

The logo for FIBRAIN, featuring the word "FIBRAIN" in a bold, white, sans-serif font, followed by a stylized red and white graphic element resembling a flag or a signal, with a registered trademark symbol (®) to its upper right.

FIBRAIN®

The letters "CPR" in a large, bold, white, sans-serif font, overlaid on a background of fiber optic cables and fire. The cables are bundled together, with some individual fibers visible, and are set against a dark background with a bright, fiery orange and yellow flame on the right side.

CPR

Construction Product Regulation (CPR)  
new regulations concerning reaction to fire tests  
on electric and telecommunication cables



## 1. What CPR is?

On July 1, 2013 a new regulation of the European Parliament and the Council of Europe on principles of construction materials and tendering rules to the common EU market, came into force. 305/2011 Regulation, since we are talking about it, abbreviated to CPR (Construction Products Regulation) replaced Directive 89/106 EEC called CPD (Construction Product Directive). The new regulation defines rules for trading construction materials on the European Union markets. This regulation introduces technical language concerning the assessment of construction products qualities. Its ultimate aim is to ensure access to reliable information for professionals, public authorities and consumers, thus they can easily compare the products qualities from different manufacturers around the world.

**CPR describes seven basic requirements that concern construction works:**

1. Mechanical resistance and stability
- 2. Safety in case of fire**
3. Hygiene, health and environment
4. Operational safety accessibility of buildings
5. Protection against noise
6. Energy saving and thermal insulation
7. Sustainable use of natural resources

For the purposes of this study we will focus on the aspect of fire safety, because it affects directly projecting the requirements for telecommunications cabling, manufactured by FIBRAIN.

**According to the CPR in the field of fire safety, construction works must be designed and constructed so that in the event of fire:**

- a. the load-bearing capacity of the construction can be maintained for a specific period of time,
- b. the generation and spread of fire and smoke within the works are limited,
- c. the spread of the fire to neighboring construction works is limited,
- d. occupants can leave the building or be rescued by other means,
- e. the safety of rescue teams is taken into consideration.

<b>Purpose:</b>	Overview of the new issue concerning KE 305/2011 - CPR Regulation
<b>Applications:</b>	Buildings and civil engineering works
<b>Technology:</b>	Fire protection
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<b>Date of publication:</b>	April 2017

CPR relates directly to so-called harmonized standards which are the basic product standards. Certainly, the scope of these standards is very wide, as the CPR regulation applies to all materials permanently integrated into the structures (buildings) and civil engineering constructions (e.g. tunnels, bridges, etc.). In this regard, cables are classified as construction products, moreover, as the only electrical products. This does not mean, however, that only cables were covered by the CPR Directive, as fiber optic cables were included too.

**As regards electric cables, control and telecommunications (copper and optical fiber) basic standards (harmonized standard) indicated by the CPR for the reaction to fire are:**

- **EN 50575** Power, control and communication cables – Cables for general applications in construction works subject to reaction to fire requirements
- **EN 13501-6** Fire classification of construction products and building elements – Part 6: Classification using data from reaction to fire tests on electric cables.



## 2. New fire classification for electric, control and communication cables

At present, reaction to fire has three main aspects. Firstly, heat released during combustion of cables affecting flame propagation, secondly transparency of the ambient air resulting from the amounts of produced smoke, and thirdly the acidity of the emitted gases.

**In order to harmonize issues related to performance, its assessment and access to information concerning the cables placed on the European market regarding reaction to fire, CPR defines the basic concepts, that are:**

- Classification system of cable coatings performance, Euroclass related to the specific testing methods
- AVCP – Assessment and Verification of Consistency of Performance
- Mandatory Information attached to CE marking.

In the above mentioned standards and other reference standards, 7 fire performance classes (Euroclasses) were defined as well as 3 Assessment and Verification of Constancy of Performance (AVCP). See details in the table below:

Fire hazard	Euroclass	Test method	Classification criteria	Additional criteria	AVCP system	
Fire resistant	A <sub>CA</sub>	EN ISO 1716	PCS ≤ 2.0 MU/kg	No performance determined	1+	
High	B1 <sub>CA</sub>	EN 50399 EN 60332-1-2 EN 61034-2 EN 60754-2	f5 ≤ 1.75 m THR1200s ≤ 10 MU Peak HRR ≤ 20 kW FIGRA ≤ 120 Ws-1 Hi ≤ 425 mm	Smoke <b>s1a, s1b, s2, s3</b>  Acidity <b>a1, a2, a3</b> EN 50267-2-3		
High	B2 <sub>CA</sub>		f5 ≤ 1.5 m THR1200s ≤ 5 MU Peak HRR ≤ 30 kW FIGRA ≤ 150 Ws-1 Hi ≤ 425 mm			
Medium	C <sub>CA</sub>		f5 ≤ 2 m THR1200s ≤ 30 MU Peak HRR ≤ 60 kW FIGRA ≤ 300 Ws-1 Hi ≤ 425 mm			Flaming droplets <b>d0, d1, d2</b> EN 50399
Low	D <sub>CA</sub>		THR1200s ≤ 70 MU Peak HRR ≤ 400 kW FIGRA ≤ 1300 Ws-1 Hi ≤ 425 mm			No performance determined
Low	Low	EN 60332-1-2	Hi ≤ 425 mm	3		
None	F <sub>CA</sub>	No performance determined	No performance determined	No performance determined	4	

**Tabela.1** Classification according to CPR

Symbols	
PCS	Higher heating value
FS/H	Flame spread
THR	Total Heat Release
PHRR	Heat Release Peak
FIGRA	Fire Propagation Peak

The Assessment and Verification of Constancy of Performance (AVCP) that need to be used depends on the fire resistance classes. AVCP 1+ is required for A<sub>CA</sub>, B1<sub>CA</sub>, B2<sub>CA</sub> and C<sub>CA</sub>, AVCP 3 dla D<sub>CA</sub> and E<sub>CA</sub> while AVCP 4 is required for F<sub>CA</sub> class.

Look at details in **Table 3**. Additional criteria (**s,d,a**) are applicable for B1<sub>CA</sub>, B2<sub>CA</sub>, C<sub>CA</sub>, D<sub>CA</sub> classes. Detailed guidelines are presented in **Table 2**.

<b>a</b>	<b>Acidity</b>	<b>a<sub>1</sub></b>	Conductivity < 2.5 μS/mm and PH>4.3
		<b>a<sub>2</sub></b>	Conductivity < 210 μS/mm and PH>4.3
		<b>a<sub>3</sub></b>	No performance determined
<b>d</b>	<b>Flaming droplets</b>	<b>d<sub>0</sub></b>	No flaming droplets within 1200s
		<b>d<sub>1</sub></b>	No flaming droplets persisting longer than 10s
		<b>d<sub>2</sub></b>	No performance determined
<b>s</b>	<b>Smoke</b>	<b>s<sub>1a</sub></b>	TSP1200s ≤ 50 m <sup>2</sup> and PSPR ≤ 0.25 m <sup>2</sup> /s, clarity > 80%
		<b>s<sub>1b</sub></b>	TSP1200s ≤ 50 m <sup>2</sup> and PSPR ≤ 0.25 m <sup>2</sup> /s, 60% < clarity < 80%
		<b>s<sub>2</sub></b>	TSP1200s ≤ 400 m <sup>2</sup> and PSPR ≤ 1.5 m <sup>2</sup> /s
		<b>s<sub>3</sub></b>	No performance determined

**Table 2.** Additional criteria

Symbols	
<b>TSP</b>	Total smoke production
<b>PSPR</b>	Smoke production peak

System 1+	
<b>Manufacturer</b>	Factory production control (FPC) Further testing of samples taken at factory according to the prescribed test plan
<b>Notified product certification body</b>	Determination of the product-type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product Initial inspection of the manufacturing plant and of FPC Continuous surveillance, assessment and evaluation of FPC Audit testing of samples taken before placing the product on the market
System 3	
<b>Manufacturer</b>	Factory production control (FPC)
<b>Notified product certification body</b>	Determination of the product-type on the basis of type testing (based on sampling carried out by the manufacturer), type calculation, tabulated values or descriptive documentation of the product
System 4	
<b>Manufacturer</b>	Factory production control (FPC) Determination of the product-type on the basis of type testing, type calculation, tabulated values or descriptive documentation of the product

**Table 3.** AVCP systems assets and verify constancy of performances

### 3. Responsibilities of the manufacturer

At the time of launching a new product on the market, which relates to the harmonized technical specifications in connection with CPR, the manufacturer is obliged to:

- A. Issuing a Declaration Of Performance (DOP), in compliance with AVCP template. DOP should be available on the website of the manufacturer in electronic form on demand, however, the manufacturer is obligated to provide the paper version,
- B. Implementation of suitable AVCP system with the commitment of certification body/laboratory,
- C. Maintaining the technical documentation for a period of min. 10 years,
- D. Product marking with CE sign with information about the manufacturer, product and AVCP system.

### 4. When CPR norms became valid?

**The European Commission has decided to implement EN50175 from 10 June 2016.** The transitional period in which CPR is not obligatory is set for the year. Since 1 July 2017 CPR will be obligatory in relation to electrical cables,

control and telecommunications. From now on, the cables that do not meet the requirements described above cannot be sold on EU markets.

### 5. Summary

CPR will introduce very significant changes in the cable market. For the first time telecommunication cables both copper and fiber optic ones are becoming building materials, with all consequences. The nomenclature, widely known today, that describes cable coatings (e.g. PVC, LSZH, LSFRZH) installed inside buildings is significantly over-valued

In terms of a fire reaction defined by a plurality of options according to „Euroclasses“. It is worth noting that the CPR does not set requirements on issues where cables have to be installed. Each EU country has the right to determine their own requirements in this respect, which certainly will not facilitate the work of international producers (such as FIBRAIN) that offer its products to many markets

in Europe. At the moment, a few EU Members defined the requirements that will apply after July 1.

This issue is not too comfortable for cable manufacturers, because it is not clearly stated what kind of performance of outer coating should be guaranteed to meet future requirements.

**FIBRAIN as a manufacturer of structured cabling systems has been constantly working for many years so far to be ready to meet any new challenges of the market.**

**Thus, the company has undertaken all efforts to effectively implement the testing and certification processes. Since 1 July 2017 all the cables produced by Fibran will comply with applicable EU law.**