Construction Product Regulations*

We are all concerned by the safety of persons and property.
In 2010, 8 million fires were recorded:
they are estimated to have caused almost 800,000 injuries and 80,000 deaths, of which 30,000 in Europe. These macabre figures show that almost 75% of deaths are not caused by burns, but by asphyxia relative to inhaling toxic smoke and gases released by the fires.

It was therefore necessary to analyse the risks in order to improve prevention, thereby improving everyday safety.

Since 1st July 2013, the European Union has applied the Construction Products Regulations n°305/2011, CPR, that define the criteria and essential requirements construction products must meet.

It also makes it possible to define a “common technical language” in order to harmonise the test and performance assessment methods in all European countries. Therefore, the objective of these regulations is to guarantee product performance and quality transparency and, as a result, the safety of persons and property.

Cables, which are found everywhere in a building, can have a major impact during a fire. They are therefore subject to these regulations and must be assessed in order to meet CPR requirements starting **from 1st July 2017**.

Which cables are concerned by these new regulations?

All static cables installed in the building are covered by the new CPR regulations, this covers both power cables and control and communications cables, whether copper or optical fibre.

The term “static” therefore includes all fixed cable elements and as a result excludes flexible so-called communications cables such as patching cords or any other elements not built into the construction.

CPR : Construction Product Regulations*

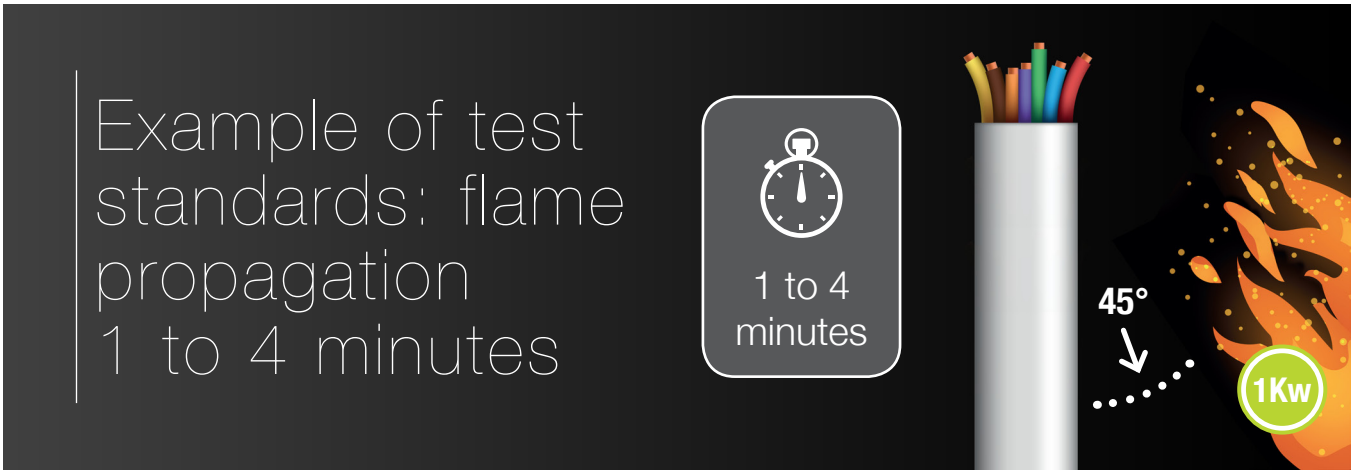
The CPR, for a harmonisation of standards

1. Prior to the CPR

Before the application of the CPR to cables, fire behaviour tests already existed but without any European-level harmonisation:

	Flame propagation	Fire propagation	Fire resistance
International standard	IEC 60332-1	IEC 60332-3	IEC 60331
EU standard	EN 50265-2.1	EN 50266	EN 50200
French standard	NF C 32070 2.1 (C2)	NFC 32070 2.2 (C1)	NFC 32070 2.3 (CR1)
Belgian standard	ARIE - RGIE Art 104-F1	ARIE - RGIE Art 104-F2	ARIE - RGIE Art 104-F3
UK standard	BS EN 50265	BS EN 50266	BS EN 50200

Exemple de quelques normes avant la mise en place du RPC / équivalence relative



2. 2. CPR: A single language

If, previously, fire test standards differed in each country and test, one of the main objectives of the CPR is to harmonise the tests at the European level.

The CPR makes it possible to classify cables according to their fire behaviour: smoke emissions, emission of hazardous substances, toxicity, etc.

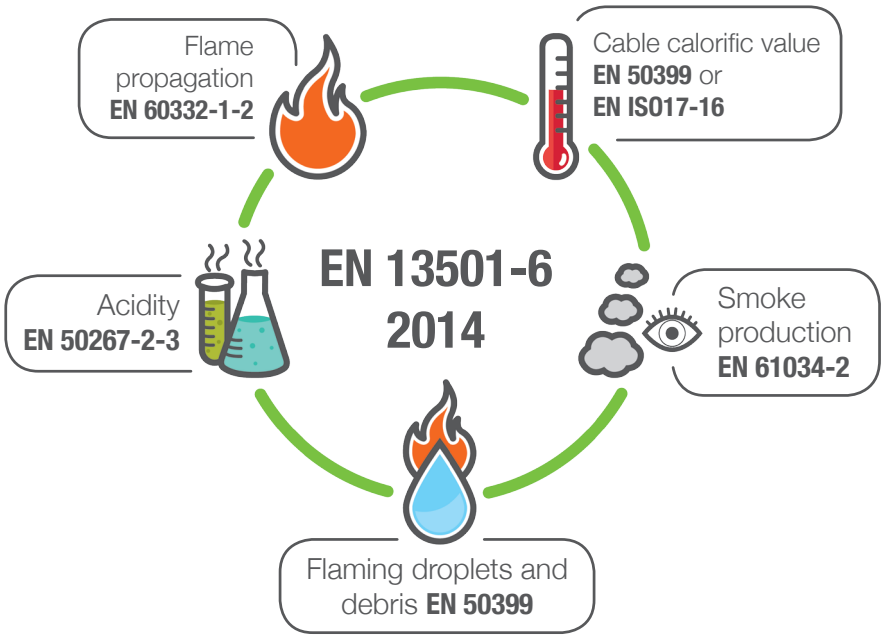
What about fire resistance?

Fire resistance makes it possible to define the capacity of a cable to provide its main function during a given period of time, while being exposed to fire.
Fire resistance test standards have not been defined by the CPR yet, they will enrich the regulations in the future.

In the framework of the CPR, a new harmonised standard EN 1350-6:2014, defines electric cable fire behaviour classifications using 5 criteria:

Special case of Aca class cables which must only meet the EN ISO 1716 standard.

The EN 50399 standard is a fire test based on a vertically installed bunched cable subjected to a 20.5 kW burner for the B2ca classification or 30k for the B1ca classification.



This series of tests is now mandatory for cables that are to be put onto the European market, and must therefore be carried out by an accredited laboratory.

The 7 fire behaviour classes

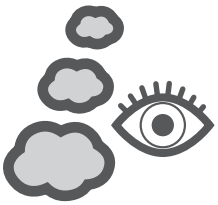
1. 1. Flame propagation & calorific value

The test and trial results are used to split the cables into one of the 7 fire behaviour classes, known as «**Euroclasse**»: Fca, Eca, Dca, Cca, B2ca, B1ca and Aca

A_{CA}	**No reaction**
$B1_{CA}$	**Very slight reaction** *Does not propagate flame, does not propagate fire (1.75 m), releases very low heat*
$B2_{CA}$	**Slight reaction** *Does not propagate flame, does not propagate fire (1.5m), releases low heat*
C_{CA}	**Limited reaction** *Does not propagate flame, does not propagate fire (2 m), releases limited heat*
D_{CA}	**Acceptable reaction** *Does not propagate flame, acceptable release of heat*
E_{CA}	**Basic reaction** *Does not propagate flame*
F_{CA}	**Non-classified**

2. Additional criteria

For classes B1ca, B2ca, Cca et Dca, **3 additional criteria** have been added: smoke production, flaming droplets / debris, and acidity.



Smoke production

During the fire testing of a cable, one of the parameters measured is smoke production. It depends on the smoke released during a fire, the RSP, *Rate Smoke Production*, which is expressed in m²/s.

Visibility through the smoke produced by the combustion of the cable, known as transmittance, is an additional criterion to take into account in cable classification.

Transmittance:

The relationship between the intensity of light passing through smoke and the incident light intensity: T: I/I0
It is expressed as a percentage. A transmittance of 100% would therefore indicate a total absence of smoke. The more smoke is produced, the lower the transmittance becomes.

Additional criteria	Production and Propagation	RSP (m²/s) max *Rate Smoke Production*	Additional sub-criteria	Transmittance
S1	Low quantity and slow smoke propagation	≤ 0.25	S1a S1b	≥80% 60%≤ <80%
S2	Medium quantity and smoke propagation	< 1.5		
S3	High quantity and fast propagation	>1.5		

S: smoke

Flaming droplets and debris

D0	No flaming droplets or debris
D1	No flaming droplets or debris for longer than 10s.
D2	Neither d0 nor d1

D: droplet

Acidity and conductivity

A1	Low conductivity (<2.5µS/mm) and low acidity (PH > 4.3)
A2	High conductivity (<10µS/mm) and low acidity (PH > 4.3)
A3	Neither a1 nor a2

A: acidity

A certificate of conformity system

A certificate of conformity system was also set up to define the tests and inspections to be carried out by notified bodies depending on the declared fire behaviour class:

Euroclass applied	Assessment and verification of the consistency of performances
Aca	"1+" including: - Initial type tests and continuous monitoring by a notified body (2 audits / year) - Production checked by the manufacturer
B1ca	
B2ca	
Cca	
Dca	"3" including: Initial type tests by an accredited laboratory Production checked by the manufacturer
Eca	
Fca	"4" type tests and production checked by the manufacturer (self-certification)

Depending on the certificate system, a set of checks and measurements is also defined:

Certificate of conformity system	+1	3	4
Factory production checks	CAE groupe	CAE groupe	CAE groupe
Tests on additional samples taken	CAE groupe		
Performance assessment	Notified body	Accredited test laboratory	CAE groupe
Initial factory inspection and factory production checks	Notified body		
Monitoring, assessment and appreciation of the factory production checks	Notified body		
Audit, test on samples taken by the notified body before commercialisation	Notified body		

Notified body:
Body (third party) authorised to carry out tasks relating to the Assessment and Verification of Consistency of Performance procedure:
- Certification
- Checks the conformity of production in the factory and of test laboratories
- 1 per European country

Accredited test laboratory
Test and measurement of performance characteristics

Manufacturers' new duties

Cable manufacturers have a series of documents and duties to guarantee the conformity of the product with the declared fire classification.

1. DoP Declaration of Performance

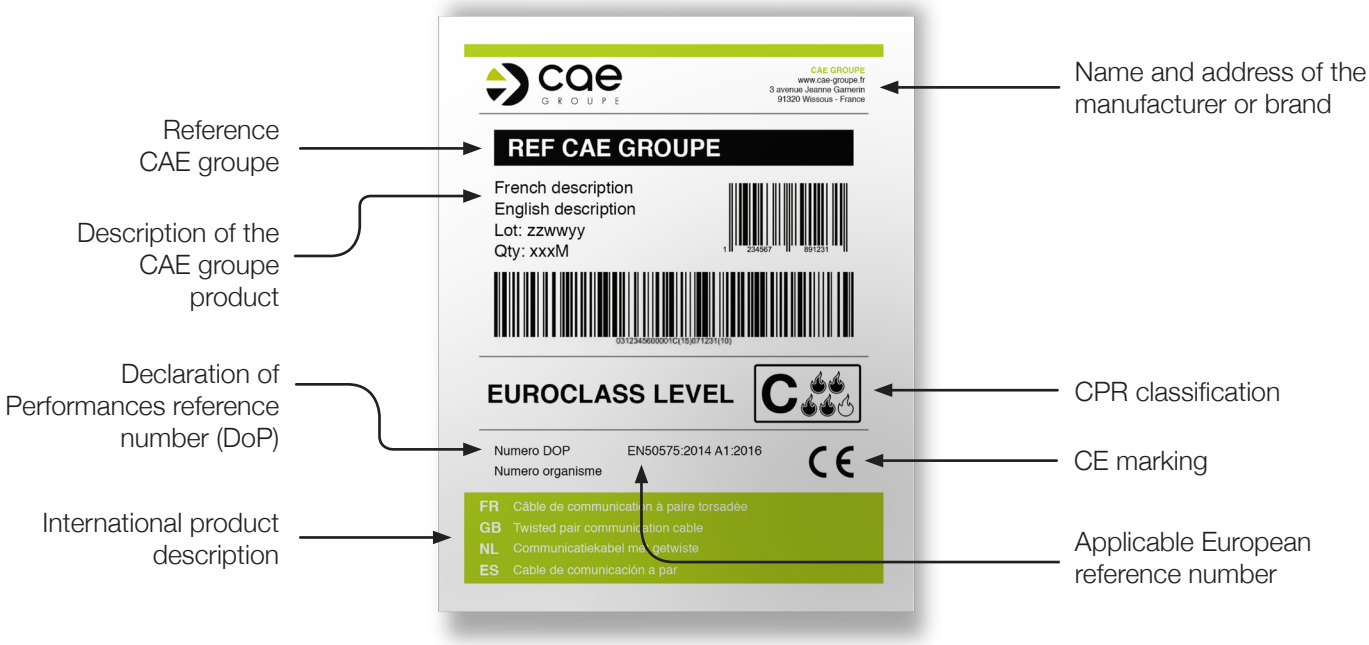
The declaration of performance is the legal document issued by the manufacturer.
By issuing the document, the manufacture engages its liability and certifies to the product's conformity with the declared performances.

Each cable put on the market must have a DoP with a unique number issued by the manufacturer.

- Product family reference
- Name and address of the manufacturer or representative
- Intended use
- Assessment system
- Notified body identification
- Reference to the harmonised standard
- Fire reaction class
- Signatory's identification

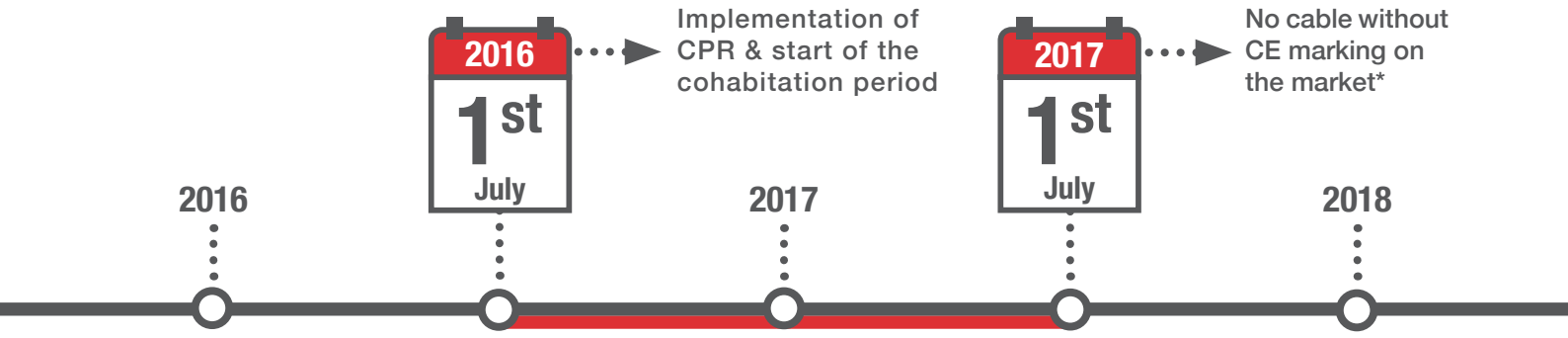
2. Labelling and CE marking

The CPR also defines labelling with CE marking to apply to the product packaging or to the product itself. This labelling defined by the EN50575 standard must feature a set of clearly legible information that users can identify.



Cohabitation with Euroclasses

The CPR for cables came into effect on 1st July 2016. However, manufacturers have 1 year (until 1st July 2017) to become compliant with these regulations.
(Starting from 1st July, the CE marking will be applicable on packaging or cables on condition that they have been tested under the new test standards and that they meet one of the defined Euroclasses). There is therefore a transition period to allow to rotate the stocks of the products in question.



Cohabitation:
transition period during which cables without a CE marking can be sold.

** Cables sold up to 1st July 2017 can be installed in a building for which planning permission was granted before 01/07/2017.*

As a manufacturer, CAE Groupe has, for several months, implemented all the measures necessary to make products compliant with these new regulations on 1st July 2017.