

THE ROLE OF THE EUROPEAN CONSTRUCTION PRODUCTS DIRECTIVE IN SUPPORTING THE APPLICATION OF IMPROVED LOW FIRE HAZARD CABLES

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ABSTRACT

The impact of the implementation of the European Construction Products Directive (CPD) for electric cables is presented. Cables are especially affected by the requirements on safety during fire. Fire performance classification criteria have been determined by the EU authorities and for higher performance classes the 1+ Attestation of Conformity system is applicable for the CE-marking of products. Product-, test and other supporting standards will become available in 2012 and 2013. The implementation of CPD has resulted in greatly improved fire testing procedures. New and improved cables will become available in the field of construction works, allowing high quality electrical installations with greatly reduced risks in case of fire.

KEYWORDS

EU ; Construction Products Directive (CPD); Electric cables; Safety during Fire; Reaction to Fire; Resistance to fire; CE-marking of electric cables; Mandate M443;

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INTRODUCTION

Regularly we hear in the news about fires in buildings.

In a recent report [1], CTIF (International Association of Fire and Rescue Service) estimates that about a third of fires originate inside buildings. The consequences of fires can be substantial: casualties and high damages frequently occur. Fires have a high cost in loss of human life and a significant economic impact. According to CTIF,

- the median fire death rate per 100.000 inhabitants in Europe was near 1 in 2003 and 2004, equivalent to 30.000 deaths per year ;
- the total economic costs of fires amount to around 1% of gross domestic product in most advanced countries.

Furthermore, hazards associated with fires in buildings have greatly increased as a result of the evolution of the materials used in decoration, furniture and other current equipment, especially the use of plastics. Data suggest that the average time from ignition of a fire to flashover was about 15 minutes in 1950 and that now fatal conditions can occur after 3 minutes [2]

Buildings often contain large amounts of electric cables and the type and quantity of the applied cable materials may considerably influence the consequences of fires. The EU has recognized, whilst implementing the Construction Products Directive (CPD), the relevance of cables for fire safety.

Consequently, all cables intended to be incorporated in a permanent manner in construction works (including both buildings and civil engineering works) will have to be identified as regards their fire performance.

HISTORICAL BACKGROUND

For more than 30 years now, cables with enhanced fire performance have been developed for specific fields of application, presenting one or more of the following features:

- confined premises with public access, like public transportation systems, especially railways and subways ;
- importance of service continuity and high potential material damages, notably in the case of power utilities or telecom operators ;
- specific fire hazards, such as found in the oil industry (offshore and onshore)

These developments have been addressing the various aspects related to the behaviour and performance of cables and applied materials in case of fire, and led to creating an extended set of test standards at international (IEC), European (CENELEC), national or sector levels. In particular, at IEC level, the first standards were issued in 1982 as regards the fire propagation in bunches of cables installed vertically (IEC 332-3) and the gases evolved during combustion (IEC 754-1), and in 1990 regarding smoke emission (IEC 61034) These standard series have since been progressively refined and complemented and provided a sound technical basis for further work dedicated to establishing the specific means required to include electric cables in the implementation of the European Construction Products Directive.



Fig 1 : Reaction to fire mainly deals with heat release, fire spread and production of smoke and gases