Construction Products Regulation (CPR) and BS 6701

What you need to know

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Construction Products Regulation (CPR)

- Scope
- Performance classifications
- Obligations & responsibilities
- Timing
- Implementation - CPR and BS 6701
- Conclusions

Scope

- Council Directive 89/106/EEC: CPD – Feb.1989
- **Regulation (EU) N° 305/2011: CPR – April 2011**
  - Products "placed on the market for incorporation in a **permanent** manner in **construction works**"
  - **Common technical language** to describe **required characteristics** of **construction products**
  - Applicable **since 01st July 2013** → **Not yet for cables !**

Harmonised European standard EN 50575

- **EN 50575:2014** published in Official Journal of European Union (OJEU) **10th July 2015**
  - Specifies requirements **for cables** used in construction works with regard to their **reaction to fire**

  → **All cables: power, control and communication cables**

  → **Copper and Fibre**

  → **In buildings and other civil engineering works**

  - Allows national legislative bodies to define **performance classes** based on a **harmonised European standard**

Construction Products Regulation (CPR)

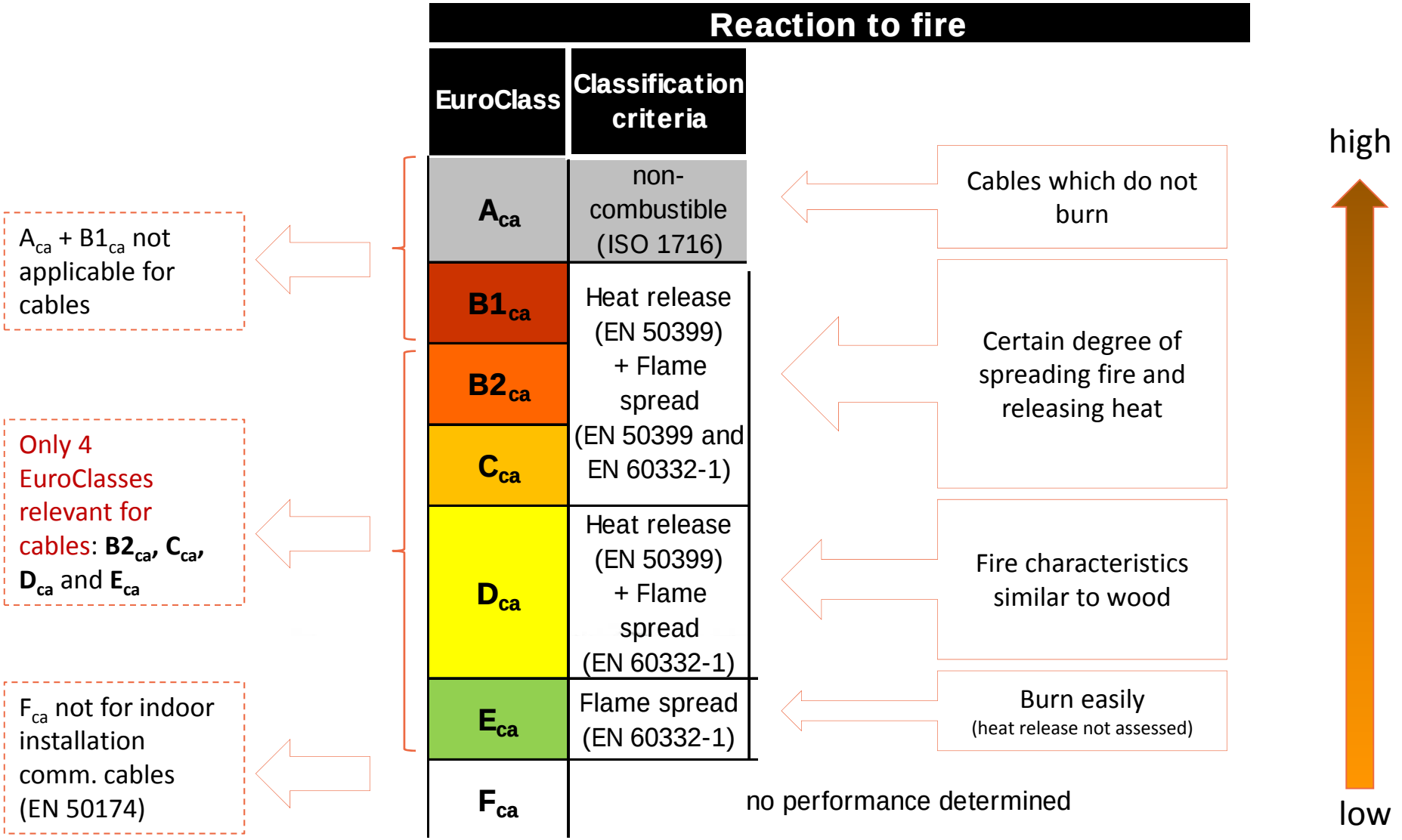
Performance classifications

Reaction to fire

- Classification criteria based on:
  - Flame spread + **heat release**
  - Smoke production + acidity + **flaming droplets**
- Existing standards :
  - IEC/EN 60332-1-2
  - IEC/EN 61034-2
  - IEC/EN 60754-2
- New harmonised standard : **EN 50399**
  - Additional test methods

Performance classifications

- 7 EuroClasses for flame spread & heat release



Flame spread

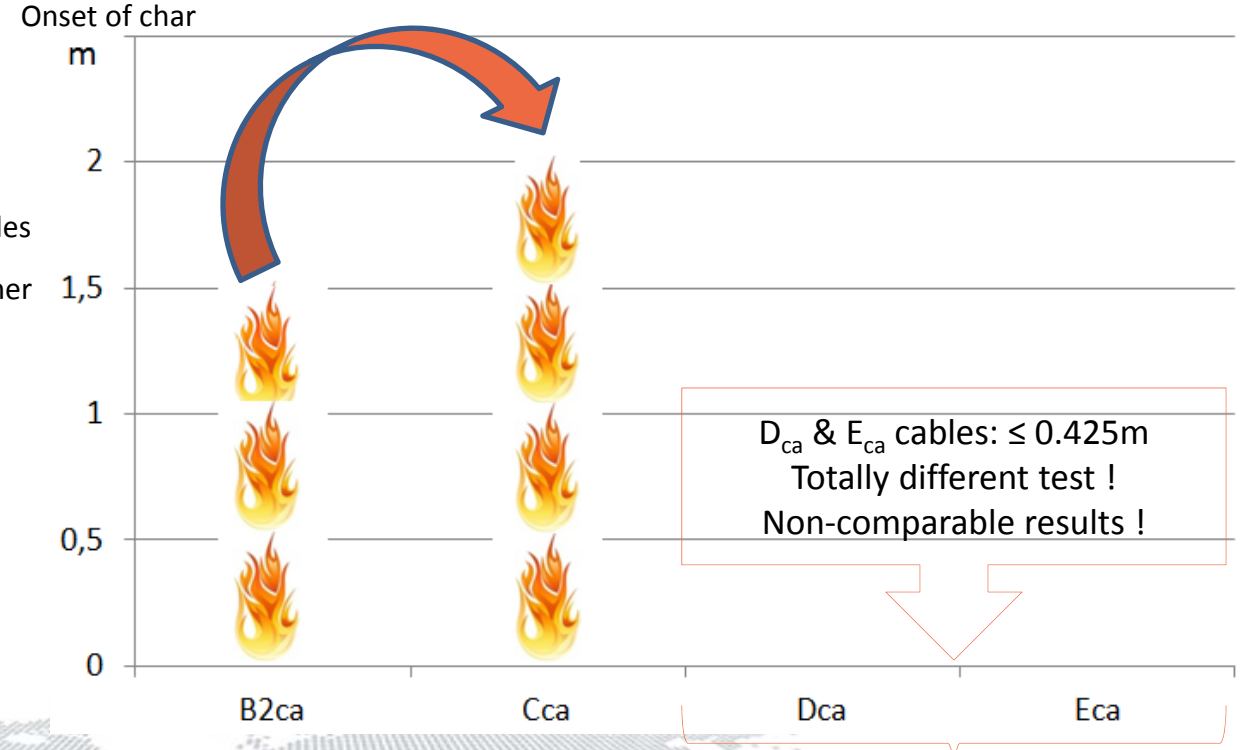
- $B2_{ca}$ and C_{ca} : IEC/EN 60332-1 + EN 50399
- D_{ca} and E_{ca} : only IEC/EN 60332-1-2

IEC/EN 60332-1-2

- IEC 60332-1-2
  - Single cable
  - 1 kW flame

- EN 50399
  - Bunched cables
  - 20.5 kW burner

EN 50399

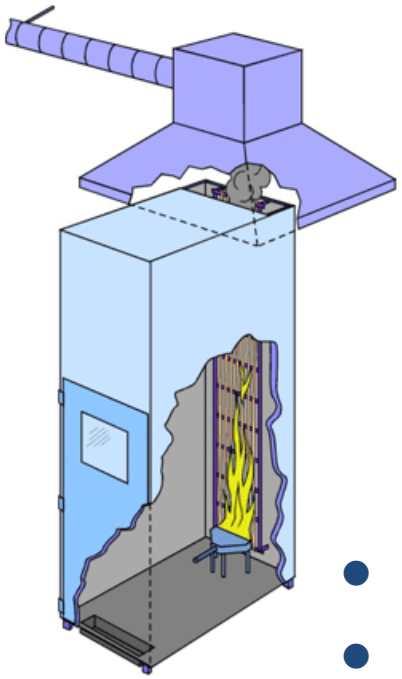


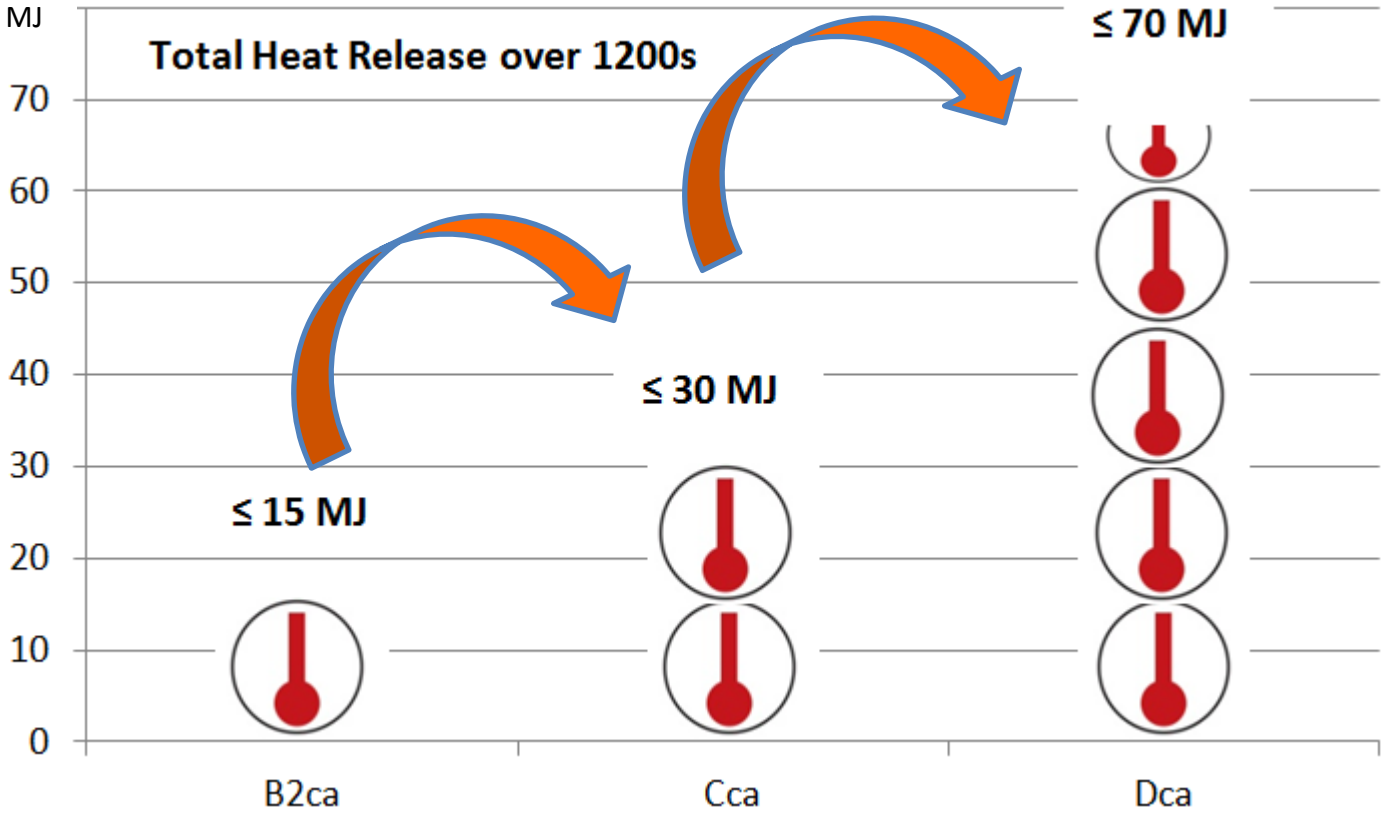
D_{ca} & E_{ca} cables: ≤ 0.425m
Totally different test !
Non-comparable results !

$B2_{ca}$ cables ≤ 1.5m
C_{ca} cables ≤ 2.0m

Heat release

- EN 50399
  - THR_{1200s}
  - HRR
  - FIGRA





- $B2_{ca}$ cables release half the heat of C_{ca} cables
- C_{ca} cables release less than half the heat of D_{ca} cables
  - Heat release is not specified for E_{ca} cables

Performance classifications

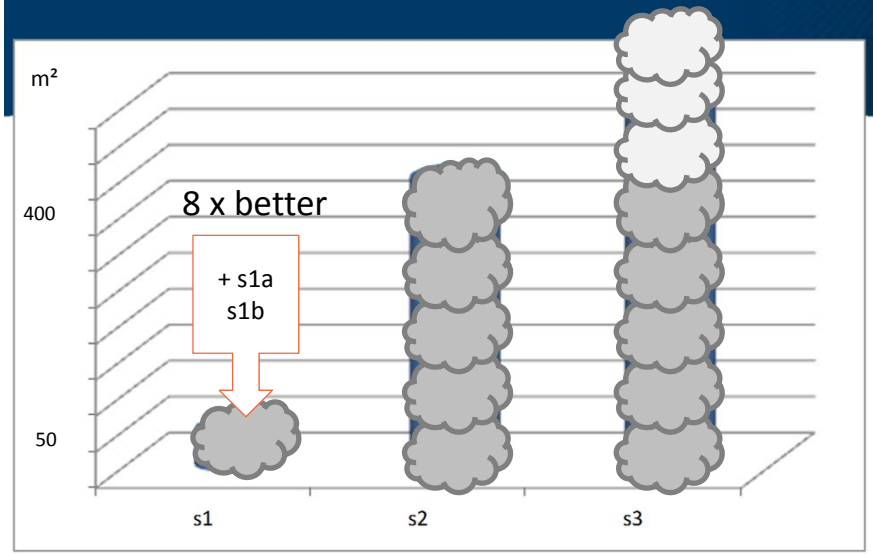
- 3 additional classifications for smoke production, acidity and flaming droplets

Reaction to fire				
EuroClass	Classification criteria	Additional classifications		
		Smoke production	Acidity	Flaming droplets
A_{ca}		/		
$B1_{ca}$	Heat release (EN 50399) + Flame spread (EN 50399 and EN 60332-1)	**s1 (s1a, s1b) s2 s3** (EN 50399 / EN 61034-2)	**a1 a2 a3** (EN 50399 / EN 60754-2)	**d0 d1 d2** (EN 50399)
$B2_{ca}$				
C_{ca}				
D_{ca}	Heat release (EN 50399) + Flame spread (EN 60332-1)			
E_{ca}	Flame spread (EN 60332-1)	/		
F_{ca}	no performance determined			

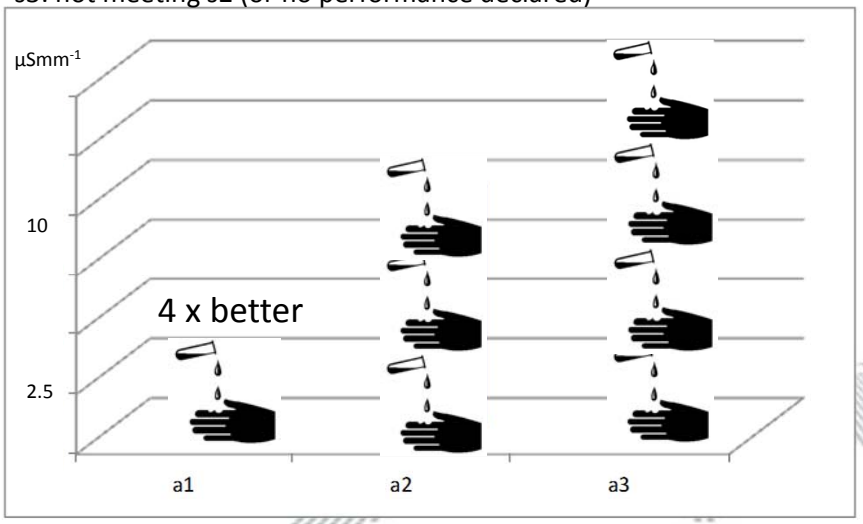
high

low

Smoke, flaming droplets and acidity

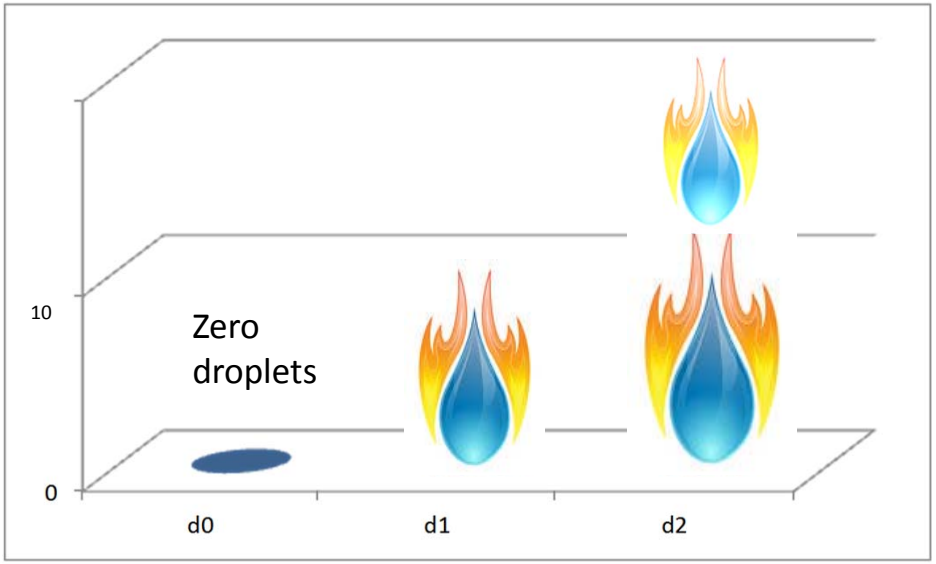


s1: ≤ 50m² (light transmittance s1a: ≥ 80%, s1b: ≥ 60%)
s2: ≤ 400m²
s3: not meeting s2 (or no performance declared)



a1: conductivity < 2.5 µSmm^{-1}, pH > 4.3
a2: conductivity < 10 µSmm^{-1}, pH > 4.3
a3: not meeting a2 (or no performance declared)

- Smoke production : EN 50399 / EN 61034-2
- Flaming droplets : EN 50399
- Acidity : EN 50399 / EN 60754-2



d0: no droplets after 1200 s
d1: no droplets persisting longer than 10 s within 1200 s
d2: not meeting d1 (or no performance declared)

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Technical assessment and certification

- 3 different systems

	AVCP system	Assessment and certification procedure
$B2_{ca}$ C_{ca}	1+	Notified Body issues **Certificate of Conformance** after: < initial type test < factory audit + factory production control (2x/year) < audit test on warehouse sampling (every 3 years)
D_{ca} E_{ca}	3	Notified Body issues **Certificate of Conformance** after: < initial type test
F_{ca}	4	**Self-declaration** by manufacturer

AVCP = Assessment and Verification of Constancy of Performance

Construction Products Regulation (CPR)

Obligations
&
Responsibilities

Responsibilities and obligations

- **E.U. member states** are obliged to:
  - Adopt CPR terminology in national regulations
    - ! Which performance level in which building is a purely national matter
  - Requirements according to building environment
    - Type of building
    - Level of occupation
    - Difficulty of evacuation
    - ...
  - **Different from country to country !**

Responsibilities and obligations

- **Manufacturers** *(*)* are obliged to:

  1) Issue a **Declaration of Performance** (DoP) by product

     - Product identification (Ref. / description / ...)
     - Its intended use
     - Assessment system (1+, 3 or 4)
     - Notified Body ID
     - Performance (Euroclass + s/d/a) + ref. to H/EN 50575

     → DoP to be made publicly available (paper doc. or electronic format) in the language(s) required by the Member State where the product is made available

(*) Manufacturer is the one who places the product on the market in the EU. This may be the actual manufacturer or the importer.

Example DoP (*)

DECLARATION OF PERFORMANCE
No. XXXX ***No. to be given by the manufacturer***

1. Unique identification code of the product-type: ..... ***To be given by the manufacturer***

2. Type, batch or serial number or any other element allowing identification of the construction product as required under Article 11(4): ***To be given by the manufacturer***

3. Intended use or uses of the construction product, in accordance with the applicable harmonized technical specification, as foreseen by the manufacturer:
Supply of electricity in buildings and other civil engineering works with the objective of limiting the generation and spread of fire and smoke

4. Name, registered trade name or registered trade mark and contact address of the manufacturer as required under Article 11(5):
AnyCo SA,
PO Box 21
B-1050 Brussels, Belgium
Tel. +32987654321
Fax: +32123456789
Email: anyco.sa@provider.be

5. Where applicable, name and contact address of the authorized representative whose mandate covers the tasks specified in Article 12(2):
Anyone Ltd
Flower Str. 24
West Hamfordshire
UK-589645 United Kingdom
Tel. +44987654321
Fax: +44123456789
e-mail: anyone.ltd@provider.uk

6. System or systems of assessment and verification of constancy of performance of the construction product as set out in CPR, Annex V: ***System 1+***

7. In case of the declaration of performance concerning a construction product covered by a harmonized standard:
Notified product certification body No. XXXX performed the determination of product type, the initial inspection of the manufacturing plant and of FPC, the continuous surveillance, assessment and evaluation of the FPC and the audit testing of samples taken before placing the product on the market and issued the certificate of constancy of performance

8. Declared performance

Essential characteristics	*Performance*	*Harmonized technical specification*
Reaction to fire	**$B2_{ca}$ -s1,d1,a1**	**EN50575:2014**
Dangerous substances		

9. The performance of the product identified in points 1 and 2 is in conformity with the declared performance in point 8.

This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.

Signed for and on behalf of the manufacturer by:

.....
(name and function)

....
(place and date of issue) (signature)

(*) source: EN 50575

Responsibilities and obligations

- **Manufacturers** are also obliged to:

  2) apply appropriate **product labelling**

  - same data as on DoP
  - ref.nr of DoP
  - CE marking
  - Year in which CE marking was first affixed

  →on product labels (drum & box labels)

  →marking on cable itself is voluntary

  →Language to be chosen by manufacturer

(*) Manufacturer is the one who places the product on the market in the EU. This may be the actual manufacturer or the importer.

Example product label (*)

CE XXXX	*CE marking, consisting of the "CE"-symbol* *Identification number of the product certification body*
AnyCo Ltd, PO Box 21, B-1050, Brussels, Belgium 14 (To be given by the manufacturer)	*Name and the registered address of the manufacturer, or identifying mark* *Last two digits of the year in which the marking was first affixed* *Reference number of the DoP*
EN 50575:2014 (To be given by the manufacturer) Supply of electricity in buildings and other civil engineering works with the objective of limiting the generation and spread of fire and smoke Reaction to Fire: $B2_{ca}$-s1,d1,a1 Dangerous substances: none	*No. of European Standard applied, as referenced in OJEU* *Unique identification code of the product-type* *Intended use of the product as laid down in the European Standard applied* *Class of performance*

(*) source: EN 50575

Responsibilities and obligations

- **Building owners / consultants / specifiers** … need to:
  - ensure that building specs / infrastructure plans are in line with national CPR regulations

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Responsibilities and obligations

- **Distributors** need to:
  - Ensure that cables they buy after 01/07/2017 carry labels with mandatory CPR information including CE mark and that a DoP is available for each

  ! For a distributor, it is entirely legal to **resell** “non-CPR cables” if they bought these before 01/07/2017, and this without end date
  (unless stipulated differently in national regulation).

- **Installers** :

  ! Equally, for an installer, it is entirely legal to **install** “non-CPR cables” if these have been placed on the market before 01/07/2017, and this without end date
  (unless stipulated differently in national regulation).

Construction Products Regulation (CPR)

Timing

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Timing

- **Applicable since 10th June 2016**
  EN50575:2014+A1:2016 published in O.J.E.U.

  → **Co-existence period until 30th June 2017**

  CE marking for CPR/EN 50575 allowed provided that:

  - Product labelling contains all mandatory CPR info
  - Declaration of Performance (DoP) is available

- **Comes into force on 01st July 2017**

  → **CE marking for CPR for cables mandatory from 01st July 2017**

Construction Products Regulation (CPR)

Implementation
CPR and BS 6701

Construction Products Regulation (CPR)

Current situation - UK

BS 6701:2016

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

- BS 6701 refers to BS/EN 50174 series
  - Cables failing to meet IEC 60332-1-2 must be terminated within 2m of external fire barrier or contained in a fire compartment
    - → Intention was to avoid “external” cables penetrating the external fire barrier and causing a hazard

Information technology cables that do not comply with the minimum recommended performance requirements of EN 60332-1-2 shall be either:

a) terminated in an entrance facility which is outside the external fire barrier of the building;

or

b) terminated inside the building, within 2 m (unless an alternative distance is specified by local regulations) of the point of internal penetration of the external fire barrier or any length exceeding 2 m is installed within trunking or conduit that is considered as a fire barrier in accordance with local fire regulations.

will become : “EuroClass E_{ca}”

BS 7671:2016

Requirements for Electrical Installations. IET Wiring Regulations

- BS 6701 refers to BS 7671 – the “Wiring Regulations”

escape routes

- Wiring systems shall be supported such that they shall not collapse prematurely in case of fire
- Cables must meet relevant part of **BS EN 60332-3** for flame propagation
- Cables must meet **BS EN 61034-2** regarding smoke density ~ min. 60% light transmittance

What are escape routes ?

- The route from where you are to a “place of safety” – not necessarily outside
- Everywhere is - or could become - an escape route as building use changes
- Building owners/specifiers/architects... are responsible for defining fire safety requirements for their buildings but cannot predict the long term usage of space within a building
- It is impossible to introduce simple requirements that adequately define what a cable installer must do
- Escape routes will probably no longer be defined in the wiring standards

Construction Products Regulation (CPR)

Future situation - UK

BS 7671 → BS 6701

- **BS 7671:2018**
  - Will refer to BS 6701 for telecommunications cables
  - Power cables remain in BS 7671 – complex situation
- **BS 6701:2017 - Draft for Public Comment**
  - Defines “installation cables”
    - Introduces simple requirements for installation cables
    - Clarifies confusion between on-site termination and pre-term in CPR
  - Introduces requirements for “other” cables
  - Maintains link with BS EN 50174 series

BS 6701:2017 – DPC : detail

- Installation cables are those that are **in a pathway**:
  - In containment e.g. basket, trunking, conduit, tray, ladder...
  - In non-continuous containment e.g. J-hooks or saddles (or stapled !)
  - Above ceilings or below floors etc.
  - Can be on-site terminated or pre-term
- Intent :
  - To cover all **non-user administered** cables –
    not work area cords, patch leads or CP – TO assemblies
  - To include fibre and copper pre-terms **installed in pathways**

BS 6701:2017 – DPC : detail

- Installation cables shall be:
  - Minimum **C_{ca}-s1b, d2, a2**
    - **C_{ca}** "closest equivalent" to existing requirement
    - **s1b** equates directly to current 60% light transmittance
    - **d** and **a** considered unimportant for life safety
- All other cables shall be:
  - Minimum BS EN 60332-1-2 (or E_{ca})

Conclusions – UK

- No requirements have significantly changed
- Requirements are now clearly stated
- No need for complex decision making
- Need for metallic support !

→ **UK** telecommunications cable =
EuroClass $\mathbf{C_{ca}}$ s1b d2 a2

CPR overview by country

- Not all EU countries have adapted their national regulation (yet)
- **Belgium / NL** : E_{ca} only acceptable if cables not installed in bundles
- **Spain :** C_{ca} in public buildings / D_{ca} in other
- **France / Germany**: recommendations from stakeholders according to building environment

→ **tendency towards EuroClass C_{ca}**

	B2ca	smoke	droplets	acidity	Cca	smoke	droplets	acidity	Dca	smoke	droplets	acidity	Eca
★ UK					Cca	s1b	d2	a2					
★ Belgium					Cca	s1		a1					~~Eca~~
France	B2ca	s1a	d1	a1	Cca	s1	d1	a1	Dca	s2	d2	a2	Eca
Germany	B2ca	s1	d1	a1	Cca	s1	d2	a1					Eca
✓ Netherlands	B2ca	s1	d1	a1	Cca	s1	d1	a1	Dca	s3	d2	a3	~~Eca~~
★ Spain					Cca	s1b	d1	a1	Dca	s2	d2	a2	

✓ Regulation / standard in place
★ Regulation / standard in progress

Conclusions

Conclusions

- The CPR does not impose higher fire performance for cables, but has certainly stimulated various European countries to **reinforce their safety requirements for cables**
  e.g. UK, Netherlands, Belgium, Spain...
- Cables currently installed **do not comply** with these higher safety requirements
- CPR brings **clarity in fire performance levels**, gets rid of ambiguity caused by local/national standards and marketing terminology and enables building owners to choose appropriate cables for a given environment
- Each member state has to **adopt CPR terminology** but can modify their national regulations re. installation at any point in time, even after 01/07/2017
- **After 01/07/2017 no manufacturer or importer will be allowed to supply non-CPR compliant cables in the EU**

Thank you for your attention.
Any questions ?

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