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English Version

**Pyrotechnic articles - Fireworks, category 4 - Overview of  
harmonized standards that will be developed by CEN/TC  
212/WG 2**

Articles pyrotechniques - Artifices de divertissement de  
catégorie 4 - Vue d'ensemble des normes harmonisées qui  
seront élaborées par le CEN/TC 212/WG 2

Pyrotechnische Gegenstände - Feuerwerkskörper,  
Kategorie 4 - Überblick über harmonisierte Normen, die von  
CEN/TC 212/WG 2 erarbeitet werden

This Technical Report was approved by CEN on 17 August 2009. It has been drawn up by the Technical Committee CEN/TC 212.

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## Foreword

This document (CEN/TR 15951:2009) has been prepared by Technical Committee CEN/TC 212 “Pyrotechnic articles”, the secretariat of which is held by NEN.

This document (CEN/TR 15951:2009) has been prepared by Working Group Nr 2 “C4 Fireworks” of Technical Committee CEN/TC 212 “Pyrotechnic articles”, the convenor and secretary of which are respectively Italian and French. Experts from ten countries have participated to its elaboration: Belgium, Czech Republic, Denmark, France, Germany, Italy, Romania, Spain, The Netherlands and United Kingdom.

It has been approved by votes of all the members of CEN/TC 212 “Pyrotechnic articles” on August 2009.

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## Introduction

Directive 2007/23/EC of May 23<sup>rd</sup> 2007 on the placing on the market of pyrotechnic articles, has been published on June 14<sup>th</sup> 2007 in the Official Journal of the European Union. (Ref. Mandate M 416).

In its Annex 1, Directive 2007/23/EC gives the essential safety requirements (ESR) pyrotechnic articles shall comply with. In order to facilitate the process of demonstrating compliance with these ESR, harmonized standards for the design, manufacture and testing of pyrotechnic articles must be developed.

CEN has been mandated by the European Commission (EC) to develop these harmonized standards: Mandate M 416 describes the work that CEN shall perform.

CEN has entrusted coordination of this work to CEN/TC 212 'Pyrotechnic articles' with the following scope:

"Standardization of fireworks, theatrical pyrotechnic articles, pyrotechnic articles for vehicles and other pyrotechnic articles, particularly from the point of view of their safe use".

During its meeting in Delft on October 16<sup>th</sup> and 17<sup>th</sup> 2007, CEN/TC 212 has decided to share the corresponding work to be done between several Working Groups. Resolutions have been voted to establish five Working Groups, one of which is Working Group 2 (CEN/TC 212 / WG2) in charge of standardization of Category 4 Fireworks.

Because no European standards exist at present for Category 4 Fireworks, preliminary work needs to be performed before a list of standards to be developed by WG2 can be drawn up. It has been accepted by CEN/TC 212 and proposed to the European Community a one-year period will be allocated to WG2 to prepare a CEN Technical Report in which its future work program will be described and an overview of the harmonized standards it will develop will be given including the reasons why WG 2 propose to develop these standards.

Five work sessions have taken place, respectively in NEN – Delft – Netherlands on February 6<sup>th</sup> 2008, in BAM – Berlin – Germany on May 21<sup>st</sup> 2008, in NEN – Delft – Netherlands on September 10<sup>th</sup> 2008, in AFNOR – Paris – France on November 12<sup>th</sup> 2008 and in UNI – Milano – Italy on February 3<sup>rd</sup> 2009.

The present document is the final draft of the Technical Report for Category 4 Fireworks. It has been written in close coordination with the other working groups of CEN/TC 212 WG 1 "Fireworks, Categories 1, 2 and 3", WG 3 "Theatrical Pyrotechnic Articles", WG 4 "Pyrotechnic articles for vehicles" and WG 5 "Other pyrotechnic articles".

## 1 Scope

This Technical Report gives an overview of harmonized standards which will be proposed to be developed by CEN/TC 212 WG 2, Category 4 Fireworks. It also gives the interpretation WG 2 experts have made of some terms, definitions and requirements of Directive 2007/23/EC in order to assure future harmonized standards will encompass all varieties of fireworks, which are presently placed on the European market, in a consistent way and take the benefit of all the practical experience and usages of fireworks in the Member States.

## 2 Terminology

### 2.1 Definition of "C4 Fireworks"

Article 3 (a) of Directive 2007/23/EC gives the following definition of "C4 Fireworks":

*"Fireworks which present a high hazard, which are intended for use only by persons with specialist knowledge (commonly known as fireworks for professional use) and whose noise level is not harmful to human health"*

This definition raises the following comments:

- Exceptions can be found to this definition, because some "fireworks for professional use" – e.g. lances – cannot be considered as "presenting a high hazard" or generate a low noise level by themselves (e.g. less than C1 maximum noise level). But they have been designed for use in combination with other fireworks articles, mainly Category 4 Fireworks. Then they are only used by persons with specialist knowledge and never offered to the consumer market. Consequently WG 2 experts consider these articles belong to category 4.
- C1-C2-C3 fireworks articles will no longer be considered as belonging to categories 1, 2 or 3, if they do not comply with all the requirements of these categories. As soon as a potentially C1, C2 or C3 article definitively does not meet one of the requirements for C1-C2-C3 Fireworks, it will be categorized as a C4 article.
- Nothing in the definition of "pyrotechnic articles" in Directive 2007/23/EC means an article must be a complete product. Then the case of "incomplete" fireworks articles must also be considered. Such articles are commonly placed on the market. An example is a "roman candle without fuse". This article needs adaptation of a fuse for its ignition and different types of fuse may be used. This operation can be made by firers at the firing place, but limited to persons with specialized knowledge.

Another example is a "shell without lift charge". This article can be used in two distinct ways. It can be placed in the mortar above a separate "bag charge" which will act as a lift charge and will have been placed first in the mortar – or – this "bag charge" can be fit to it first before placing the assembly in the mortar.

Such products require "modification or preparation before use", which appears to be a better wording than "incomplete".

- Likewise, "components" of fireworks can be considered as "pyrotechnic articles" from the point of view of Directive 2007/23/EC, as far as they are placed on the market. Such pyrotechnic objects as rocket motors, drivers, delay fuses, shells to be included in more elaborated shells, etc. are used for the construction of fireworks. Some of them can have other applications than fireworks manufacturing and are "other pyrotechnic articles" as defined by Directive 2007/23/EC (See Clause 3 hereafter). The others – which are only used as components of fireworks – can be identified to "fireworks which are intended to be part of a more elaborate firework", then as "C4 Fireworks" to be used by persons with specialist knowledge in pyrotechnical factories.

NOTE The specific case of "stars" is discussed in 4.1.