



**SLOVENSKI STANDARD**  
**SIST-TP CEN/TR 15952:2009**  
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Pyrotechnic articles - Theatrical pyrotechnic articles, categories T1 and T2 - Overview of harmonized standards that will be developed by CEN/TC 212/WG 3

Pyrotechnische Gegenstände - Pyrotechnische Gegenstände für Bühne und Theater, Kategorien T1 und T2 - Überblick über harmonisierte Normen, die von CEN/TC 212/WG 3 erarbeitet werden

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Articles pyrotechniques - Articles pyrotechniques pour le théâtre - Vue d'ensemble du programme pour le développement de normes européenne

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TECHNICAL REPORT  
RAPPORT TECHNIQUE  
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**CEN/TR 15952**

October 2009

ICS 71.100.30

English Version

**Pyrotechnic articles - Theatrical pyrotechnic articles, categories  
T1 and T2 - Overview of harmonized standards that will be  
developed by CEN/TC 212/WG 3**

Articles pyrotechniques - Articles pyrotechniques pour le  
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Gegenstände für Bühne und Theater, Kategorien T1 und  
T2 - Überblick über harmonisierte Normen, die von CEN/TC  
212/WG 3 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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COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This document (CEN/TR 15952:2009) has been prepared by Technical Committee CEN/TC 212 “Pyrotechnic articles”, the secretariat of which is held by NEN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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**CEN/TR 15952:2009 (E)****Introduction**

This Technical Report gives an overview of the work carried out by CEN/TC 212 WG 3, Theatrical Pyrotechnic Articles T1 and T2 within the first year of appointment (2008) and to provide a basis for future work, in order to write the standards for Theatrical Pyrotechnic Articles.

Work on developing harmonized Standards for T1 and T2 theatrical pyrotechnic articles will begin in early 2009.

Several features described in this report of the Harmonized Standards are expected to be changed during the Standards development phase. However the overall philosophy of the WG3 working group is expected to be retained.

Directive 2007/23/EC on the placing on the market of pyrotechnic articles, was published on June 14 2007 in the Official Journal of the European Union. Annex 1 of the Directive 2007/23/EC gives the essential safety requirements (ESRs) which apply to pyrotechnic articles. 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.

During the October 16/17 2007 meeting in Delft, CEN/TC 212 agreed to share the corresponding work to be done between several Working Groups and hence Working Group 3 (WG3) has been established to develop Harmonized Standards for T1 and T2 pyrotechnic articles.

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## 1 Scope

This document gives a description of the context regarding the situation of theatrical pyrotechnic articles and their consideration within the Directive 2007/23/EC with the aim to define what harmonized standards shall be developed in order to comply with the essential safety requirements of the Annex 1 of the Directive.

## 2 Terminology for this Report

The following terms are used in this document. Note that these are not necessarily terms that will appear in the Standards itself.

**Table 1 — Terminology for this report**

Term	Definition	Comments
Directive	The Pyrotechnic Articles Directive (2007/23/EC)	Formally "Directive 2007/23/EC of the European parliament and of the Council of 23 May 2007 on the placing on the market of pyrotechnic articles"
ESRs	Essential Safety Requirements as detailed in the Directive	
NEC	Net Explosive Content	Also NEQ, NEM have the same meaning
WG1	Working Group 1 of CEN TC 212 - addressing cat 1/2/3 fireworks	
WG2	Working Group 2 of CEN TC 212 - addressing cat 4 fireworks	
WG3	Working Group 3 of CEN TC 212 - addressing T1/T2 pyrotechnic articles for theatrical use	This group
WG4	Working Group 4 of CEN TC 212 - addressing pyrotechnic articles for automotive use	
WG5	Working Group 5 of CEN TC 212 - addressing other pyrotechnic articles	
Civil Uses Directive	Directive 1993/15/EC concerning the placing on the market of explosives (except pyrotechnics)	
T1 pyrotechnics	Theatrical pyrotechnic low hazard items available to persons WITHOUT specialised knowledge	

Table 1 (continued)

Term	Definition	Comments
T1 users	Users of T1 products	Exclusive use of T1 products
T2 users	Users of T2 products	Users may also use T1 products
T1(od)	T1 outdoor only products	Although this is not a formal category within the Directive WG3 have adopted it as a way of discriminating between the 2 sub-categories of T1

### 3 Scope of Standards for T1 and T2 pyrotechnic articles

The Pyrotechnic Articles Directive (2007/23/EC) concerns issues of supply and not use. The purpose of Standards development is to provide a harmonized means of achieving the Essential Safety Requirements (ESRs) specified within the Directive.

WG3 agree that, where possible, the Harmonized Standards to be developed should be

- performance based;
- address safety of the product in normal functioning as the primary concern;
- as simple as possible;
- as flexible as possible – to allow for future developments in product design – particularly for T2 products.

WG3 further agree that a single Standard, covering T1 and T2 products should ideally be developed and further that it should address all known T1 and T2 types and future developments of T2 articles within this single Standard. However, WG3 have determined that a number of project groups will be needed to address specific features of the Standard as follows:

- terminology;
- categorisation;
- requirements;
- labelling;
- test methods

and that the sections developed by these project groups will ideally be combined into a single final standard.

Further details of the designated project groups is given in Clause 24.

WG3 consider that one single Standard will cover both T1 and T2 Theatrical Pyrotechnic articles. The rationale behind this decision is:

- It will lead to simplification of the technical requirements and test methods and prevent “copy/paste” or inconsistency errors if multiple Standards are developed.
- T1/T2 items are often similar in construction, performance, effect and safety parameters.



WG3 considers that “type testing” (Module B of the Directive) and “batch testing” (“Conformity to Type” - Module C/D/E of the Directive) are likely to be the most frequent means by which product compliance will be met. Hence in the initial development phase WG3 intends to consider these methods primarily. It is also considered that many of the features of the remaining compliance modules will share common features with those of Module C/D/E in relation to the requirements for batch testing.

A comparison of Modules B and C with the Essential Safety Requirements specified in the Directive is given at the end of this report.

#### 4 Overview of existing Standards and National provisions

A wide variety of national provisions and standards exist for Theatrical Pyrotechnics across Europe and control of supply ranges from outright prohibition on supply to persons without specialist knowledge to unrestricted supply. Only some Member States have standards by which theatrical products are approved for use. In other countries articles are only categorised or classified by the UN transport tests and criteria.

Only one Member State (UK ) appears to have a true consumer pyrotechnic market for theatrical pyrotechnics (T1) and in this country, apart from a lower age limit of 18 years of age, there is no other restriction on who can purchase or use theatrical pyrotechnic articles. Other Member States have some restrictions over the purchasing or use of theatrical pyrotechnic articles in addition to age restrictions.

It is apparent, however, that the perception of what constitutes a T1 pyrotechnic article differs widely and in Germany, for instance, even though T1 Articles are readily available they are subject to a licensing regime prior to use. If Member States wish to retain additional controls on use this will be a matter for them and the Commission; however, they will not be addressed in development of the Standards.

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#### 5 Interface with other CEN TC 212 Working Groups

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This technical report has been written in close consultation with the working groups WG1, WG2, WG4 and WG5 of CEN/TC 212 and where possible shares terms and approaches with them. However we envisage that coalescence of these will only occur once the Standards for Cat 1/2/3 Fireworks (WG1) are adopted and when work on other Pyrotechnic Article Standards is more highly developed. WG3 is fortunate to have many members who sit on other WGs and WG3 welcomes the free flow of information between the groups.

Where possible common terminology and methodology will be adopted; however, WG3 members agree that where this is not possible T1/T2 Standards should address their own specific requirements.

#### 6 General features of T1/T2 Pyrotechnic Articles for Theatrical use

WG3 members agree that, except where explicitly described within the Standards to be developed, all T1/T2 products should share the following common features:

- electric ignition;
- that there is no delay before first effect;
- the performance is within parameters described explicitly within the Standards to be developed.

In this manner T1/T2 products will be distinguished from functionally equivalent Cat 1/2/3 fireworks (which are lit by hand) or Cat 4 fireworks. Additionally it is considered that this reduces the degree of hazard of these materials by ensuring that

- the operator is at a remote firing position (except for hand held/ignited devices);

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- there is a significantly reduced likelihood of performers (for example) moving into the safety area of a device between the time of initiation and the time of first functioning;
- the performance parameters are more stringent than for the functionally equivalent firework item.

## 7 Initial Terminology for the T1/T2 Harmonized Standard

The following terms have been developed in association with WG2 and WG5 and which will be incorporated, possibly with revisions, into the Harmonized Standard for T1 and T2 pyrotechnic articles:

**Table 2 — Initial Terminology**

Term	Description	Comments/Example
Generic Type	identifies articles with a common, very general, design feature or with a common characteristic effect under a single designation	Mine
Sub Type	identifies articles within a generic type which share common features (e.g. calibre and height)	25mm Colour – 5 metre
Individual Article	identifies a specific individual pyrotechnic article within a generic type and sub type, usually by effect	Red
Name	the combination of the above terms. Note that the individual article will also be identified by a unique product code, usually originating from the manufacturer in addition to a coding from the Notified Body that relates to the certificate for the product	Colour Mine - 25mm x 5metre- Red.  (NB format of name to be determined)
Family/Group	identifies a number of individual items/articles which will be considered together for the purposes of testing and certification. A group or family will have common characteristic such as caliber, composition or NEQ. Note that the family or group will also be identified by a number originating from the notified body. All items considered together for the purposes of testing and certification will share this number.	5metre - 25mm Colour Mines  Directive 2007/23 identifies that such groups/families should be established for the purposes of testing and certification (“whereas 18” of the Directive)
First Functioning	The initial manifestation of the primary effect of the device.	For instance the appearance of projected sparks from a fountain
Initiation	The initial transfer of energy from an initiating device (match or igniter) to the device	

Table 2 (continued)

Term	Description	Comments/Example
Hazard	an intrinsic feature of an item or activity irrespective of the actual functioning of the item which could cause damage or injury	See later for further information
Risk	a combination of the inherent hazard and the likelihood of an item or activity causing damage or injury	See later for further information
Label	Instructions and information attached to the device or packaging	
Supplementary Product Information (SPI)	Additional information provided to the user. It may be presented in a "hard copy" form on or within the packaging of the article, by the manufacturer direct to a user, or electronically.	
Effect Hazard	For example, incandescent or high energy fragments arising from the normal functioning of the device, or a thermal effect that may cause injury or damage  <b>iTeh STANDARD PREVIEW</b> <b>(standards.iteh.ai)</b>  <a href="https://standards.iteh.ai/catalog/standards/sist/114f1446-e652-4e80-9f05-8f13ffc446d/sist-tp-cen-tr-15952-2009">SIST-TP CEN/TR 15952:2009</a>	Does not include deliberately projected, low energy particles (such as confetti) produced by the device. The effect hazard may be used as a determinant of, for example, performer safety distance in the Standards to be developed.

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Terminology will be further extended and refined during the development phase of the Harmonized Standards

## 8 Overview of Types of T1/T2 Pyrotechnic Articles to be considered

The following types of theatrical pyrotechnic articles have been identified along with their definitions and primary effect.

Table 3 — List of Generic Types and Definitions

No	Generic Type	Definition	Primary Effect/Comments
1	Combination	Assembly including several elements either containing the same type or several types each corresponding to one of the types of pyrotechnic devices listed in this table, with one or multiple points of ignition and in which the initial fuse transmits fire from one tube to the next to fire the devices sequentially or in some other pattern	As per the individual elements. Note that WG3 consider there is no practical difference between a "Battery" and a "Combination" as in EN14035 and will consider them together. Where the individual elements could not be separated and still function individually, such items are not considered to be a combination.
2	Bengal flames + flares	A device containing a pyrotechnic substance which produces a (coloured) light or flame where the duration of the effect is not instantaneous	Production of coloured flame (and smoke)
3	Theatrical Fire	A pyrotechnic substance that is ignited in suitable container (open flame-bowl) or in a preformed cartridge to produce a (coloured) light or flame effect	Production of coloured flame (and smoke)
4	Bengal sticks	A stick partially coated with slow-burning pyrotechnic composition and designed to be held in the hand	Emission of a bright light for a stated duration
5	Stage report	A single sealed unit containing a pyrotechnic composition whose principle function is to produce a bang	A pyrotechnic device that produces an instantaneous Report with or without coloured light and / or sparks
6	Flashes	A device containing pyrotechnic composition(s) where the effect is instantaneous and whose primary effect is a flash	A pyrotechnic device that produces an instantaneous flash of light which may be accompanied by smoke, sparks and/or an aural effect and emits microstars
7	Flash reports	A device containing a pyrotechnic composition whose primary effect is a flash accompanied by a report	
8	Airbursts	A device containing a pyrotechnic composition which is suspended into the air and functions to produce a visual and/or aural effect	An instantaneous aerial effect to produce a visual effect and / or aural effect
9	Fountains	A device containing pressed or consolidated pyrotechnic composition(s) producing sparks in a directional manner	Includes "Jets"