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Utility lighters — Safety specifications

Briquets utilitaires — Spécifications de sécurité

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 4, *Burning behaviour*.

This second edition cancels and replaces the first edition (ISO 22702:2003), which has been technically revised. It also incorporates the Amendment ISO 22702:2003/Amd.1:2008.

The mains changes compared to the previous edition are as follows:

— Clause 2, 3.20, 3.21, subclause 4.2.10, subclause 4.2.11, subclause 4.5.4, subclause 4.5.5, subclause 4.7, subclause 8.1, subclause 8.8.4.9, subclause 8.8.4.10 have been added;

— subclause 5.4, subclause 5.7, subclause 7.1.4, Figure 3, Figure 4, Figure 6, subclause 8.3.3, Figure 8, subclause 8.7.4, subclause 8.10.5, subclause 8.12.4 and Annex A have been modified;

— Bibliography has been deleted.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Utility lighters, being flame-producing devices, can, as do all flame sources, present a potential hazard to the user. The safety specifications given in this document cannot eliminate all hazards, but are intended to minimize potential hazards of utility lighters to users.

Utility lighters — Safety specifications

WARNING — This document does not purport to address all the safety concerns, if any, associated with its use. It is the responsibility of the user of this document to establish appropriate safety and health practices and to determine the applicability of any other restrictions.

1 Scope

This document specifies requirements for utility lighters to ensure a reasonable degree of safety for normal use or reasonably foreseeable misuse of such lighters by users.

This document applies to all flame-producing consumer products commonly known as utility lighters (also known as grill lighters, fireplace lighters, lighting rods or gas matches), and similar devices.

It does not apply to matches and flame-producing products intended for igniting cigars, pipes and cigarettes.

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.

ISO 7941, *Commercial propane and butane — Analysis by gas chromatography*

UL 1439, *Tests for Sharpness of Edges on Equipment*

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 http://www.electropedia.org/

3.1
valve
component of a *utility lighter* (3.6) that controls the input or release of *fuel* (3.9)

3.2
nozzle
end of the fuel discharge system

3.3
flame height
linear distance from the tip of the visible *flame* (3.19) to the end of the *shield* (3.12)

3.4
flaring
variation of *flame height* (3.3) from the steady-state flame condition

3.5
ignite
to produce a *flame* (3.19) with a *utility lighter* (3.6) by activating the self-contained ignition and fuel release systems of that *utility lighter* (3.6) in the intended manner

3.6
utility lighter
hand-held, flame-producing device with a manually-operated ignition system, 100 mm or greater in length when in the fully extended position, employing a *fuel* (3.9), used primarily to ignite items such as candles, fuel for fireplaces, charcoal- or gas-fired grills, camp stoves, lanterns, fuel-fired appliances or devices and/or pilot lights

3.7
adjustable utility lighter
utility lighter (3.6) that is received by the consumer with a mechanism for the user to manually vary the *flame height* (3.3)

3.8
non-refillable utility lighter
disposable utility lighter
utility lighter that is received by the user with a supply of fuel and that is not intended to be refuelled

3.9
fuel
butane, isobutane, propane or other liquefied hydrocarbon, or a mixture containing any of these, whose vapour pressure at 24 °C exceeds a gauge pressure of 103 kPa

3.10
non-adjustable utility lighter
utility lighter (3.6) that has a *flame height* (3.3) preset by the manufacturer and is not provided with a mechanism to adjust the *flame height* (3.3)

3.11
refillable utility lighter
utility lighter (3.6) that is intended to be refuelled either by transferring *fuel* (3.9) from an external container or by inserting a new pre-packaged fuel reservoir

3.12
shield
structure that totally or partially surrounds the *nozzle* (3.2) of the *utility lighter* (3.6)

3.13
sustained self-ignition
propagation of a *flame* (3.19) by other than deliberate manual operation, such as by dropping the *utility lighter* (3.6), so as to cause the *ignition system* (3.16) to be activated and the flame to continue to burn

3.14
spitting
sputtering
flame phenomenon of a *utility lighter* (3.6) wherein the escape of non-evaporated or liquid fuel produces a shower of burning liquid droplets which separate from the main flame

3.15
fuel reservoir
structure that stores the *fuel* (3.9) prior to release

3.16
ignition system
system that generates a spark to ignite the *fuel* (3.9), such as a piezo mechanism or battery

3.17
premixing burner utility lighter
gas *utility lighter* (3.6) in which *fuel* (3.9) and air are mixed before being supplied for combustion

3.18
postmixing burner utility lighter
gas *utility lighter* (3.6) in which *fuel* (3.9) is supplied for combustion and air is supplied at the point of combustion

3.19
flame
result of combustion of *fuel* (3.9) that produces heat and often light which could be visible to the naked eye under normal or subdued lighting conditions

3.20
dual flame type utility lighter
utility lighter (3.6) that employs a burner valve system(s) that produces more than one type of flame (premixing and postmixing), which could be produced independently and separately (one flame type at a time), or dependently and concurrently (multiple flames types at a time)

3.21
multiple flame type utility lighter
utility lighter (3.6) that employs a burner valve system(s) that produces more than one flame of the same type of flame (premixing or postmixing), which could be produced independently and separately (one flame at a time), or dependently and concurrently (multiple flames at a time)

4 Functional requirements

4.1 Flame generation

In order to minimize the possibility of inadvertent ignition or self-ignition, utility lighters shall require a deliberate manual operation to produce a flame. These operations shall conform to at least one of the following requirements:

a) a system such that positive action on the part of the user is required to generate and maintain a flame;

b) a system that requires two or more independent actions by the user to generate a flame;

c) a system that requires an actuating force equal to or greater than 15 N to generate a flame (see Figure 1 for an example of test equipment).

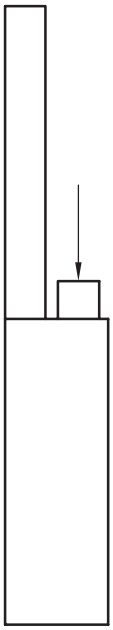

Figure 1 — Block diagram showing a typical example of test equipment for measuring the flame generation actuating force as specified in 4.1 c)

4.2 Flame heights

4.2.1 General

The maximum attainable flame height for utility lighters shall be limited with a setting or by product design, or both. For adjustable-flame-height utility lighters, the maximum flame height that a user will obtain on first activating the utility lighter without adjustment shall also be limited. These limits shall conform to the following requirements when tested in accordance with 8.2.

4.2.2 Non-adjustable postmixing burner utility lighters

Non-adjustable postmixing burner utility lighters, as defined in 3.10 and 3.18, shall have, in the user's hands, a maximum attainable flame height of no more than 100 mm when the flame is directed vertically upward when tested in accordance with 8.2.

4.2.3 Non-adjustable premixing burner utility lighters

Non-adjustable premixing burner utility lighters, as defined in 3.10 and 3.17, shall have, in the user's hands, a maximum attainable flame height of no more than 75 mm when the flame is directed vertically upward when tested in accordance with 8.2.

4.2.4 Adjustable postmixing burner utility lighters

Adjustable postmixing burner utility lighters, as defined in 3.7 and 3.18, shall not be capable of producing a flame height greater than 150 mm when the flame is directed vertically upward, when deliberately adjusted by the user to the manufacturer's design limit for maximum flame height and when tested in accordance with 8.2.

4.2.5 Adjustable premixing burner utility lighters

Adjustable premixing burner utility lighters, as defined in 3.7 and 3.17, shall not be capable of producing a flame height greater than 75 mm when the flame is directed vertically upward, when deliberately

adjusted by the user to the manufacturer's design limit for maximum flame height and when tested in accordance with 8.2.

4.2.6 Adjustable postmixing burner utility lighters (flame height on first ignition)

Adjustable postmixing burner utility lighters, as defined in 3.7 and 3.18, shall have the flame height adjusted by the manufacturer in such a manner that the utility lighter, when first ignited by the user without changing the adjustment, will not produce a flame height in excess of 100 mm when the flame is directed vertically upward and when tested in accordance with 8.2.

4.2.7 Adjustable premixing burner utility lighters (flame height on first ignition)

Adjustable premixing burner utility lighters, as defined in 3.7 and 3.17, shall have the flame height adjusted by the manufacturer in such a manner that the utility lighter, when first ignited by the user without changing the adjustment, will not produce a flame height in excess of 60 mm when the flame is directed vertically upward and when tested in accordance with 8.2.

4.2.8 Adjustable postmixing burner utility lighters (flame height at lowest setting)

Adjustable postmixing burner utility lighters, as defined in 3.7 and 3.18, shall be capable of producing a flame not in excess of 75 mm with the flame directed vertically upward, when set at the lowest possible flame height and tested in accordance with 8.2.

4.2.9 Adjustable premixing burner utility lighters (flame height at lowest setting)

Adjustable premixing burner utility lighters, as defined in 3.7 and 3.17, shall be capable of producing a flame not in excess of 50 mm with the flame directed vertically upward, when set at the lowest possible flame height and tested in accordance with 8.2.

4.2.10 Dual flame type utility lighters

Dual flame type utility lighters, as defined in 3.20, for each type of flame of a dual flame type utility lighter, each flame height shall conform to the corresponding requirement for that type of flame provided in 4.2.1 to 4.2.9.

4.2.11 Multiple flame type utility lighters

Multiple flame type utility lighters, as defined in 3.21, for each flame of a multiple flame type utility lighter, the flame shall conform to the corresponding requirement for that type of flame provided in 4.2.1 to 4.2.9.

4.3 Flame-height adjustment

4.3.1 Adjustable utility lighters, as defined in 3.7, shall require a deliberate action on the part of the user either to decrease or to increase the flame height when the utility lighter is used in the normal fashion.

4.3.2 If flame-height adjustment features protrude from the body of the utility lighter, it shall require a minimum actuating force of 1 N applied over the entire range of adjustment in a tangential direction (see Figure 2 for an example of test equipment).

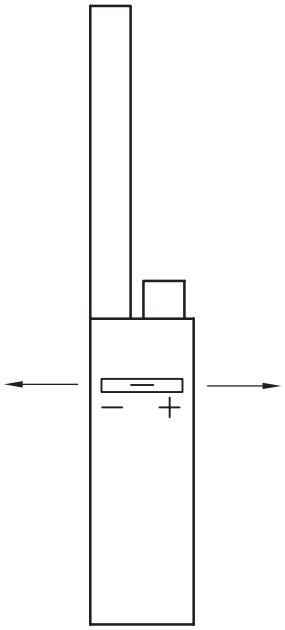

Figure 2 — Block diagram showing a typical example of test equipment for measuring the flame-height adjustment feature actuating force as specified in 4.3.2

4.3.3 Adjustable utility lighters having rotary movement flame-height adjustment features approximately at right angles to the flame shall perform as follows:

a) When the flame-height adjustment feature of the utility lighter is held so the flame is oriented vertically upward, and the user is facing the flame-height adjustment feature, moving the actuator to the left shall produce a decrease in flame height.

b) Adjustable utility lighters requiring motion of the flame-height adjustment feature approximately parallel to the flame axis shall decrease or increase the flame height according to the direction of the movement.

c) When the flame control actuator is at the bottom of the lighter, and the lighter is held so that the user is facing the actuator, a clockwise movement shall produce a decrease in flame height.

Adjustable utility lighters shall indicate the direction of movement to produce a higher or lower flame height. On utility lighters, the direction of movement shall be permanently imprinted or engraved on the utility lighter. Such information shall be placed on the utility lighter in the vicinity of the flame-height adjustment feature and be readily visible and understandable.

4.4 Resistance to spitting or sputtering and flaring

Utility lighters, as defined in 3.6, when set at the maximum flame height, shall exhibit no spitting or sputtering as defined in 3.14 or flaring as defined in 3.4, when tested in accordance with 8.3.

4.5 Flame extinction

4.5.1 Adjustable postmixing burner utility lighters

Adjustable postmixing burner utility lighters, after a 10 s burn at maximum flame height, when extinguished in the intended manner such as by releasing a button or lever, shall have any exposed

