

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Household and similar electrical appliances – Safety –
Part 2-55: Particular requirements for electrical appliances for use with
aquariums and garden ponds

Appareils électrodomestiques et analogues – Sécurité –
Partie 2-55: Règles particulières pour les appareils électriques à utiliser avec les
aquariums et les bassins de jardin



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –****Part 2-55: Particular requirements for electrical appliances
for use with aquariums and garden ponds**

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 60335-2-55 consists of the third edition (2002) [documents 61/2222/FDIS and 61/2297/RVD] and its amendment 1 (2008) [documents 61/3547/FDIS and 61/3601/RVD].

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

It bears the edition number 3.1.

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

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 electrical appliances for use with aquariums and garden ponds.

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: Normal operation is different (USA);
- 6.1: Class 0I appliances are allowed (Japan);
- 7.12.1: Additional instructions are required (USA);
- Clause 21: The tests are different (USA);
- 25.7: Ordinary polyvinyl chloride sheathed cords are allowed (Australia and New Zealand).

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.

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.

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 2-55: Particular requirements for electrical appliances for use with aquariums and garden ponds

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric appliances for use with aquariums and garden ponds for household and similar purposes, their **rated voltage** being not more than 250 V.

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

- aerators;
- aquarium heaters;
- automatic food dispensers;
- sludge-suction appliances.

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 and in light industry and 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

- 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

- pumps (IEC 60335-2-41);
- other portable immersion heaters (IEC 60335-2-74);
- luminaires for aquariums and garden ponds (IEC 60598-2-18);
- appliances intended for outdoor use having a **rated power input** exceeding 100 W;
- appliances intended exclusively for professional use;
- 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).

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 the appliance under the following conditions

Aerators are operated with the outlet immersed in water at a depth of 1 m or at the maximum operating depth if this results in a higher power input.

Sludge-suction appliances are operated with the inlet immersed in water at a depth of 1 m or at the maximum operating depth if this results in a higher power input.

Automatic food dispensers are operated with the dispenser initially filled with the maximum quantity of food.

Heaters are operated in a sufficient quantity of water to maintain the water temperature between 20 °C and 25 °C without the **thermostat** cycling.

3.101

aerator

appliance that pumps air into the water in order to increase the oxygen content

3.102

sludge-suction appliance

hand-held appliance for removing deposits from aquariums or ponds

[IEC 60335-2-55:2002+AMD1:2008 CSV](https://standards.iteh.ai/catalog/standards/sist/dce91ba5-eb46-45fa-bbea-67fed9ec44ca/iec-60335-2-55-2002amd1-2008-csv)

<https://standards.iteh.ai/catalog/standards/sist/dce91ba5-eb46-45fa-bbea-67fed9ec44ca/iec-60335-2-55-2002amd1-2008-csv>

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 21.103 has to be carried out, an additional sample is required.

6 Classification

This clause of Part 1 is applicable except as follows.

6.2 *Addition:*

Appliances for use in water shall be IPX8.

Appliances for use above water shall be at least IPX7 unless they are intended to be fixed, in which case they shall be at least IPX4.

Other appliances shall be at least IPX4.

These requirements do not apply to **class III appliances**.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 Addition:

Appliances for use in water shall be marked with the maximum operating depth, if greater than 1 m.

7.6 Addition:



maximum operating depth

7.12 Addition:

The instructions shall include details regarding

- the operation of the appliance;
- the precautions to be taken for appliances not intended to be used in water;
- the maintenance of the appliance.

The instructions for appliances intended to be fully immersed in water shall state the maximum operating depth.

The instructions for appliances, other than **class III appliances**, shall include the substance of the following:

WARNING: Unplug or switch off all appliances in the aquarium or pond before carrying out maintenance.

7.12.1 Addition:

The installation instructions for appliances intended to be used above water shall include details regarding fixing, unless they are at least IPX7.

The installation instructions of appliances for outdoor use shall state that the appliance is to be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA.

The installation instructions of **class III appliances** shall include details regarding the fixing and location of safety isolating transformers to prevent them from falling into the water or from being affected by water.

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.

11.7 Replacement:

Appliances are operated until steady conditions are established.

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.

15.1.2 Addition:

Appliances for use in water are immersed for 24 h in water containing approximately 1 % NaCl and having a temperature of $15\text{ °C} \pm 5\text{ °C}$. The appliance is immersed in its normal position of use so that

- *its lowest point is located 1 m below the surface, for appliances having a height less than 0,85 m;*
- *its highest point is located 0,15 m below the surface of the water, for other appliances.*

However, if the appliance is marked with a maximum operating depth, its lowest point shall be located at this depth.

*During immersion, the appliance is supplied at **rated voltage** and operated in cycles, each cycle consisting of 1 h on and 1 h off.*

15.3 Addition:

Appliances classified IPX8 are not subjected to this test.

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:

Aerators are also subjected to the test of 19.101.

19.2 Addition:

Heaters are operated in their normal position of use but without being immersed.

19.101 Aerators for use in water are supplied at **rated voltage** and operated under **normal operation** until steady conditions are established. Valves are rendered inoperative in turn and in any combination. After cooling down, the **aerator** is removed from the water.

Inspection shall show that water has not entered places where electrical components are located. The conditions of 19.13 are not applicable.

Other **aerators** are supplied at **rated voltage** and operated for 5 min with the aerator and its outlet placed in the most unfavourable position with regard to the water level. Valves are rendered inoperative in turn and in any combination.

NOTE The **aerator** is not placed in water.

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 Addition:

After the application of the impact hammer, **aerators** for use in water are subjected to the test of 21.101.