



**SLOVENSKI STANDARD**  
**SIST EN 17616:2022**

**01-marec-2022**

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**Zunanje sveče - Specifikacija za požarno varnost**

Outdoor candles - Specification for fire safety

Kerzen für den Außenbereich - Spezifikation für die Feuersicherheit

Bougies d'extérieur - Spécifications relatives à la sécurité incendie

**Ta slovenski standard je istoveten z: EN 17616:2021**

**ITeH STANDARD**  
**PREVIEW**  
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**ICS:**

13.220.01	Varstvo pred požarom na splošno	Protection against fire in general
97.180	Razna oprema za dom in trgovino	Miscellaneous domestic and commercial equipment

**SIST EN 17616:2022**

**en,fr,de**

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EUROPEAN STANDARD

EN 17616

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 71.100.99; 97.180

English Version

## Outdoor candles - Specification for fire safety

Bougies d'extérieur - Spécifications relatives à la  
sécurité incendie

Kerzen für den Außenbereich - Spezifikation für die  
Feuersicherheit

This European Standard was approved by CEN on 23 August 2021.

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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.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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## European foreword

This document (EN 17616:2021) has been prepared by Technical Committee CEN/TC 369 “Candle fire safety”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by June 2022, and conflicting national standards shall be withdrawn at the latest by June 2022.

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

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EN 17616:2020 (E)

## Introduction

Candles have accompanied mankind for more than 2 000 years serving above all as a light source. Closely connected to the development history of the candle are the efforts made to improve its quality and its safety in use. Fires caused by unsafe candles and/or inappropriate use during the burning of candles have led to consumer concern for these issues.

This document helps to ensure a reasonable degree of safety during use, thereby improving personal safety and reducing the risk of fires, deaths and injuries.

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## 1 Scope

This document specifies requirements and test methods for the fire safety of candles intended to be burned outdoors.

Sticks wrapped with fuel-soaked materials, such as paper, cardboard or fabric, oil lamps on a stick and products intended to be used professionally to protect vineyards or fruit orchards from frost damages are not covered by this document.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 17617:2021, *Outdoor candles — Product safety labels*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1

#### **burning period**

time the candle burns from being lit initially until it is extinguished

[SOURCE: EN 15493:2019, 3.3] [SIST EN 17616:2022  
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### 3.2

#### **burn test cycle**

total time of a burning period and pause

[SOURCE: EN 15493:2019, 3.4]

### 3.3

#### **candle**

one or more combustible wicks supported by a material that constitutes a fuel, which is solid or semisolid at room temperature (20 °C to 27 °C) with the main function of sustaining a light-producing flame, including any coatings on and articles or substances in the fuel

[SOURCE: EN 15426:2018, 3.2]

**EN 17616:2020 (E)****3.4****container candle**

candle that is produced and used in the same container

Note 1 to entry: The material of the container can be e.g. ceramic, concrete, glass, metal, plastic or any bi-component material for example.

[SOURCE: EN 15426:2018, 3.3, modified – Note 1 to entry “This definition includes tea lights” is replaced]

**3.5****flare-up**

condition where the vapours of the base material ignite over the entire fuel pool

**3.6****floating candle**

candle intended and designed for use in a suitable bowl or container filled with water

[SOURCE: EN 15493:2019, 3.8]

**3.7****freestanding candle**

candle that is designed to be used without a supporting holder

[SOURCE: EN 15426:2018, 3.4]

**3.8****garden torch**

stick with a candle fixed on top which is planted in the ground or set up in a stable manner with a support

Note 1 to entry: Sticks wrapped with fuel-soaked materials such as paper, cardboard or fabric as well as oil lamps on a stick are not considered as garden torches.

**3.9****grave light**

container candle intended to be used unattended only at cemeteries on or close to graves

Note 1 to entry: Usually, a wind protection like a lid is present to prevent extinguishing or without lid when intended to be placed in a lantern.

**3.10****outdoor candle**

candle intended and designed to be used outside buildings in the open air

**3.11****secondary ignition**

self-sustained flame other than that on the intended wick(s), including flare-ups or the ignition of a container

[SOURCE: EN 15493:2019, 3.15, modified]

**3.12****self-sustained flame**

flame that continues to burn until the fuel source is removed or depleted or is actively extinguished

[SOURCE: EN 15493:2019, 3.16]



## 4 Safety requirements

### 4.1 Container candles

**4.1.1** The candle shall not tip over when tested on a slope of  $(10 \pm 0,2)^\circ$  according to 9.2.

**4.1.2** The wind resistance shall have a value  $> 1$  when calculated according to 9.6.

NOTE A wind velocity of 3 m/s is used for the calculation.

Container candles that do not comply may still be marketed if they show appropriate safety information (see EN 17617:2021, Figure 10).

If the requirement is not met, it is recommended that appropriate sturdy stands in which the candles can be placed are offered for sale in conjunction with the candles.

**4.1.3** The temperature at the surface below the container shall not exceed  $350^\circ\text{C}$  when tested according to 9.4.

The temperature limit is supposed to avoid fire if containers are burned on a wood surface without a heat resistant base, not to avoid damage to the surface. If the objective is to avoid damage to the surface, e.g. scorch marks, the manufacturer should aim for much lower temperatures.

**4.1.4** No secondary ignition shall occur for more than 10 s, when the candle is burning according to 9.3. At the end of burning, when there is only a small amount of molten base material left, there may be a flare-up for maximum 5 min, provided that this does not pose any risk to the surroundings.

**4.1.5** The container shall not ignite or break when tested according to 9.3.

**4.1.6** The container shall not burn for longer than 15 s on average and 30 s in any individual test when tested according to 9.5. The container shall not be completely burned away during testing.

NOTE The clamped part of the container is not taken into account to evaluate complete burning away. Containers constructed exclusively of non-combustible materials (e.g. ceramic, metal, glass, terracotta) are assumed to fulfil the requirement without testing.

Containers of grave lights are exempted from this requirement provided that they show clear indication that they are only intended to be used at cemeteries (see EN 17617:2021, Figure 8).

**4.1.7** After extinguishing, the candle shall not spontaneously re-light.

### 4.2 Freestanding candles

**4.2.1** Freestanding candles shall not tip over when tested on a slope of  $(10 \pm 0,2)^\circ$  according to 9.2.

**4.2.2** No secondary ignition shall occur for more than 10 s when the candle is burning according to 9.3.

**4.2.3** After extinguishing, the candle shall not spontaneously re-light.

### 4.3 Garden torches

**4.3.1** Garden torches shall be designed to be set up and stay in a stable manner.

**4.3.2** No secondary ignition shall occur for more than 10 s when the garden torch is burning according to 9.3.

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**4.3.3** No burning or smoldering material shall fall from garden torches. The garden torch shall neither burn paper placed underneath nor cause any scorch marks on it during the whole burning test according to 9.3.

NOTE Dripping base material that does not burn is not considered.

**4.3.4** The candle placed on a stick shall also meet the requirements relevant for the respective candle type, except stability (see 4.1 and 4.2).

**4.4 Floating candles**

**4.4.1** No secondary ignition shall occur for more than 10 s when the candle is burning according to 9.3.

**4.4.2** After extinguishing, the candle shall not spontaneously re-light.

**5 Test equipment and apparatus**

**5.1 Incline plane** (fixed or adjustable) with an angle of  $(10 \pm 0,2)^\circ$  from a horizontal level.

**5.2 Measuring device**, non-flammable with millimetre grading.

**5.3 Stop watch**.

**5.4 Brick**, solid with a density of  $(2\,000 \pm 200)$  kg/m<sup>3</sup>.

NOTE The specific heat capacity of a burnt brick is about 900 J/(kg K) and the thermal conductivity is about 0,35 W/(m K).

**5.5 Thermocouple**, class 1 K-type thermocouple, thickness 0,5 mm.

**5.6 Data collector**, computer controlled data logger capable of recording the temperature in intervals of max. 30 s.

**5.7 Clamp**, non-flammable.

**5.8 Flame source**, a post mix butane/propane stick lighter capable of producing a flame with a height of  $(40 \pm 5)$  mm and width of  $(6 \pm 1)$  mm.

The blue flame part should be approximately 10 mm in height.

**5.9 Calliper**, non-flammable with millimetre grading.

**5.10 Oven**, capable of reaching a minimum temperature of 75 °C.

**5.11 Camera**.

**6 Sampling**

The test shall be carried out on finished candles representative of those intended to be supplied commercially.

For tests according to 9.2, 9.3 and 9.4, for the test result to represent a specific candle type, a minimum of three samples shall be tested.

For tests according to 9.5, for the test result to represent a specific candle type, a minimum of five samples shall be tested.