

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

Household and similar electrical appliances – Safety –  
Part 2-59: Particular requirements for insect killers

Appareils électrodomestiques et analogues – Sécurité –  
Partie 2-59: Règles particulières pour les destructeurs d'insectes

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Part 2-59: Particular requirements for insect killers**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

### HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

#### Part 2-59: Particular requirements for insect killers

#### 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 60335-2-59 consists of the third edition (2002) [documents 61/2172/FDIS and 61/2253/RVD], its amendment 1 (2006) [documents 61/2958/FDIS and 61/2988/RVD] and its amendment 2 (2009) [documents 61/3868/FDIS and 61/3917/RVD].

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 bilingual version (2005-10) replaces the English version.

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 electric insect killers.

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.

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- 6.1: Class 0 appliances for indoor use having a rated voltage not exceeding 150 V and class 0I appliances are allowed (Japan).
  - 6.1: Class 0 appliances are allowed for indoor use only (USA).
  - 7.1: Additional markings are required (USA).
  - 16.101: The test is different (USA).
  - Clause 22: The high voltage has to be obtained from an isolating transformer (Canada, Japan and USA).
  - Clause 22: Earthing of the secondary circuit of the transformer is not allowed (Japan).
  - 24.1.3: Interlock switches are operated 6 000 times (Canada and USA).
  - 24.101: The contact separation need not be in accordance with IEC 61058-1 (USA).
  - 25.7: Other types of supply cords are allowed (Australia and USA).
  - 30.101: The test is not carried out on parts of the enclosure classified as V-2 (USA).
  - Clause 31: The test is different (Canada and USA).

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the maintenance result 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.

2 | NOTE 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.

## 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.

- 2 | 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 2-59: Particular requirements for insect killers

### 1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric **insect killers** for household and similar purposes, their **rated voltage** being not more than 250 V.

Appliances not intended for normal household use but that 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.

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

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

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NOTE 101 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 102 This standard does not apply to

- appliances that function by emitting vaporized chemicals;
- appliances emitting ultrasonic waves;
- 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).

NOTE 103 For appliances provided with discharge lamps or tungsten filament lamps, IEC 60598-1 also applies as far as is reasonable.

### 2 Normative references

*Addition:*

IEC 60068-2-52:1996, *Environmental testing – Part 2: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*



### 3 Definitions

This clause of Part 1 is applicable except as follows.

#### 3.1.9 *Replacement:*

##### **normal operation**

operation of the appliance under the following conditions:

- the output circuit is short-circuited;
- the grids are separated by the maximum distance for maintaining an arc, the appliance being operated in cycles consisting of 1 s of operation followed by a rest period of 2 s;
- a resistive load is connected between the grids and adjusted to obtain the maximum current.

#### 3.101

##### **insect killer**

appliance that electrocutes insects by applying a voltage between two or more grids

#### 3.102

##### **effective irradiance**

irradiance of electromagnetic radiation weighted according to a specific action curve

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### 4 General requirement

This clause of Part 1 is applicable.

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### 5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

**5.101** *For each test, the most unfavourable condition specified in 3.1.9 is used.*

**5.102** *Insect killers are tested as motor-operated appliances.*

### 6 Classification

This clause of Part 1 is applicable except as follows.

#### 6.1 *Modification:*

**Insect killers** shall be **class I** or **class II**.

#### 6.2 *Addition:*

**Insect killers** intended for outdoor use shall be at least IPX4.

## 7 Marking and instructions

This clause of Part 1 is applicable except as follows.

### 7.1 Addition:

Appliances shall be marked with symbol 5036 of IEC 60417-1 or with the substance of the following:

DANGER: High voltage

Appliances provided with replaceable lamps shall be marked with the type reference of the lamp.

- 2 | Appliances containing lamps that cannot be replaced without breaking or destroying the appliance shall be marked with the substance of the following:

WARNING: The lamps in this appliance cannot be replaced. Scrap the appliance when the lamps cease to operate.

### 7.6 Addition:



[symbol 5036 of IEC 60417-1] dangerous voltage

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### 7.12 Addition:

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The instructions shall state whether the appliance is for indoor use only or suitable for outdoor use.

The instructions for appliances for indoor use only shall state that they are not suitable for use in barns, stables and similar locations.

The instructions for appliances intended for outdoor use shall include the substance of the following:

WARNING: An electric shock hazard may exist if water from a garden hose is directed at the insect killer.

When using extension cords, keep the socket-outlet away from moisture and avoid damage to the cord.

The instructions shall state the substance of the following:

- the appliance is to be kept out of reach of children;
- the appliance is not to be used in locations where flammable vapour or explosive dust is likely to exist.

The instructions shall give details concerning

- the method and frequency of cleaning, together with the precautions to be taken;
- precautions to be taken when replacing lamps and starters, if applicable.

If symbol 5036 of IEC 60417-1 is used, its meaning shall be explained.

**7.14 Addition:**

The height of symbol 5036 of IEC 60417-1 shall be at least 10 mm.

The height of the lettering of the warning relating to high voltage shall be at least 3 mm.

*Compliance is checked by measurement.*

## **8 Protection against access to live parts**

This clause of Part 1 is applicable except as follows.

**8.1.1 Addition:**

*When the grid voltage is obtained from an isolating transformer, the test probe may touch earthed parts of the secondary circuit.*

## **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**

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This clause of Part 1 is applicable except as follows.

**11.7 Replacement:**

*Appliances are operated until steady conditions are established.*

**11.8 Addition:**

*The temperature rise of surfaces likely to collect dust or insects shall not exceed 60 K.*

NOTE 101 Surfaces having an inclination of at least 60° to the horizontal and parts having a diameter less than 10 mm are not considered likely to collect dust or insects.

## **12 Void**

## **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.

### 15.1 Addition:

*Water on the grids is ignored.*

## 16 Leakage current and electric strength

This clause of Part 1 is applicable except as follows.

**16.101** The transformer shall have adequate internal insulation.

*Compliance is checked by the following test.*

*Twice the **working voltage** is induced in the secondary winding of the transformer by applying a sinusoidal voltage having a frequency higher than **rated frequency** to the primary terminals.*

*The duration of the test is*

- 60 s, for frequencies up to twice the **rated frequency**, or
- $120 \times \frac{\text{rated frequency}}{\text{test frequency}}$  s, with a minimum of 15 s, for higher frequencies.

NOTE The frequency of the test voltage is higher than the **rated frequency** to avoid excessive excitation current.

*A maximum of one-third of the test voltage is applied and is then rapidly increased without creating transients. At the end of the test, the voltage is decreased in a similar manner to approximately one-third of its full value before switching off.*

*There shall be no breakdown between windings or between adjacent turns of the same winding.*

## 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.

## 20 Stability and mechanical hazards

This clause of Part 1 is applicable.