

INTERNATIONAL STANDARD



**Household and similar electrical appliances – Safety –
Part 2-78: Particular requirements for outdoor barbecues**



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IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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INTERNATIONAL STANDARD



**Household and similar electrical appliances – Safety –
Part 2-78: Particular requirements for outdoor barbecues**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –****Part 2-78: Particular requirements for outdoor barbecues****FOREWORD**

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 60335-2-78:2002+AMD1:2008+AMD2:2019 CSV. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 60335-2-78 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This third edition cancels and replaces the second edition published in 2002, Amendment 1: 2008 and Amendment 2:2019. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) the text is aligned with IEC 60335-1:2020;
- b) some notes have been converted to normative text (Clause 1, 5.2, 15.101, 22.102);
- c) requirements for **communal use barbecues** have been added (Clause 3, 7.1, 22.103, 22.104);
- d) exclusion of battery-operated appliances (Clause 1);
- e) clarification of the need for an RCD is added (7.12).

The text of this International Standard is based on the following documents:

Draft	Report on voting
61/6370/FDIS	61/6420/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts in the IEC 60335 series, published under the general title *Household and similar electrical appliances – Safety*, can be found on the IEC website.

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments unless that edition precludes it; in that case, the latest edition that does not preclude it is used. It was established on the basis of the sixth edition (2020) of that standard.

NOTE 1 When “Part 1” is mentioned in this standard, it refers to IEC 60335-1.

This Part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Particular requirements for outdoor barbecues.

When a particular subclause of Part 1 is not mentioned in this Part 2, that subclause applies as far as is reasonable. When this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.

NOTE 3 The following print types are used:

- requirements: in roman type;

- *test specifications: in italic type;*
- notes: in small roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

NOTE 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

Guidance documents concerning the application of the safety requirements for appliances can be accessed via TC 61 supporting documents on the IEC website

<https://www.iec.ch/tc61/supportingdocuments>

This information is given for the convenience of users of this International Standard and does not constitute a replacement for the normative text in this standard.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules may differ.

If an appliance within the scope of this standard also incorporates functions that are covered by another Part 2 of IEC 60335, the relevant Part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

When a Part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 applies.

NOTE 1 This means that the technical committees responsible for the Part 2 standards have determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

NOTE 2 Horizontal ~~and generic standards~~ publications, basic safety publications and group safety publications covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IEC 60335 series of standards. ~~For example, in the case of temperature requirements for surfaces on many appliances, generic standards, such as ISO 13732-1 for hot surfaces, are not applicable in addition to Part 1 or part 2 standards.~~

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features that impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

NOTE 3 Standards dealing with non-safety aspects of household appliances are:

- IEC standards published by TC 59 concerning methods of measuring performance;
- CISPR 11, CISPR 14-1 and relevant IEC 61000-3 series standards concerning electromagnetic emissions;
- CISPR 14-2 concerning electromagnetic immunity;
- IEC standards published by TC 111 concerning environmental matters.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-78: Particular requirements for outdoor barbecues

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of outdoor **barbecues** for household and similar use, their **rated voltage** being not more than 250 V.

Appliances not intended for normal household use but that nevertheless ~~may~~ can be a source of danger to the public, such as appliances intended to be used by laymen in shops, **restaurants**, **hotels**, in light industry and on farms, are within the scope of this standard.

~~NOTE 101—Examples of such appliances are those used by restaurants and hotels.~~

As far as is practicable, this standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account

- persons (including children) whose
 - physical, sensory or mental capabilities; or
 - lack of experience and knowledgeprevents them from using the appliance safely without supervision or instruction;
- children playing with the appliance.

~~NOTE 102—Attention is drawn to the fact that~~

- for appliances intended to be used on board ships, additional requirements may be necessary;
- in many countries, additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour and similar authorities.

~~NOTE 103—This standard does not apply to~~

- barbecues for indoor use (IEC 60335-2-9);
- appliances intended to burn charcoal or similar combustible fuels;
- appliances intended exclusively for industrial purposes;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- **battery-operated appliances.**

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60068-2-52, *Environmental testing – Part 2: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1 Definitions relating to physical characteristics

3.1.9 Replacement:

~~normal operation~~

operation of the appliance under the following conditions:

Barbecues are operated with the food support in the lowest position, any cover or shield being placed in accordance with the instructions.

Note ~~401~~ 1 to entry: **Barbecues** are operated without water even if the use of water is recommended in the instructions.

3.5 Definitions relating to types of appliances

3.5.101

barbecue

appliance having a radiant heating element located under the food support

3.5.102

communal-use barbecue

barbecue accessible and used by the general public, such as those installed in parks and other recreational sites

3.6 Definitions relating to parts of an appliance

~~3.102~~ 6.101

functional surface

surface that is intentionally heated by an internal heat source and that has to be hot to carry out the intended function of the appliance

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

5.2 Addition:

~~NOTE 101~~ If the test of 15.101 has to be carried out, three additional samples are required.

6 Classification

This clause of Part 1 is applicable except as follows.

6.2 Addition:

Appliances shall be at least IPX4.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 Addition:

Appliances intended to be partially immersed in water for cleaning, shall be marked with the maximum level of immersion and the substance of the following:

Do not immerse beyond this level.

When the provisions of footnote b to Table 101 apply, the appliance shall be marked with:

- the substance of “CAUTION: Hot surface”, or
- symbol IEC 60417-5041 (2002-10).

Communal-use barbecues shall be marked with the substance of the following warnings:

WARNING: Charcoal or similar combustible fuels must not be used with this appliance.

WARNING: Accessible parts may become hot during and after use. Young children should be kept away.

7.6 Addition:



[symbol IEC 60417-5041
(2002-10)]

caution, hot surface

7.12 Addition:

The instructions shall state the substance of the following:

- WARNING: Charcoal or similar combustible fuels must not be used with this appliance;
- the appliance should be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA (instruction not necessary for appliances intended to be permanently connected to fixed wiring);
- the appliance is to be connected to a socket-outlet having an earthing contact (for **class I appliances**);
- the supply cord should be regularly examined for signs of damage and the appliance is not to be used if the cord is damaged;
- WARNING: Accessible parts may become hot during use. Young children should be kept away;
- do not use the barbecue near combustible materials.

The instructions for appliances incorporating an appliance inlet, and intended to be partially or fully immersed in water for cleaning, shall state that the connector must be removed before the appliance is cleaned and the appliance inlet must be dried before the appliance is used again.

The instructions for appliances intended to be used with water shall state the maximum quantity of water to be poured into the appliance.

If symbol IEC 60417-5041 (2002-10) is marked on appliances, its meaning shall be explained and the location of areas where the limits are exceeded shall be stated or shown by a drawing.

7.14 Addition:

The height of the triangle in symbol IEC 60417-5041 (2002-10) shall be at least 10 mm.

Compliance is checked by measurement.

7.15 Addition:

The marking specified for hot surfaces shall be clearly visible when the appliance is operated as in normal use, including when actuating any switch, adjusting any control or opening a lid or door. It shall not be placed on a **functional surface**.

8 Protection against access to live parts

This clause of Part 1 is applicable.

9 Starting of motor-operated appliances

This clause of Part 1 is not applicable.

10 Power input and current

This clause of Part 1 is applicable.

11 Heating

This clause of Part 1 is applicable except as follows.

11.2 Modification:

Appliances are placed on the floor of the test corner and away from the walls.

11.3 Addition:

*Where the external **accessible surfaces** are suitably flat and access permits, then the test probe of Figure 101 is used to measure the temperature rises of external **accessible surfaces** specified in Table 101. The probe is applied with a force of $4\text{ N} \pm 1\text{ N}$ to the surface in such a way that the best possible contact between the probe and the surface is ensured. The measurement is performed after a contact period of 30 s.*

The probe may be held in place using a laboratory stand clamp or similar device. Any measuring instrument giving the same results as the probe may be used.

11.7 Replacement:

Appliances are operated until steady conditions are established.

*Appliance outlets accessible to the user and socket-outlets accessible to the user are loaded with a resistive load that gives the marked **outlet load**.*

11.8 Modification:

During the test, the temperature rises shall not exceed the values shown in Table 3 and Table 101.

Addition:

~~Add the following to footnote “k” of Table 3: “Similar parts held for short periods include handles or grips of vents and air shutters.”~~

The temperature rise of handles or grips of vents and air shutters shall not exceed the value specified in Table 3 for surfaces of handles, knobs, grips and similar parts which are held for short periods only in normal use.

Table 101 – Maximum temperature rises of external accessible surfaces under normal operating conditions

Surface	Temperature rise of external surfaces ^{a, b} K
Bare metal	42
Coated metal ^c	49
Glass and ceramic	56
Plastic and plastic coating > 0,4 mm ^{d, e}	62

NOTE ~~101~~ The temperature rise limits of knobs, grips, keyboards, keypads and similar parts are specified in Table 3.

^a ~~The following surfaces or elements shall not be taken into consideration:~~
Temperature rises are not measured on:

- functional surfaces;**
- surfaces within 50 mm of the outline of the **functional surfaces**;
- underside surfaces that are not accessible to a 75 mm diameter probe having a hemispherical end;
- lids and covers.

^b When the required values are not met, the maximum temperature rise shall not be higher than two times the values indicated.

^c Metal is considered coated when a coating having a minimum thickness of 90 µm made ~~by~~ of enamel, powder or non-substantially plastic coating is used.

^d The temperature rise limit of plastic also applies for plastic material having a metal finish of thickness less than 0,1 mm.

^e When the thickness of the plastic coating does not exceed 0,4 mm, the temperature rise limits of the coated metal or of glass and ceramic material apply.

12 ~~Void~~ Charging of metal-ion batteries

This clause of Part 1 is not applicable.

13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable.

14 Transient overvoltages

This clause of Part 1 is applicable.

15 Moisture resistance

This clause of Part 1 is applicable except as follows.

15.101 Appliances intended to be partially or completely immersed in water for cleaning shall have adequate protection against the effects of immersion.

Compliance is checked by the following tests, which are carried out on three additional appliances.

*The appliances are operated under **normal operation** at 1,15 times **rated power input**, until the **thermostat** operates for the first time. Appliances without a **thermostat** are operated until steady conditions are established. The appliances are disconnected from the supply, any appliance connector being withdrawn. They are then completely immersed in water containing approximately 1 % NaCl and having a temperature between 10 °C and 25 °C, unless they are marked with the maximum level of immersion, in which case they are immersed 50 mm deeper than this level.*

~~*After 1 h, the appliances are removed from the saline solution, dried and subjected to the leakage current test of 16.2.*~~

~~*NOTE—Care should be taken to ensure that all moisture is removed from the insulation around the pins of appliance inlets.*~~

After 1 h, the appliances are removed from the saline solution. They are then dried, taking care that all moisture is removed from the insulation around the pins of appliance inlets and are then subjected to the leakage current test of 16.2.

This test is carried out four more times, after which the appliances shall withstand the electric strength test of 16.3, the voltage being as specified in Table 4.

*The appliance having the highest leakage current after the fifth immersion is dismantled and inspection shall show that there is no trace of liquid on insulation that could result in a reduction of **clearances** and **creepage distances** below the values specified in Clause 29.*

*The remaining two appliances are operated under **normal operation** for 240 h at 1,15 times **rated power input**. After this period, the appliances are disconnected from the supply and immersed again for 1 h. They are then dried and subjected to the electric strength test of 16.3, the voltage being as specified in Table 4.*

*Inspection shall show that there is no trace of liquid on insulation that could result in a reduction of **clearances** and **creepage distances** below the values specified in Clause 29.*

16 Leakage current and electric strength

This clause of Part 1 is applicable.

17 Overload protection of transformers and associated circuits

This clause of Part 1 is applicable.

18 Endurance

This clause of Part 1 is not applicable.

19 Abnormal operation

This clause of Part 1 is applicable except as follows.

19.2 Addition:

*Lids and hoods are open or closed, whichever is more unfavourable. **Detachable parts** are in position or removed, whichever is the more unfavourable.*

20 Stability and mechanical hazards

This clause of Part 1 is applicable.

21 Mechanical strength

This clause of Part 1 is applicable except as follows.

21.1 Modification:

The impact energy is increased to 0,70 J.

22 Construction

This clause of Part 1 is applicable except as follows.

22.101 Appliances shall not have bare-heating elements.

Compliance is checked by inspection.

22.102 Appliances shall be constructed so that their heating elements are fixed in position or prevented from operating when they are not in their normal position of use. This requirement is not applicable if the appliance complies with the standard with the element placed in any position.

Compliance is checked by inspection.

~~NOTE—This requirement does not apply if the appliance complies with the standard with the element placed in any position.~~

22.103 Communal use barbecues shall be fitted with a switch to operate the appliance. It shall require at least two manual operations to switch on the appliance but only one to switch it off. A press and hold switch that must be held pressed for at least 3 s to switch on the appliance is considered to be a switch that requires at least two manual operations to switch on the appliance.

*Compliance is checked by inspection and by manual test with the appliance supplied at **rated voltage**.*

22.104 Communal use barbecues shall be fitted with a timer that switches the appliance off and that has a maximum setting of 30 min.

*Compliance is checked by inspection and by manual test with the appliance supplied at **rated voltage**.*

23 Internal wiring

This clause of Part 1 is applicable.

24 Components

This clause of Part 1 is applicable.

25 Supply connection and external flexible cords

This clause of Part 1 is applicable except as follows.

25.7 Replacement:

The **supply cord** shall be polychloroprene sheathed and shall not be lighter than ordinary polychloroprene sheathed flexible cord (code designation 60245 IEC 57).

Compliance is checked by inspection.

26 Terminals for external conductors

This clause of Part 1 is applicable.

27 Provision for earthing

This clause of Part 1 is applicable.

28 Screws and connections

This clause of Part 1 is applicable.

29 Clearances, creepage distances and solid insulation

This clause of Part 1 is applicable except as follows.

29.2 Addition:

The microenvironment is pollution degree 3 unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance.

30 Resistance to heat and fire

This clause of Part 1 is applicable except as follows.

30.2.2 Not applicable.

31 Resistance to rusting

This clause of Part 1 is applicable except as follows.

Addition:

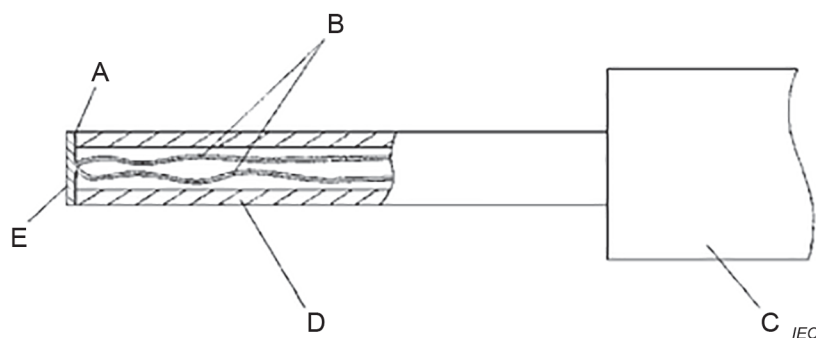
Compliance is checked by the salt mist test, Kb of IEC 60068-2-52, ~~severity~~ Test method 2 being applicable.

Before the test, coatings are scratched by means of a hardened steel pin, the end of which has the form of a cone with an angle of 40°. Its tip is rounded with a radius of 0,25 mm ± 0,02 mm. The pin is loaded so that the force exerted along its axis is 10 N ± 0,5 N. The scratches are made by drawing the pin along the surface of the coating at a speed of approximately 20 mm/s. Five scratches are made at least 5 mm apart and at least 5 mm from the edges.

After the test, the appliance shall not have deteriorated to such an extent that compliance with this standard, in particular with Clause 8 and Clause 27 is impaired. The coating shall not be broken and shall not have loosened from the metal surface.

32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.



Key

- A adhesive
- B thermocouple wires 0,3 mm diameter to IEC 60584-1 Type K ~~(chrome-alumel)~~
- C handle arrangement permitting a contact force of 4 N ± 1 N
- D polycarbonate tube: inside diameter 3 mm, outside diameter 5 mm
- E tinned copper disc: 5 mm diameter, 0,5 mm thick with a flat contact face

Figure 101 – Probe for measuring surface temperatures

Annexes

The annexes of Part 1 are applicable **except as follows**.