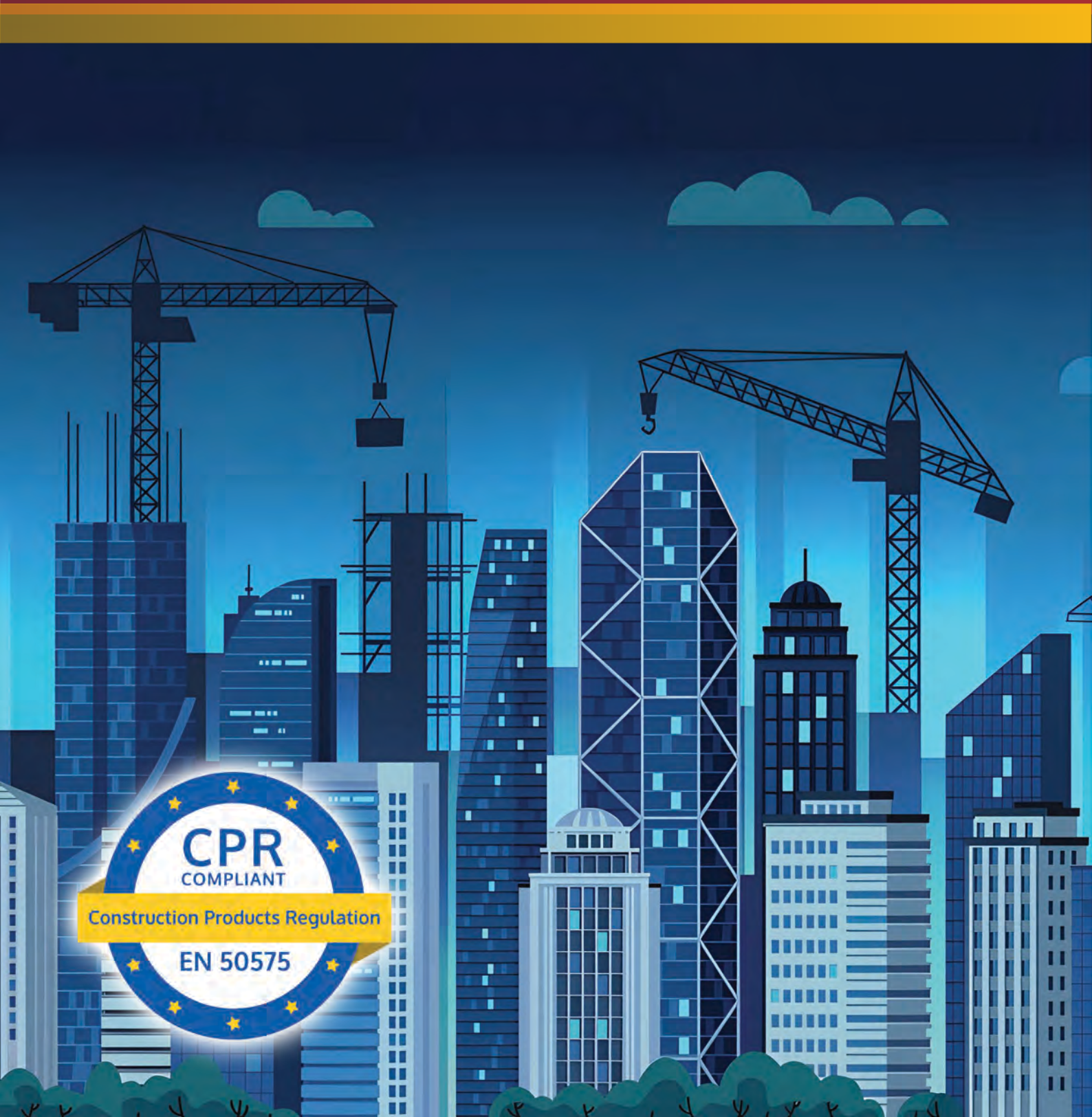




ZION CPR

Construction Products Regulation
& Fire Safety for Cables



CPR

Construction Products Regulation

www.zion-communication.com
HANGZHOU ZION COMMUNICATION CO., LTD.

- **What is the Construction Products Regulation (CPR)?**
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What is the Construction Products Regulation (CPR)?

■ The Construction Products Regulation (CPR) establishes conditions for placing or making construction products available on the market by setting harmonized standards for declaring the performance of these products in relation to their essential characteristics. It also regulates the use of CE marking and provides standardized marketing rules within the EU.

■ This regulation introduces a unified technical language to evaluate the performance of construction products, ensuring that professionals, public authorities, and consumers have access to dependable information regarding the performance of construction products. This facilitates the comparison of products from various manufacturers across different countries, achieved by standardizing the methods for testing and classifying construction products, including cables.

■ CPR stands for the European Construction Product Regulation. It applies to any product that, once incorporated into a building, becomes a permanent part and influences the building's overall performance.

■ The regulation also emphasizes the fire safety aspects of cables used in buildings. Consequently, cables have been included in the European classification system under the CPR. The EN 50575:2014 standard specifically covers "Power, control, and communication cables - Cables for general applications in construction works subject to reaction to fire requirements."

■ Power, control and communication cables which are permanently installed in structures is governed by EU Regulation 305/2011 (known as the "Construction Products Regulation"). The Construction Products Guideline 89/10/EEC has been superseded by the Construction Products Regulation (CPR) 305/2011.

The objectives of the CPR

The Construction Products Regulation (CPR)

aims to enhance building safety and efficiency with key goals:

- **Fire Safety:** Increase building safety in fire situations.
- **Accessibility and Safety:** Ensure safe, accessible buildings.
- **Health and Environment:** Promote health protection and environmental conservation.
- **Resource Efficiency:** Reduce material waste and energy use.
- **Structural Integrity:** Maintain mechanical resistance and stability.
- **Energy Efficiency:** Improve energy economy and heat retention.
- **Sustainable Resources:** Support sustainable use of natural resources.

Fire Safety Standards

The following fire safety standards identify testing apparatus and procedures for testing cable construction materials. These tests evaluate cabling under various fire conditions and measure heat release, smoke and gas production, acidity, and conductivity.

■ EN 50575 is the main fire safety standard.

It covers power, control, and communication cables for general applications in construction works subject to reaction to fire requirements. This European standard changes fire performance requirements for cabling being installed in buildings.

■ EN 50575 include:

EN50576

covers extended application of test results for electric cables, electric cable systems, cable sheaths, flaw detection, high-voltage tests, insulated cables, and test equipment.








EN13501

is for fire classification of construction products and building elements.
Part 6 of the classification dictates using test data from reaction-to-fire tests.

EN50399

standardises reaction-to-fire tests and common test methods for cables under fire conditions. Establishes heat release and smoke production measurement on cables during flame spread test, identifying test apparatus, procedures, and results.

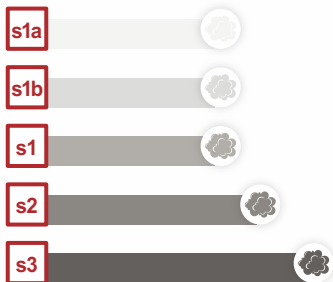
Euroclasses & AVCP Systems of CPR

Euroclass (ca)	Classification Criteria	Additional Criteria	Assessment and Verification of Constasy of Performance System (AVCP)
A*	 EN ISO 1716 Fross heat of combustion		SYSTEM 1+ - Initial type-testing, factory inspection, and continuous surveillance of factory production control (FPC) with audit Testing of samples by third-party notified Product certification body
B1*	 EN 50399 Heat release Flame spread	 Smoke production (s1a, s1b, s1, s2, s3) EN50399/ EN61034-2	
B2			SYSTEM 3 - Initial type-testing by third-party Notified testing laboratory - FPC by manufacturer
C	 EN 60332-1-2 Flame propagation	 Acidity (a1, a2, a3) EN 60754-2	
D		 Flaming droplets (d0, d1, d2) EN 50399	
E	 EN 60332-1-2 Flame propagation		SYSTEM 4 - Initial type-testing and FPC by manufacturer
F*			

*Classes A and B1 are not applicable to LSHF/LSZH data cables, and class F is not permitted, as it fails the fire regulations.

Additional Classifications for Euroclass B,C,D

■ SMOKE PRODUCTION EN 50399 / EN 61034-2



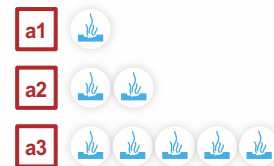
- s1a:** s1 and transmittance $\geq 80\%$
- s1b:** s1 and light transmittance $\geq 60\% < 80\%$
- s1:** $TSP_{1200} \leq 50m^2$ and $SPR \leq 0.25m^2/s$
- s2:** $TSP_{1200} \leq 400m^2$ and $SPR \leq 1.5m^2/s$
- s3:** not meeting s2 or no performance

■ FLAMING DROPLETS EN 50399



- d0:** no droplets after 1200 s
- d1:** no droplets persisting longer than 10 s within 1200 s
- d2:** not meeting d0 & d1 or no performance

■ ACIDITY EN 50399 / EN 60754-2



- a1:** conductivity $< 2.5\mu Smm^{-1}$, $pH > 4.3$
- a2:** conductivity $< 10\mu Smm^{-1}$, $pH > 4.3$
- a3:** not meeting a1 & a2 or no performance

Euroclass classification

Classes	Classification criteria				Additional classification (only for classes B1 _{ca} B2 _{ca} C _{ca} and D _{ca})			
	EN ISO 1716 Calorific value	EN 50399 Heat emission & Fire growth rate	EN 50399 Non-fire propagation	EN 60332-1-2 Non-flame propagation	EN 50399 Smoke production	EN 61034 Smoke transmittance	EN 50399 Burning droplets and particles	EN 60754-2 Acidity
A_{ca}								
B1_{ca}					s1	s1a	d0	a1
B2_{ca}					s2	s1b	d1	a2
C_{ca}					s3		d2	a3
D_{ca}								
E_{ca}								
F_{ca}								

Example

E_{ca}

■ **Class E_{ca}** It satisfies the non-flame propagation test, without additional classifications.

C_{ca}

s1b

d1

a1

■ **Classification a1** Reduced acidity and corrosiveness of emitted gases with conductivity < 2.5 μS/mm and pH > 4.3

■ **Classification d1** No burning droplets/particles that persist for more than 10 seconds.

■ **Classification s1b** Reduced emission of smoke and transmittance of over 60% and less than 80%.

■ **Class C_{ca}** It satisfies the flame propagation test, with the requirement of fire propagation and with emitted heat limits for this class.

A sample modelling for classification of cable types

The Declaration of Performance certifies compliance with the fire classes and thus forms the requirement for using the cables for the applications defined by the EU countries. Each country will decide how CPR Euroclasses will be used in construction

BUILDING CLASSES AND STRUCTURES		EUROCLASS
Escape routes in buildings	B _{ca} s1 d1 a1
Hospitals	.....
Stores for high risk flammable materials	.....
Day care facilities for children disabled and elderly people	.....
Buildings and premises	used by more than 100 people	C _{ca} s1 d2 a1
Buildings including underground floors	.....
Assembly buildings gathering places	more than 200 people	
Retail buildings & shops	more than 800 m ²	
Office administration	more than 400 m ²	
Tower and high rise buildings	higher than 22 m	
Restaurants & hotels	.....
Schools & universities or similar facilities	.....
Medium fire risk buildings	D _{ca} s1 d2 a1
Isolated buildings and other buildings	up to 7 m high	E _{ca}
Low fire risk buildings	.....
Individual residential houses with max 2 floors	.....

Notified body (NB)

Depending on the conformity procedure, an official notified body may be required to perform defined tasks for the manufacturer to receive certification. The notified bodies, approved by the Member States and confirmed by the EU, conduct the certification tests in accredited laboratories. They also verify conformity at the manufacturers and issue conformity statements if the tests are positive. Such notified bodies must be independent and authorized only in the EU and EEA countries. They are authorized to perform cable certification following approval by the government authorities and registration in the EU database.

Notified/Approved Laboratory (NL)

Notified laboratories have to be registered on NANDO (New Approach Notified and Designated Organizations) Information System to fully perform all services as a notified product certification and testing laboratory for EN 50575

You can find the complete list at:

<https://webgate.ec.europa.eu/single-market-compliance-space/#/home>

Applicable Euroclass




	1+	3	4
Assessment and Verification of Constancy of Performances -System	1+	3	4
Factory production control	M	M	M
Additional tests on samples taken from the factory, in agreement with the determined test plan	M	...	...
Determination and test of the standard product by tests and calculation	NB	NL	M
Initial factory inspection and factory production control	NB	...	...
Factory monitoring inspection and factory production control	NB	...	...
Tests on samples taken before the product is launched onto the market	NB	...	...

What is the Declaration of performance(DoP)?

The manufacturer is required to create a Declaration of Performance (DoP), a mandatory legal document that must be publicly available. In this document, the manufacturer must identify the product and its intended use, detailing the performance of the cable with respect to its essential characteristics. Presently, these characteristics include safety in case of fire (fire reaction as per EN 50575) and the emission of hazardous substances.

■ The DoP will contain the following information:

- Manufacturer's name.
- Product code.
- Traceability.
- Use of this product.
- AVCP System.
- Notified Body.
- Declared performance and respective standards.
- Date and manufacturer's stamp.



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Number: DOP-U/UTP CAT 5e-7112436-D

Declaration of Performance

1	Unique identification code of the product type:	U/UTP CAT 5e-7112436-D									
2	Description of the product type:	CAT6 ENHANCED 550 MHz 23 AWG SOLID BC, 4PR, UTP, ANSI/TIA 568-C.2, ISO/IEC 11801 CLASS E, UL CMR, EN50575:2014 Dca-s3,d2,a3 PVC JKT- GRAY									
3	Intended use of the construction product:	Control and communications in buildings and other civil engineering works with the objective of limiting the generation and spread of fire and smoke.									
4	Contact Address:	No. 68 Huaqiao Road, Xinxiao Village, Jincheng Street, Lin'an, Zhejiang, China, 311300 Tel: +86 15088607575 Email: info@zion-communication.com									
5	System or systems of assessment and verification of constancy of performance of the construction product:	AVCP System 3									
6	Notified Body Code:	0987									
7	Declaration of Performance:	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Essential Characteristics</th> <th style="width: 20%;">Performance</th> <th style="width: 40%;">Harmonized Technical Specifications</th> </tr> </thead> <tbody> <tr> <td>Reaction to Fire</td> <td style="color: red;">Dca-s1,d0,s1</td> <td>EN50575:2014 +A1:2016</td> </tr> <tr> <td>Dangerous Substances</td> <td>None</td> <td></td> </tr> </tbody> </table>	Essential Characteristics	Performance	Harmonized Technical Specifications	Reaction to Fire	Dca-s1,d0,s1	EN50575:2014 +A1:2016	Dangerous Substances	None	
Essential Characteristics	Performance	Harmonized Technical Specifications									
Reaction to Fire	Dca-s1,d0,s1	EN50575:2014 +A1:2016									
Dangerous Substances	None										
8	The performance of the product as identified is in conformity with the declared performance in point 7.										
9	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:



Stephen Xie / Products Manager
(Name and title)

Signature: _____ Date: _____

What is the CE mark?

The ZION product label shown on the right serves as an example of a Euroclass label, which includes several legally mandated elements. These elements consist of the CE Mark, the identity of the Notified Body that tested the product, the cross-reference number for the Declaration of Performance (DoP), the classification for reaction to fire, and an environmental declaration.

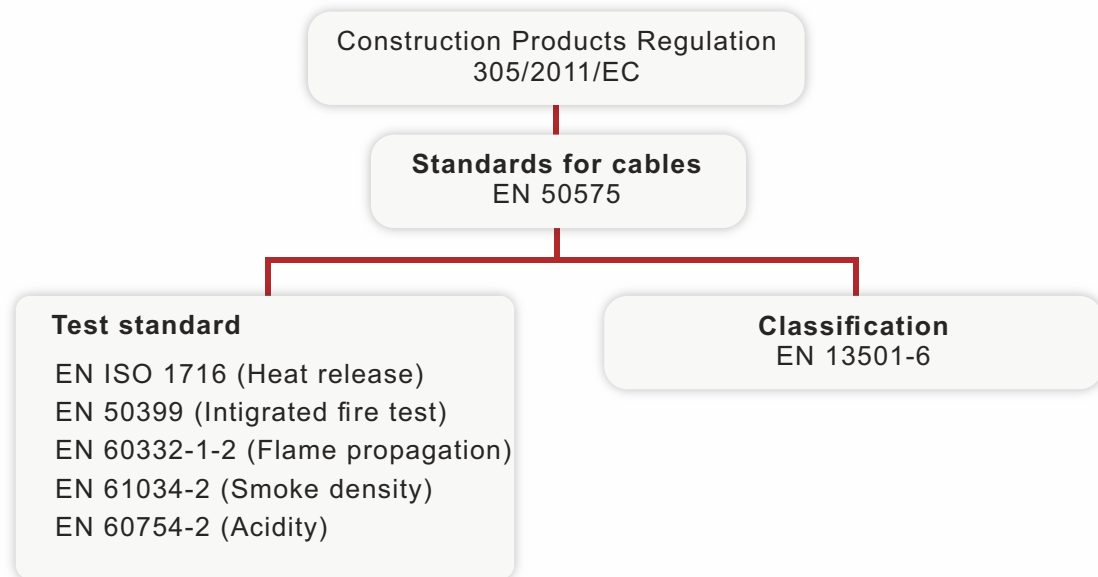
Additionally, ZION incorporates two extra features into its labels to provide further information and enhance user understanding.

 ZION U/UTP CAT6 CAT6 ENHANCED 550 MHz 23 AWG SOLID BC 4PR, UTP, LSZH 20240511	 12345678902	CE 1234 D_{ca} Reaction to fire
		HANGZHOU ZION HANGZHOU, ZHEJIANG, CHINA Registration Year: 2024 DoP No.: DOP-U/UTP CAT6-xxx-D www.zion-communication.com
		EN 50575:2014+A1:2016 Cable for general applications In construction works subject To reaction to fire requirements
12345678902		For Product & Safety information refer to:

 ZION PH120 2×1.00mm ² 300m Red Manufacturer	 12345678902
HANGZHOU ZION HANGZHOU, ZHEJIANG, CHINA DoP No.: DoP-PH120-xxx-C	CE
C_{ca} - s1b, d0, a1 EN 50575:2014+A1:2016	2024 1234 12345
Cable for general applications in construction works subject to reaction to fire requirements	

Standards of the cables for CPR

■ Requirements for cables as a construction product



EN 13501-6

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

EN ISO 1716

Reaction to fire tests for products - Determination of the gross heat of combustion (calorific value) (ISO 1716).

EN 50399

Common test methods for cables under fire conditions - Heat release and smoke production measurement on cables during flame spread test - Test apparatus, procedures, results.

EN 60332-1-2

Tests on electric and optical fiber cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame (IEC 603321-2).

EN 60754-2

Test on gases evolved during combustion of materials from cables - Part 2: Determination of acidity (by pH measurement) and conductivity (IEC 60754-2).

EN 61034-2

Measurement of smoke density of cables burning under defined conditions - Part 2: Test procedure and requirements (IEC 61034-2).

CABLE & WIRE

Good Quality

Good Service

Based on Reasonable prices.



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Ethernet Cable



Coaxial Cable



Fire, Security
& Alarm Cable



Voice, Audio
& Video Cable



Control Cable



Power Cable

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