



BSI Standards Publication

Alcohol powered flueless fireplaces — Safety requirements and test methods

Part 1: Manually operated decorative fireplaces for domestic use

National foreword

This British Standard is the UK implementation of EN 16647-1:2025. Together with BS EN 16647-2, it partially supersedes BS EN 16647:2015, which will be withdrawn upon publication of BS EN 16647-2.

The UK participation in its preparation was entrusted to Technical Committee RHE/13/1, Fireplaces for liquid fuels.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Foyers décoratifs à fonctionnement manuel pour un
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Alkoholbetriebene abzugslose Feuerstätten -
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European foreword

This document (EN 16647-1:2025) has been prepared by Technical Committee CEN/TC 46 “Fireplaces for liquid fuels”, 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of an identical text or by endorsement, at the latest by June 2026, and conflicting national standards shall be withdrawn at the latest by June 2026.

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.

This document supersedes EN 16647:2015.

EN 16647-1:2025 includes the following significant technical changes with respect to EN 16647:2015:

- alignment with Mandate M/538 and Commission Decision (EU) 2015/547 throughout the whole text;
- change of Scope and splitting the document into two parts; this part covers manually operated fireplaces;
- removal of all requirements regarding automatically operated fireplaces (e.g. Annex B); these will be covered in Part 2;
- removal of gelatinous fuel;
- restructure of Clause 5;
- addition of requirements for glass screens in 4.8.2;
- revision of the entire combustion subclause 5.3.6;
- revision of Clause 9 (Factory production control).

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

1 Scope

This document is applicable only to decorative fireplaces that have been manufactured for domestic use, which produce a flame using liquid alcohol, hereafter referred to as fuel.

NOTE 1 The requirements outlined in this document can also be applied for outside domestic settings. In that case, additional or different rules on the use of the fireplaces can apply.

This document is applicable to free-standing, wall-mounted and built-in fireplaces.

This document is applicable to decorative fireplaces that require manual user interaction for ignition, filling, re-filling or extinguishing the fireplace.

NOTE 2 The fireplaces can contain some electric or electronic components.

This document is applicable to fireplaces ready for use, whose fuel box is of one unit or is an integral component of the fireplace but not to fireplaces with a fuel tank separate from the fireplace.

This document does not apply to fireplaces specifically designed for heating food or keeping food warm (rechauds), nor does it apply to fireplaces for use in boats, caravans, other vehicles or outdoor areas.

This document does not apply to fireplaces with a power output higher than 4,5 kW or with a defined heating function.

NOTE 3 National regulations can restrict the power output to less than 4,5 kW.

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 1023-3:2000, *Office furniture — Screens — Part 3: Test methods*

EN 10088-3:2023, *Stainless steels — Part 3: Technical delivery conditions for semi-finished products, bars, rods, wire, sections and bright products of corrosion resistant steels for general purposes*

EN 16510-1:2022, *Residential solid fuel burning appliances — Part 1: General requirements and test methods*

EN 13501-1:2018, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN 60335-1:2012,¹ *Household and similar electrical appliances — Safety — Part 1: General requirements (IEC 60335 1:2010, modified)*

EN 60335-2-102:2016, *Household and similar electrical appliances — Safety — Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections (IEC 60335-2-102:2004, modified)*

EN ISO 13732-1:2008, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces (ISO 13732-1:2006)*

¹ As impacted by EN 60335-1:2012/AC:2014, EN 60335-1:2012/A11:2014, EN 60335-1:2012/A13:2017, EN 60335-1:2012/A1:2019, EN 60335-1:2012/A2:2019, EN 60335-1:2012/A14:2019, EN 60335-1:2012/A15:2021 and EN 60335-1:2012/A16:2023

EN IEC/IEEE 82079-1:2020, *Preparation of information for use (instructions for use) of products — Part 1: Principles and general requirements (IEC/IEEE 82079-1:2019)*

3 Terms and definitions

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

ISO and IEC maintain terminology 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

appliance which is ready for use

unit comprising a burner and housing which are supplied ready for use by the manufacturer or a burner which is ready to be built into a setting as per the manufacturer's instructions

3.2

area of flame impingement

area which could be touched by the flame under normal operating conditions

3.3

burner

unit comprising at least secondary containment chamber and the burner opening

3.4

burner opening

opening in the burner at which the combustion of the fuel-air mixture takes place

3.5

secondary containment chamber

container in which the fuel storage tank is located, in order to contain excess, overfilled fuel or fuel leaking out of a defective fuel storage tank

3.6

decorative fireplace fuelled by liquid fuel

appliance which is fuelled with liquid fuel and used for decorative purposes

3.7

fixed fireplace

appliance designed to be permanently fixed to the fabric of the building

3.8

free standing fireplace

appliance not designed to be permanently fixed to the fabric of the building and not provided with helping devices for moving

3.9

fuel

alcohol derivate with at least 91 % (volume concentration) C_2H_5OH

3.10

filling material

material inside of the burner to absorb the fuel

3.11**fuel storage tank**

container part of the appliance, from which the fuel is fed to the burner

3.12**minimum burner adjustment**

burner setting at lowest fuel consumption

3.13**ignition device**

device for the ignition of the burner

3.14**maximum burner adjustment**

burner setting at highest fuel consumption

3.15**non-combustible material**

material classified A2-s1d0 as specified in EN 13501-1:2018

3.16**test bag**

device for testing the stability of the fireplace

3.17**tabletop fireplace**

appliance which is placed exclusively on furniture, wall shelves in accordance with the manufacturer's definition and not in the walkable area within a room

4 Construction and operation**4.1 General**

The fireplace shall be produced in such a way as to:

- rule out any type of permanent deformations or other damages on the fireplace after testing;
- withstand any tensions occurring during normal use;
- facilitate being operated safely.

The use of decorative elements, e.g. imitation wood, pebbles in the area of flame impingement are not permitted.

4.2 Fuel volume

The maximum burner volume shall not exceed 3 litres. The total fuel capacity of the fireplace shall not exceed 10 litres

NOTE National or regional legislation might impose lower limits.

4.3 Design

The fireplace shall be fitted with a feature with an easy-to-use closing mechanism (in order to extinguish the flames). This mechanism shall work reliably and safely whilst the fireplace is in use. If required by means of auxiliary tools, these shall be provided with the fireplace.

Furthermore, the design of the construction shall ensure:

- any welding seams of the fuel storage tank shall be continuously welded;
- that replaceable parts or parts necessary for assembly on site shall not be fitted incorrectly;
- that all parts used for operation and/or maintenance of the fireplace shall be free from sharp edges which could constitute a safety hazard for the user;
- an extinguishing device fulfilling 5.3.5.

4.4 Fuel storage container

4.4.1 General

The way of safe refilling of the fireplace shall be specified in the instruction for use and maintenance.

If symbols on the burner are not coloured, coloured stickers shown in Figure 1 shall be added to the burner, in order to force the removing before the first use of the fireplace.

The fuel storage container shall be leak proof. This is checked by the test under 5.2.1.

The fireplace shall be constructed in such a way that any fuel leakage is avoided. In order to prevent leakage, an additional containment chamber shall be provided which has a minimum volume of 110 % of the actual filling volume and that prevents the accumulation of explosive gases. This is checked by the test under 5.2.2.

NOTE This can be achieved for example by sufficient ventilation.

An additional containment chamber that does not allow the checking and removal of any excess fuel is prohibited.

The product documentation shall contain safety advice regarding the danger of ignition of fuel overspill. Furthermore, the user shall be instructed to check and remove any excess fuel in the secondary containment chamber before lighting the fireplace.

The fireplace shall be equipped with a durable and clearly visible device which helps preventing overfilling and subsequent overrun of fuel during filling when carried out in accordance with the intended terms of use. A level indicator or a fill level mark are regarded as suitable devices.

4.4.2 Container marking

Clearly visible and durable warning sign shall be shown around the filling opening of the fireplace indicating that filling when warm or in operation is not allowed (Figure 1). This shall be according to ISO/TS 20559:2020, 6.6.2.

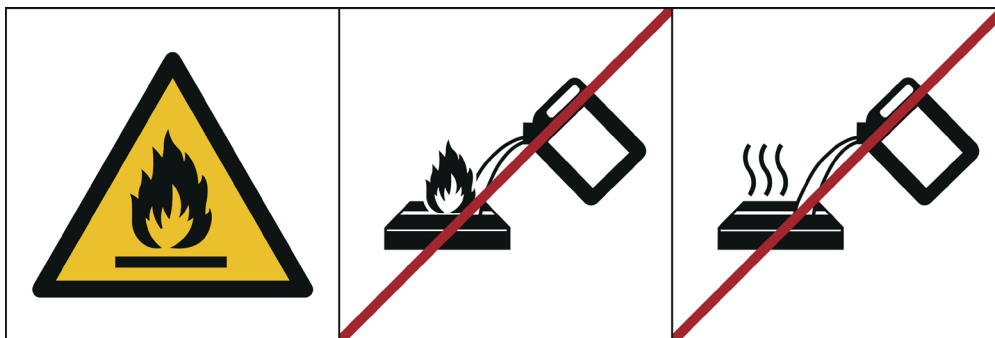


Figure 1 — Graphical symbols “Do not fill fuel into the open flame. Do not fill fuel into the hot burner” (ISO 7010 - W021)

The height of the symbol shall be at least 25 mm. If the symbol is engraved or laser etched into the metal, it does not have to be coloured. Marking of components of the fireplace which are removed during operation or a marking of accessories (funnel, lighter, fuel refill container) are not considered as sufficient.

The durability of the marking shall be checked according to 5.2.4.

4.5 Materials

The parts which are in contact with the fuel shall be constructed with chrome-nickel steel X5CrNi18-10 according to EN 10088-3:2023.

NOTE 1 This is equivalent to chrome-nickel steel 1.4301.

If different materials are used, their suitability in terms of thermal, chemical, mechanical properties and corrosion resistance shall be proven by specification or by test; special consideration shall be given to materials used in areas touching the flame.

Soldering flux containing Asbestos and Cadmium shall not be used in any components of the fireplace. Any insulation material shall be non-combustible (A2s1d0 class according to EN 13501-1:2018) and its application shall not pose any threat to health and safety.

Filling materials used in the burners shall be durable and specifically suited for the thermal strain under contact with fuel and its combustion and shall not alter their properties. Proof shall be presented in order to make sure the suitability of the material. This shall be tested according to 5.2.3.

NOTE 2 Certificates issued by a test institute are acceptable proof.

The burner, and all components which can reach a temperature over 65 K above room temperature, shall be constructed of non-combustible materials.

4.6 Stability

If fittings for the mounting or fixing of the fireplaces are provided with the fireplace, they shall be durable for the whole life of the fireplace.

If unintentionally moved or tilted during operation the fireplace shall be stable according to the tests in 5.1.

Fireplaces provided with wheels, or any other device helping their movement, shall be naturally blocked and it shall be impossible to move them without extinguishing the flame.

The freestanding fireplaces shall pass the stability test (tilting and sliding, impact, movement test), as stated in 5.1.

For all the tests the fuel tank shall be filled with fuel to the maximum level according to the user instruction.

For wall-mounted fireplaces, unintentional movement or release shall be prevented. Especially it shall not be possible to unintentionally unlatch or lift off the fireplace from its fittings. This should be checked during the test in 5.1.5.

Damage to the fireplace which is caused by impact stress (e.g. crack in a glass screen) are acceptable as long as the requirements towards mechanical stability and fuel spillage are met.

4.7 Ignition device

The fireplace shall be safe to ignite.

It shall be possible to light the fireplace with commonly available lighters, if the fireplace is not equipped with an integrated ignition device, a suitable lighter shall either be provided with the fireplace or the instruction for use shall give information on suitable lighters. The user shall be able to ignite the fire from

a horizontal minimum distance of 140 mm (shortest distance between the handle of the lighter or ignition device and the burner opening).

Devices which would enable the user to light the fire without visual contact with the flames are not allowed.

If a remote-control device is provided, an accidental ignition shall not be possible, and a child safety device shall be provided.

EXAMPLE Pressing two buttons is considered enough for child safety.

4.8 Operation of the fireplace

4.8.1 Fuel consumption and thermal output

The fireplace shall be constructed in such a way that over the whole burning period, there shall be no increase of fuel consumption, that can cause a burner runaway. The verified thermal output shall be $\leq 4,5$ kW. This shall be checked by the test described in 5.3.2.

4.8.2 Flame accessibility

The access to the fire shall be obstructed at least from one side. If areas of the fireplace could be used as a repository, the access to the fire shall be blocked from two sides. The housing of tabletop fireplaces shall restrict access to the flames from at least two sides. The majority of flames in fireplaces which are open at the top shall be shielded by the screens.

Where glass screens are used, their construction and attachment to the fireplace shall be such that they are made of either glass-ceramic, borosilicate or tempered glass, but in any case, that the screen:

- is of at least 4 mm thickness;
- is able to withstand maximum temperatures of the fireplace (of a minimum temperature of at least 250 °C). This requirement is considered to be fulfilled by using the mentioned materials;
- has appropriate thermal expansion properties that enable it to expand and contract without cracking during use, this requirement is considered to be fulfilled, if after the tests performed in Clause 5 there is no visible damage;
- has appropriate thermal shock ratings such as it can tolerate sudden temperature changes without cracking;
- has no sharp edges along any of its surfaces.

4.8.3 Draught protection

The fireplace shall be constructed in such a way to prevent flaring out of the flames under normal air draft conditions by more than the safety distance as indicated in the instructions and shall not exceed in any case 50 cm.

4.8.4 Combustion

Under the conditions in 5.3.6.1, the CO concentration shall be lower than:

- 87 ppm (volume fraction) for every 15 min period during the test;
- 52 ppm (volume fraction) for every 30 min period during the test;
- 26 ppm (volume fraction) for every 1 h period during the test;