

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Household and similar electrical appliances – Safety –
Part 2-120: Particular requirements for the safety of appliances for the
generation of directly inhalable aerosols**

**Appareils électrodomestiques et analogues – Sécurité –
Partie 2-120: Exigences particulières de sécurité des appareils destinés à
produire des aérosols directement inhalables**

<https://standards.iteh.ai/catalog/standards/iec/593ed3d5-f3bb-4efd-b13e-70ffcce5e745/iec-60335-2-120-2024>





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ELECTROTECHNICAL
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –****Part 2-120: Particular requirements for the safety of appliances
for the generation of directly inhalable aerosols**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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IEC 603335-2-120 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliance. It is an International Standard.

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

| Draft | Report on voting |
|--------------|------------------|
| 61/7076/FDIS | 61/7099/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/publications.

A list of all parts of the IEC 60335 series, 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 the safety of appliances for the generation of directly inhalable aerosols.

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, or
- revised.

NOTE 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations can 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.

The following differences exist in the countries indicated below.

- Clause 1: These devices are considered medical devices and are separately regulated by the Therapeutic Goods Administration. (Australia).
- Clause 1: Nicotine using products are required to comply with TGO 110 order 2021 (Australia)

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 can 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 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.

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 2-120: Particular requirements for the safety of appliances for the generation of directly inhalable aerosols

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of appliances for generation of directly inhalable **aerosols**, their **rated voltage** being not more than 250 V for single-phase appliances, and other appliances including direct current (DC) supplied appliances and **battery-operated appliances**.

Examples of the appliances that are within the scope of this standard are:

- vapour and **aerosol** appliances;
- personal vaping appliances with or without nicotine;
- electronic cigarettes;
- electronic nicotine delivery systems (ENDS);
- electronic non-nicotine delivery systems (ENNDS);
- electronic tobacco **heating appliances** for heated tobacco products.

This standard does not apply to:

- medical ventilators,
- humidifiers (IEC 60335-2-98).

NOTE 101 Other safety aspects of appliances under the scope of this standard can be covered by standards developed by ISO/TC 126.

These requirements do not cover the **consumables**, such as **e-liquids** and other inhaled **aerosol** substances, wicks, and other particulate matter inhaled during use, nor do they cover substances in the emissions from the operation of the appliances.

NOTE 102 For example, heavy metal emissions in the **aerosol** and environmental exposure are not covered by this standard.

These requirements do not consider the physiological effects of any **consumable** used with the appliances.

This International Standard does not cover requirements or prohibitions of the labelling, packaging and contents of nicotine-containing or nicotine-consuming products that are strictly regulated by law of the relevant jurisdiction.

2 Normative references

This clause of Part 1 is applicable.

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1 Definitions relating to physical characteristics

3.1.9 *Modification:*

Replace the first paragraph with the following:

operation as specified in B.3.1.1

3.8 Definitions relating to miscellaneous matters

3.8.101

aerosol

suspension of particles in air or gas

Note 1 to entry: The particles can be comprised of only liquids or a mixture of liquids and solids.

3.8.102

consumable

substrate or receptacle containing a substrate, intended to be used in combination with an appliance to generate an inhalable **aerosol**, and which is consumed or depleted through single or multiple use

EXAMPLE 1 Sealed cartridge containing **e-liquid**.

EXAMPLE 2 Tobacco or non-tobacco stick. [IEC 60335-2-120:2024](https://standards.iteh.ai/catalog/standards/iec/593ed3d5-f3bb-4efd-b13e-70ffcce5e745/iec-60335-2-120-2024)

EXAMPLE 3 Tobacco or non-tobacco capsule.

EXAMPLE 4 Tablets or similar solid formats that will be depleted during use.

EXAMPLE 5 Loose solid materials such as tobacco.

3.8.103

e-liquid

liquid or gel **consumable** that can contain nicotine

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:

5.101 *Appliances, other than those with heating elements, are tested as **motor-operated appliances**.*

6 Classification

This clause of Part 1 is applicable except as follows:

6.2 Addition:

Appliances shall be at least IPX4. This does not apply to the battery charger or **detachable power supply part** for rechargeable **battery-operated appliances**.

7 Marking and instructions

This clause of Part 1 is applicable except as follows:

7.1 Modification:

Delete the seventh dashed item for marking of the IP number.

7.12 Modification:

Replace the fourth paragraph with the following:

The instructions shall state the substance of the following:

This appliance is not intended for use by persons with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children shall not handle the appliance.

8 Protection against access to live parts

This clause of Part 1 is applicable.

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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.

11.7 Modification:

Replace the first paragraph with the following:

The appliance is operated as specified in B.11.1.

12 Charging of metal-ion batteries

This clause of Part 1 is applicable.

13 Leaking current 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.

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:

19.1 Addition:

Compliance is also checked by 19.101.

19.2 Not applicable.

19.3 Not applicable.

19.17 Modification:

Replace the second sentence of the paragraph after item d) with the following:

*However, **venting** of the **cells** is permitted provided that they have not vented by any means other than through their vents and the **venting** of appliance pressure is not directed towards the user's mouth.*

19.101 Charge the appliance with 130 % of the **rated voltage** of the power source provided with the appliance or specified in the instruction or 7,5 V, whichever is higher. Maintain the voltage until the surface temperature of the appliance achieves steady conditions.

*For the purpose of this standard, a steady condition is considered to be attained if the difference in peak temperature does not exceed 3 K in 30 min. No explosion or ignition of the **battery** shall occur during or after the test. However, **venting** of the **cells** is permitted provided that they have not vented by any means other than through their vents.*

19.102 Appliances, other than those complying with B.20.101, shall not generate fire hazards and hazardous events to users due to heating from an accidental operation.

Compliance is checked by the following test:

The appliance is operated according to B.3.1.1 until steady conditions are established. The appliance is then immediately wrapped by a layer of compressed wool felt sheet with a mass per unit area of $4 \text{ kg/m}^2 \pm 0,4 \text{ kg/m}^2$ and a total thickness of 25 mm and the surface temperature of the appliance is measured in the most unfavourable position by means of fine-wire thermocouples according to 11.3.

The surface temperature shall not exceed 150 °C.

20 Stability and mechanical hazards

This clause of Part 1 is applicable.

21 Mechanical strength

This clause of Part 1 is applicable.

22 Construction

This clause of Part 1 is applicable except as follows:

22.36 Addition:

Hand-held parts shall be **class III appliances** or **class III constructions** having a **working voltage** not exceeding 24 V.

Compliance is checked by inspection.

22.101 If the **consumable** is a solid item which can be removed from the appliance for replacement or disposal purpose, it shall not burn or ignite the surroundings after use.

*Compliance is checked by visual inspection and by operating with the **consumable** attached to or inserted into the appliance under normal conditions as specified in B.3.1.1. As soon as the **consumable** is consumed and needs to be replaced, it is removed from the appliance in accordance with the manufacturer's instructions and placed on a wooden table which is covered with a layer of wrapping tissue with mass per unit area between 12 g/m^2 and 30 g/m^2 . The wrapping tissue shall not burn or ignite.*

23 Internal wiring

This clause of Part 1 is applicable.