SLOVENSKI STANDARD
SIST EN 16256-5:2013

01-junij-2013

Pirotehnični izdelki - Pirotehnični izdelki za gledališče - 5. del: Preskusne metode

Pyrotechnic articles - Theatrical pyrotechnic articles - Part 5: Test methods

Pyrotechnische Gegenstände - Pyrotechnische Gegenstände für Bühne und Theater - Teil 5: Prüfverfahren

Articles pyrotechniques - Articles pyrotechniques destinés au théâtre - Partie 5: Méthodes d'essai

Ta slovenski standard je istoveten z: EN 16256-5:2012

ICS:

71.100.30	Eksplozivi. Pirotehnika	Explosives. Pyrotechnics
97.200.10	Gledališka, odrska in studijska oprema ter delovne postaje	Theatre, stage and studio equipment

SIST EN 16256-5:2013 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 16256-5

December 2012

ICS 71.100.30

English Version

Pyrotechnic articles - Theatrical pyrotechnic articles - Part 5: Test methods

Articles pyrotechniques - Articles pyrotechniques destinés au théâtre - Partie 5: Méthodes d'essai

Pyrotechnische Gegenstände - Pyrotechnische Gegenstände für Bühne und Theater - Teil 5: Prüfverfahren

This European Standard was approved by CEN on 3 November 2012.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 16256-5:2012: E

Contents

Page

Foreword

This document (EN 16256-5:2012) has been prepared by Technical Committee CEN/TC 212 “Pyrotechnic articles”, the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2013, and conflicting national standards shall be withdrawn at the latest by June 2013.

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.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

This European Standard is one of the series of standards as listed below:

— EN 16256-1, *Pyrotechnic articles — Theatrical pyrotechnic articles — Part 1: Terminology*

— EN 16256-2, *Pyrotechnic articles — Theatrical pyrotechnic articles — Part 2: Categories of theatrical pyrotechnic articles*

— EN 16256-3, *Pyrotechnic articles — Theatrical pyrotechnic articles — Part 3: Requirements for construction and performance*

— EN 16256-4, *Pyrotechnic articles — Theatrical pyrotechnic articles — Part 4: Minimum labelling requirements and instructions for use*

— EN 16256-5, *Pyrotechnic articles — Theatrical pyrotechnic articles — Part 5: Test methods*

CEN/TC 212 has also developed European Standards for:

— Pyrotechnic articles — Fireworks Categories 1, 2 and 3

— Pyrotechnic articles — Fireworks, Category 4

— Pyrotechnic articles — Pyrotechnic articles for vehicles

— Pyrotechnic articles — Other pyrotechnic articles

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies test methods. It is applicable to theatrical pyrotechnic articles of the generic types defined in EN 16256-1:2012, Clause 3.

NOTE In this document "Theatrical Pyrotechnic Articles" are referred to as "articles".

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 16256-1:2012, *Pyrotechnic articles — Theatrical pyrotechnic articles — Part 1: Terminology*

EN 16256-3:2012, *Pyrotechnic articles — Theatrical pyrotechnic articles — Part 3: Requirements for construction and performance*

EN 61672-1, *Electroacoustics — Sound level meters — Part 1: Specifications (IEC 61672-1)*

EN ISO 13385-1, *Geometrical product specifications (GPS) — Dimensional measuring equipment — Part 1: Callipers; Design and metrological characteristics (ISO 13385-1)*

ISO 6344-3, *Coated abrasives — Grain size analysis — Part 3: Determination of grain size distribution of microgrits P240 to P2500*

ISO 21948, *Coated abrasives — Plain sheets*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16256-1:2012 apply.

4 Test environment

4.1 General

The test area shall be unobstructed and suitable for the accurate measurement of the required parameters. The test sample should be placed in the centre of the test area, as shown in the labelled instruction the manufacturers supplied or recommended equipment shall be used.

4.2 Indoor

The test area shall be indoors.

The function test for articles for indoor use may be carried out outdoors: see 6.15.2.

The test area shall be in an enclosed space, which is capable of limiting the movement of air. A means of extracting fumes shall be provided.

4.3 Outdoor

The test area shall be an outdoor site. If applicable, provisions shall be made at the centre of the test area for partially burying into the ground.

If applicable, insert support pole in the centre of the test area.

The measurement of the windspeed (5.6) shall be started before starting the function test and continue

through the function test.

A means of measuring the wind speed at a height of 1,5 m above the ground shall be provided. No performance testing shall be carried out if the wind speed exceeds 5,0 m/s.

The test area shall be a clean, flat, horizontal, non-flammable and sound reflecting surface (for example concrete). For exceptions regarding the sound pressure level see 6.4.

5 Apparatus

5.1 General

The described apparatuses are only examples: any equivalent apparatus with the same accuracy or better may be used.

5.2 Timing device

5.2.1 Timing device, capable of being read to the nearest 0,1 s.

5.2.2 Timing device, capable of being read to the nearest 1 min.

5.3 Calliper

Calliper, flat faced vernier calliper reading to 0,1 mm, conforming to EN ISO 13385-1.

5.4 Ruler

Ruler, reading to 1,0 mm.

5.5 Measuring tape

Measuring tape, reading to 10 mm.

5.6 Wind speed meter

The wind speed meter shall be capable of measuring with an accuracy of at least 0,5 m/s.

5.7 Masses including clamping device

5.7.1 100 g ±1,0 g total mass

5.7.2 500 g ±1,0 g total mass

5.8 Balance

5.8.1 Balance, reading to 0,1 g

5.8.2 Balance, reading to 0,01 g

5.9 Abrasive sheet

Abrasive sheet at least 93 mm x 230 mm, conforming to ISO 21948, grit P240 measured in accordance with ISO 6344-3.

5.10 Temperature chamber

5.10.1 Up to (75 ± 2,5) °C

5.10.2 Up to (50 ± 2,5) °C

5.11 Clamping device

Means of clamping to hold masses.

5.12 Devices for measuring of Effect-, Rising/Bursting-, Drop Height

Universal surveying instruments (USI) for measuring horizontal and vertical angles (e. g. Theodolites, electronic spirit levels or video systems).

5.13 Sound level meter

Sound level meter in accordance to class 1 of EN 61672-1 with free-field microphone.

5.14 Shock apparatus

The apparatus shall provide a deceleration of 490^{+100}_{-50} m/ s² (when measured at the centre of an unloaded platform) and the shock impulse duration (time elapsed from the starting of the machine's deceleration to the time in which the deceleration reaches its maximum value during each first shock pulse) shall be 2 ms ± 1 ms working at a frequency of 1 Hz ± 0,1 Hz.

An example of an apparatus is shown in Annex A.

5.15 Goniometer

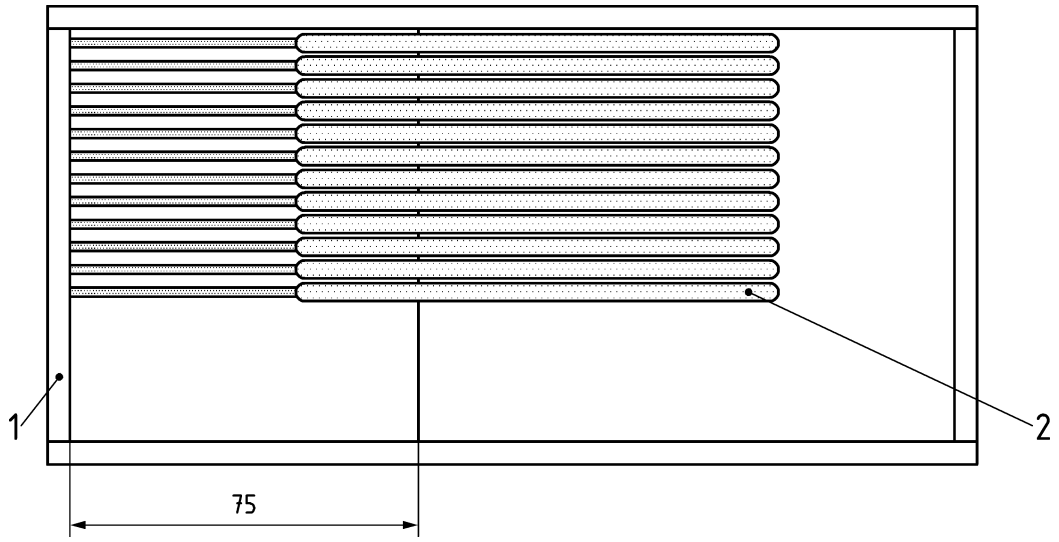
Goniometer, reading to 1°

5.16 Frame

The frame should retain the test article consistently.

To gauge the length of the handles, a clearly marked line should be marked at distances of 75 mm from the handle end of the frame. An example for determining the length of handles during the Batch Test is given in Figure 1.

Dimensions in millimeters



Key

1 frame
2 article

Figure 1 — Example for determining length of handles (Batch test)

5.17 Ignition source

Ignition source, capable of producing a small flame or of smouldering.

5.18 Transparent type size sheet

Transparent sheet with the characters shown in Figure 2 printed on it in 2,1 mm text. The height of text determined by height of capital X in each case.

2,1 mm: ABC abc XYZ xyz 123

Figure 2 — Type sizes of print

5.19 Striking surface

The primary pack is supplied with a striking surface for safety matches, resistant enough for the ignition of the content of one primary pack which is submitted to test.

5.20 Burning time measurement – mould device

The test apparatus should be in accordance with Figure 33.2.1.4.1 of the "Recommendations on the Transport of Dangerous Goods – Manual of Tests and Criteria" (see [1]). Fill the apparatus in accordance with the description given in sub-clause 33.2.1.4.3.2.1 of the "Recommendations on the Transport of Dangerous Goods – Manual of Tests and Criteria" (see [1]), measure the burning time and calculate the burning rate by dividing the length in cm by the time in s.

6 Test methods

NOTE These methods are only examples. Any equivalent method with the same sensitivity and the same accuracy or better can be used.

6.1 Construction and stability

6.1.1 Length of handle

6.1.1.1 Apparatus

— Calliper (5.3);

— Ruler (5.4);

— Frame (5.16).

6.1.1.2 Procedure

6.1.1.2.1 Theatrical pyrotechnic with visible handle

For type test measure and record the length of the uncoated end using the calliper (5.3) if the length of the handle is smaller than or equal to 75 mm or using the ruler (5.4) if the length exceeds 75 mm.

For batch test measure the length of the uncoated end by using the calliper (5.3), the ruler (5.4) or the frame (5.16) to determine the length of the uncoated end and record if the length of uncoated end is within the requirements.

If using the frame (5.16) place the articles with the handle in the frame and record the number of articles that have uncoated ends less than the required length.

6.1.1.2.2 Hand-held fountain without a separate handle

Carry out using the articles that are used for determination of the net explosive content. Cut open the marked end of the articles case. Using calliper (5.3), measure and record the length of the articles case which is not filled with pyrotechnic composition to the nearest 1,0 mm.

6.1.2 Attachment of separate handle

6.1.2.1 Apparatus

— Timing device (see 5.2.1);

— Weight (5.7.2).

6.1.2.2 Procedure

Secure the article in such a position that the handle is pointing vertically downwards. Securely attach the 500 g mass (5.7.2) to the handle. Using the timing device (5.2.1), determine and record the time until the handle becomes detached. If this time is longer than 10 s, stop the test and record that the time was greater than 10 s.

6.1.3 Length of item

6.1.3.1 Apparatus

— Ruler (see 5.4).

6.1.3.2 Procedure

Using the ruler, measure and record the total length of the test article to the nearest 1,0 mm.

6.1.4 Determination of calibre