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**Candle safety**

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## **First working document**

**prEN aaa "Candles - Specification for fire safety"**

**(1. version)**

Please check the attached document and send your comments to <a href="mailto:daniela.klug@din.de">daniela.klug@din.de</a> by 2004-09-20 at the latest or save your comments in the Livelink "discussion" folder.
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## **Candles — Specification for fire safety**

*Kerzen — Spezifikation für Feuersicherheit*

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## Foreword

This document prEN aaa has been prepared by Technical Committee CEN/TC BT/TF 154 “Candle safety”, the secretariat of which is held by DIN.

This document is a working document.

## Introduction

### 1 Scope

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### 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

*EN xyz:199x, Title of the european standard.*

*EN ab-c:199x, General title of series of parts — Part c: Title of part.*

### 3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply/the terms and definitions given in ... and the following apply.

#### 3.1

##### **term**

text of the definition

#### 3.2

##### **term**

text of the definition

### 4 Safety requirements

#### 4.1 Stability

Freestanding candles must not tip over when tested according to 6.1 of this standard.

Record the candle as passing the stability requirement if the candle does not tip over during the stability test.

#### 4.2 Flame height

The flame heights for all candle types, when tested in accordance with the test method in 5.5, shall not exceed 76,2 mm.

#### 4.3 Potential formation of a second wick

No secondary ignition shall occur while burning.

While burning, the wick shall bend evenly up to the outer edge of the flame, where the flame temperature is the highest, so that the complete, gradual burning (and incineration) of the wick tip takes place there. Wick remains in the wax pool is a potential source for secondary ignition.

Record the candle as passing the secondary ignition requirement if no secondary ignition is observed during the testing.

#### 4.4 Behaviour by self extinguishing at the end of the burning process

It is believed that if the candle self-extinguishes at the end of life, this will substantially reduce the risk of fires caused by candles. Otherwise, the candle may overheat, increasing the risk of fires.

Record candle as passing the self-extinguishing requirement if the candle self-extinguishes at the end of life, cannot be re-lit and does not break the container, exhibit excessive flame height and secondary ignition.

#### 4.5 Temperature of the liquid in the burning bowl

???

#### 4.6 Exterior of the containers/jars for candles

Any part which the consumer is likely to touch or hold when using the product, as well as the base, any hook or other supporting surfaces, should not reach such a high temperature that it might burn the skin or damage materials on which it is supported or hung.

A supporting surface is defined as any surface or part of a candle product which is liable to come into contact with other materials.

*Maximum temperature to be decided...*

<b>Maximum surface temperature</b>	<b>Metal</b>	<b>Ceramic</b>	<b>Glass</b>	<b>Plastics</b>
<i>EN 12983-1, cookshop</i>	<i>55 °C</i>	<i>66 °C</i>	<i>66 °C</i>	<i>70 °C</i>
<i>Finland, candleholders</i>	<i>60 °C</i>			

## 5 Test methods

### 5.1 Conditioning

The temperature of the testing room must be between XX°C and YY°C and protected from draught as far as possible. If the test room is equipped with a cooling system (e.g. air conditioning), it must not create additional draught.

### 5.2 Apparatus

- Incline plane (fixed or adjustable) with an angle of  $XX^\circ \pm 0.2^\circ$  from horizontal level.
- Equipment for measuring the temperature, e.g. fine wire thermocouples.
- Non flammable measuring device, millimetre grading.

### 5.3 Stability test

Remove any outer wrapping and remove label material (according to manufacturer's instructions) and make the candle ready for use.

Place the prepared, unlit candle on an incline apparatus in the orientation most likely to cause tipping at  $XX^\circ \pm 0.2^\circ$  from level. Rotation around the candle's vertical axis may be necessary to determine the stability of an asymmetrical candle.

### 5.4 Burning test

The candles are to be placed upright at a distance of at least X cm from one another, so that the candles do not transmit heat to each other, thus avoiding an undesirable thermal influence.

Prepare the candle according to the manufacturers instructions (e.g. trim the wicks).

Light the candles without contaminating the candle by the ignition source.

Burning of the samples is carried out in different burning cycles depending on the candle type and size. *(To be decided, preferably same as sooting test?)*

Visual observations are made after initial lighting and at least hourly intervals throughout the entire burn duration.

### 5.5 Flame height

The whole visible part of the flame is measured and recorded after XX minutes into each burning cycle. If the flame appears to be higher at other times, it shall also be measured and recorded.

Place the ruler carefully as close to the flame as possible without disturbing the flame. Allow the flame to stabilise. Keep the ruler in place for 5 seconds and record the maximum value (undisturbed flame).

### 5.6 Temperature of the liquid in the burning bowl

The temperature of the liquid in the burning bowl is measured at a distance of XX mm from the wick and XX mm below the wax surface, before extinguishing in each burning cycle.

The fine wire thermocouple must be positioned in such a way that it will not be heated by the flame.

### **5.7 Exterior of the containers/jars for candles**

Determine parts, which the consumer is likely to touch or hold when using the product, as well as the base, any hook or other supporting surfaces. Measure the temperature on the surface of the specified parts before extinguishing in each burning cycle.

## **6 Test report**

The test report shall include the following details:

- a) a reference to this European Standard;
- b) identification of the article tested;
- c) the test results;
- d) details of any deviations from this European Standard;
- e) name and address of the test facility;
- f) the date of the test.