

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Household and similar electrical appliances – Safety –
Part 2-45: Particular requirements for portable heating tools and similar
appliances

Appareils électrodomestiques et analogues – Sécurité –
Partie 2-45: Règles particulières pour les outils chauffants mobiles et appareils
analogues



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INTERNATIONAL
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COMMISSION

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CONTENTS

FOREWORD.....	3
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	8
3 Definitions	8
4 General requirement.....	10
5 General conditions for the tests	10
6 Classification.....	10
7 Marking and instructions.....	10
8 Protection against access to live parts.....	11
9 Starting of motor-operated appliances	11
10 Power input and current	12
11 Heating	12
12 Void	12
13 Leakage current and electric strength at operating temperature.....	12
14 Transient overvoltages	12
15 Moisture resistance	12
16 Leakage current and electric strength.....	13
17 Overload protection of transformers and associated circuits.....	13
18 Endurance.....	13
19 Abnormal operation	13
20 Stability and mechanical hazards	14
21 Mechanical strength	14
22 Construction	15
23 Internal wiring.....	16
24 Components	16
25 Supply connection and external flexible cords	17
26 Terminals for external conductors.....	18
27 Provision for earthing	18
28 Screws and connections	18
29 Clearances, creepage distances and solid insulation	18
30 Resistance to heat and fire	18
31 Resistance to rusting.....	18
32 Radiation, toxicity and similar hazards.....	18
Annexes	19
Bibliography.....	19

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-45: Particular requirements for portable heating tools and similar appliances

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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This part of International Standard IEC 60335 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This consolidated version of IEC 60335-2-45 consists of the third edition (2002) [documents 61/2219/FDIS and 61/2294/RVD], its amendment 1 (2008) [documents 61/3559/FDIS and 61/3605/RVD] and its amendment 2 (2011) [documents 61/4099/CDV and 61/4197/RVC].

The technical content is therefore identical to the base edition and its amendments and has been prepared for user convenience.

It bears the edition number 3.2.

A vertical line in the margin shows where the base publication has been modified by amendments 1 and 2.

The French version of this standard has not been voted upon.

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments. It was established on the basis of the fourth edition (2001) 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: Safety requirements for portable electric heating tools and similar appliances

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 following differences exist in the countries indicated below.

- 3.1.9: The conditions of normal operation are different for soldering guns and plastic-cutting tools (USA).
- 6.1: Class 0 appliances are allowed if their rated voltage does not exceed 150 V and class 0I appliances are allowed (Japan).
- 6.1: Class 0 soldering irons are allowed if their rated power input does not exceed 18 W (Poland).
- 6.1: Class I dehorning tools are allowed. Class 0 appliances are allowed if their rated voltage does not exceed 150 V and they are for indoor use only (USA).
- 11.7: The test for firelighters is different (USA).
- 11.8: The modification does not apply (USA).
- 21.101: The drop test is different (USA).
- 24.1.3: Switches are tested for 6 000 cycles of operation (Canada and USA).
- 25.7: Lighter cords are allowed (USA).
- 25.7: The modification does not apply (Japan).
- 25.8: Shorter supply cords are allowed for class II dehorning tools (USA).

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication 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 the amendment 1 be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

2 | It is the recommendation of the committee that the content of the amendment 2 be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

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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.

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 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.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-45: Particular requirements for portable heating tools and similar appliances

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of **portable electric heating tools** and similar appliances, their **rated voltage** being not more than 250 V.

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

Appliances that may also be used when mounted on a support are within the scope of this standard.

NOTE 101 Examples of appliances that are within the scope of this standard are

- **branding tools;**
- **burning-in pens;**
- **conduit-soldering tools;** [IEC 60335-2-45:2002+AMD1:2008+AMD2:2011 CSV](https://standards.iteh.ai/catalog/standards/sist/07d7686e-fl13-42fb-8889-b7fa2ed8d86b/iec-60335-2-45-2002amd1-2008amd2-2011-csv)
- **dehorning tools;** <https://standards.iteh.ai/catalog/standards/sist/07d7686e-fl13-42fb-8889-b7fa2ed8d86b/iec-60335-2-45-2002amd1-2008amd2-2011-csv>
- **desoldering irons;** [b7fa2ed8d86b/iec-60335-2-45-2002amd1-2008amd2-2011-csv](https://standards.iteh.ai/catalog/standards/sist/07d7686e-fl13-42fb-8889-b7fa2ed8d86b/iec-60335-2-45-2002amd1-2008amd2-2011-csv)
- **firelighters;**
- glue guns;
- heat guns;
- **household film-welding appliances;**
- paint strippers;
- plastic-cutting tools;
- **soldering guns;**
- **soldering irons;**
- stripping pliers;
- **thermoplastic conduit-welding tools.**

As far as is practicable, this standard deals with the common hazards presented by appliances which are encountered by all persons in and around the home. However, in general, it does not in general 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 in vehicles or on board ships or aircraft, 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

- hand-held motor-operated electric tools (IEC 60745);
- transportable motor-operated electric tools (IEC 61029);
- 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);
- tools using high-frequency heating other than **induction soldering irons**;
- arc-welding equipment.

2 Normative references

This clause of Part 1 is applicable.

3 Definitions

This clause of Part 1 is applicable except as follows.

3.1.9 Replacement:

normal operation operation of appliances under the following conditions

Appliances having a stand are operated on the stand, unless otherwise specified.

Other appliances are operated in accordance with the instructions, unless otherwise specified.

Soldering guns and plastic-cutting tools incorporating a **biased-off switch** are operated in cycles in accordance with the instructions but they are switched on for at least 12 s with rest periods not exceeding 48 s. For **soldering guns**, the on-period is such that the temperature at the tip reaches at least 300 °C at the end of the first on-period.

Household film-welding appliances are operated in cycles in accordance with the instructions but they are switched on at least for the time necessary to weld together two sheets of plastic film with rest periods not exceeding 2 min. The plastic film is high pressure (low density) polyethylene, each sheet having a thickness of 50 µm.

Heat guns are operated with the airflow horizontal.

Firelighters are operated to ignite charcoal placed in a tray having a diameter of 600 mm and a side 50 mm high. The pile of charcoal is 500 mm in diameter and 100 mm high at its centre.

Contact firelighters are positioned with the heating element horizontal and inserted in the centre of the charcoal.

Hot-air firelighters are positioned with the airflow horizontal, or directed downwards up to 45° if allowed by the construction, whichever is more unfavourable.

3.101

biased-off switch

switch that automatically returns to the **off position** when its actuating member is released

3.102

branding tool

appliance for marking wood, leather and other materials by means of a heated metal stamp

3.103

burning-in pen

appliance for scribing on wood, leather and other materials by means of a heated tip

3.104

conduit-soldering tool

appliance used for joining metal piping by means of solder

3.105

dehorning tool

appliance for burning out horn buds

3.106

desoldering iron

appliance for melting and removing solder

3.107

firelighter

appliance for igniting solid fuel such as charcoal or wood

3.108

contact firelighter

firelighter incorporating a heating element that is in direct contact with the fuel

3.109

hot-air firelighter

firelighter that incorporates a fan and a heating element and blows hot air at the fuel

3.110

heat gun

appliance that produces a jet of hot air

NOTE **Heat guns** may be used for fusing materials or for softening paint or plastics.

3.111

household film-welding appliance

appliance for household use only, used for welding or cutting thin thermoplastic sheets by means of electrically heated parts between which the material is clamped

3.112

paint stripper

appliance for softening paint using hot air

NOTE **Paint strippers** may incorporate a scraper.

3.113

soldering gun

appliance incorporating a transformer, the soldering tip being part of the secondary circuit

3.114

soldering iron

appliance having a heated tip for soldering

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3.115

thermoplastic conduit-welding tool

appliance for welding conduit by partly melting the thermoplastic material of a separate fitting

NOTE The fitting has an integral heating wire and is used only once.

2

3.116

induction soldering iron

soldering iron that heats the soldering tip by means of high frequency induction eddy currents

NOTE Eddy currents are induced in the soldering tip or heating element by the electromagnetic field of a coil.

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 An additional sample of a **contact firelighter** is required for the test of 21.102.

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6 Classification

This clause of Part 1 is applicable except as follows.

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6.1 Modification:

Dehorning tools shall be **class II** or **class III**.

Other appliances shall be **class I**, **class II** or **class III**.

6.2 Addition:

Class II dehorning tools and transformers for **class III dehorning tools** shall be at least IPX4.

Conduit-soldering tools and **thermoplastic conduit-welding tools** shall be at least IPX4.

Hand-held paint strippers for outdoor use shall be at least IPX4, unless the instructions state they are not to be stored or left outdoors, in which case they may be IPX0.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 Addition:

Contact firelighters shall be marked with the limit of insertion into the fuel.

Contact firelighters that are not at least IPX4 shall be marked with the substance of the following:

Do not expose to rain or moisture.

Thermoplastic conduit-welding tools shall be marked with the types of fittings with which they are to be used and with the corresponding settings. Each fitting shall be marked with the type of appliance with which it is to be used and with its own type reference.

7.12 Addition:

The instructions for appliances having a separate stand and not incorporating a **biased-off switch** shall include the substance of the following:

WARNING: This tool must be placed on its stand when not in use.

The instructions for **class III dehorning tools** shall include the substance of the following:

WARNING: Only use the transformer provided.

The instructions for **heat guns** and **hand-held paint strippers** shall include the substance of the following.

A fire may result if the appliance is not used with care, therefore

- be careful when using the appliance in places where there are combustible materials;
- do not apply to the same place for a long time;
- do not use in presence of an explosive atmosphere;
- be aware that heat may be conducted to combustible materials that are out of sight;
- place the appliance on its stand after use and allow it to cool down before storage;
- do not leave the appliance unattended when it is switched on.

The instructions for **firelighters** shall include the substance of the following:

- ensure that the firelighter is properly positioned;
- unplug the firelighter before removal from the fire;
- allow the firelighter to cool before storage;
- do not allow the hot parts of the firelighter to touch the cord or other flammable materials.

The instructions for **thermoplastic conduit-welding tools** shall state that a welding operation must not be repeated on a fitting since this can result in live parts becoming accessible.

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1.4 Addition:

Parts of **thermoplastic conduit-welding tools** operating at **safety extra-low voltage** exceeding 12 V are also considered to be **live parts**.

9 Starting of motor-operated appliances

This clause of Part 1 is not applicable.