSES

The standard classifies the reaction to fire performance of cables based on:



Heat Release and Flame Spread



Smoke Production



Flaming Droplets



Acidity

The above classifications are specified in existing standards:

- IEC 60332-1 (Test for vertical flame propagation),
- IEC 61034-2 (Measurement of smoke density of cables burning under defined conditions),
- IEC 60754-2 (Test on gases evolved during combustion of materials from cables)

The EN (BS) 50575:2014+A1:2016 standard sets out:

- Requirements for reaction to fire
- Test methods for reaction to fire
- Factory production control
- Assessment and verification of consistency of performance (AVP)
- Defines a number of reaction to fire classes
- Marking, labelling, and packaging.

All data and telecommunications cable must be ranked, by its class. These classes provide a standardized way to assess the cable's reaction to fire.

EUROCLASSES

From 1st July 2017 all data and telecommunications cable must be ranked in terms of its reaction to fire performance, by its Euroclass.

There are seven Euroclasses, for flame spread and heat release as shown below.

Euroclass	Reaction to Fire Standards	Classification
Aca	Gross heat of combustion EN ISO 1716	Class Aca is for non-combustible products, eg. cables with ceramic insulation. Out of scope for data cables.
B1ca	Heat Release EN 50399, Flame spread EN 50399, and EN 60332-1-2	Class B1ca is the best in class, ie. this cable is the least capable of spreading fire. Class B2a and Cca cable are capable of some degree of spreading a fire.
B2ca		
Cca		
Dca	Heat release EN 50399, Flame spread EN 50399, and EN 60332-1-2	Class Dca cable is difficult to ignite by a small flame. Heat release and flame spread are assessed.
Eca	Flame spread EN 60332-1-2	Class Eca is difficult to ignite by a small flame. Heat release and flame spread are not assessed.
Fca		Cable that has no determined performance

In addition to the flame spread and heat release rankings, additional performance criteria must be declared for smoke production (s), flaming droplets (d) and acidity (a) for cables with a Euroclass higher than Class Eca.

Euroclass	Reaction to Fire Standards	Additional Parameters		
		Smoke production	Flaming droplets	Acidity
Aca	Gross heat of combustion EN ISO 1716	None		
B1ca	Heat release EN 50399, Flame spread EN 50399, and EN 60332-1-2	s1a, s1b, s2, s3 EN 50399, EN 61034-2	d0, d1, d2 EN 50399, EN 60754-2	a1, a2, a3 EN 50399, EN 60754-2
B2ca				
Cca				
Dca	Heat release EN 50399, Flame spread EN 50399, and EN 60332-1-2			
Eca	Flame spread EN 60332-1-2	None		
Fca		None		

Smoke Production (CPR)

- s1 Burns and produces smoke, but the cable has not been tested for the transmittance of the smoke.
- s1a Burns and produces smoke. Transmittance of smoke values percentages defined.
- s1b Burns and produces smoke. Transmittance of smoke values (less demanding than s1a)
- s2 Less demanding than s1, s1a, s1b
- s3 No performance declared or does not conform to s2 or s1 criteria

Flaming Droplets

- d0 No droplets
- d1 Some droplets
- d2 No performance declared or does not conform to d1 or d0 criteria

Acidity (Acid Gas Evolution)

- a1 The most demanding criteria
- a2 Less demanding criteria
- a3 No performance declared or does not conform to a1 or a2

Factory Production Control and Assessment and Verification of Consistency of Performance (AVP)

All cable manufacturers who sell copper and fiber cable into the EU are required to test the performance of their cables (reaction to fire) via a Notified Body (in UK an Approved Body). A Notified/Approved Body is an independent organization whose role is to evaluate whether the product complies with the relevant legislation in force. Each Notified Body is designated by the individual member state. Britain designates its Approved Bodies.

An Assessment and Verification of Constancy of Performance (AVCP) is completed by the Notified/Approved Body and a Certificate of Conformance is issued to the cable manufacturer on the successful completion of the relevant tests. The AVCP is a harmonized system defining how to assess products and control the constancy of the assessment results. This system safeguards the reliability and accuracy of the Declaration of Performance.

CPR IMPLEMENTATION IN THE EU AND UK

Each EU member state has decided which class to implement for their specific national construction standards and regulations. Not all EU states or the UK have adopted the same reaction to fire class for communication cables. Regional building codes and regulations must be consulted for guidance.

Declaration of Performance (DoP)

Cable manufacturers must supply the buyer of their cables with a Declaration of Performance document and add a CE and/or UKCA mark visibly, legibly, and indelibly to the product labels supplied with the reels, coils, or drums of the cables.

The DoP:-

- identifies the product
- states its intended use
- states its essential characteristics, as given by its declared performance (for cables by class)

Molex Implementation of CPR Compliance

Molex Connected Enterprise Solutions offer a comprehensive range of reaction to fire classes of copper and fiber cables compliant with the Construction Products Regulations. Consult our sales team and our website for details.

The information contained in this document is based on our understanding of the Construction Products Regulation. It is not a legally binding document and shall in no way be construed or interpreted to give rise to any legal right or obligation whatsoever. Information contained herein is subject to change.