

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

Household and similar electrical appliances – Safety –  
Part 2-98: Particular requirements for humidifiers

Appareils électrodomestiques et analogues – Sécurité –  
Partie 2-98: Règles particulières pour les humidificateurs

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Part 2-98: Particular requirements for humidifiers**

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ELECTROTECHNICAL  
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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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### HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

#### Part 2-98: Particular requirements for humidifiers

#### 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 60335-2-98 consists of the second edition (2002) [documents 61/2231/FDIS and 61/2306/RVD], its amendment 1 (2004) [documents 61/2746/FDIS and 61/2797/RVD] and its amendment 2 (2008) [documents 61/3645/FDIS and 61/3685/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 2.2.

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 electric humidifiers.

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.

- Clause 1: Electrode-type appliances and appliances with bare heating elements are only allowed if they are for permanent connection to fixed wiring (Netherlands).
- 7.12.1: The minimum rated pressure is 1,0 MPa (Denmark, Sweden and Norway).
- 24.101: The requirement is not applicable (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 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 2 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.

(standards.iteh.ai)

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.

[https://standards.iteh.ai/catalog/standards/sist/9907d14a-c08a-42cb-bcd8-](https://standards.iteh.ai/catalog/standards/sist/9907d14a-c08a-42cb-bcd8-8d5c91320018/iec-60335-2-98-2002+A1-2004+A2-2008-CSV)

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 2-98: Particular requirements for humidifiers

### 1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric humidifiers for household and similar use, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances.

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

- appliances that atomize water;
- appliances that evaporate water by heating;
- appliances that blow air through a moist element.

Appliances that are 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.

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

- appliances for heating liquids (IEC 60335-2-15);
- humidifiers intended for use with heating, ventilation or air-conditioning systems (IEC 60335-2-88);
- appliances for medical purposes (IEC 60601);
- 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).

### 2 Normative references

This clause of Part 1 is applicable.



### 3 Definitions

This clause of Part 1 is applicable except as follows.

#### 3.1.6 Addition:

NOTE 101 For **electrode-type appliances**, if no current is assigned to the appliance, the **rated current** is calculated from the **rated voltage** and the mean value of the power input during the first 2 min of operation, the appliance being supplied at **rated voltage** and operated under **normal operation**.

#### 3.1.9 Replacement:

##### **normal operation**

operation of the appliance under the following conditions

The appliance is filled with the maximum quantity of water in accordance with the instructions, unless the appliance is connected to the water mains and the supply is automatically controlled.

For **electrode-type appliances**, the water has a resistivity of approximately 500  $\Omega\text{cm}$  at a temperature of 20 °C.

NOTE 101 The appropriate resistivity may be obtained by adding sodium chloride to the water.

#### 3.101

##### **electrode-type appliance**

appliance in which a conductive liquid is heated by a current flowing through it

### 4 General requirements

<https://standards.iteh.ai/catalog/standards/sist/9907d14a-c08a-42cb-bcd8-660335-2-98-2002amd1-2004amd2-2008-csv>  
This clause of Part 1 is applicable.

### 5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

#### 5.6 Addition:

*Humidistats are short-circuited or rendered inoperative.*

### 6 Classification

This clause of Part 1 is applicable.

### 7 Marking and instructions

This clause of Part 1 is applicable except as follows.

#### 7.1 Modification:

**Electrode-type appliances** shall be marked with their **rated power input**.

*Addition:*

Appliances that are manually filled shall have a level mark or other means to indicate when they are filled to their rated capacity, unless they cannot be filled beyond this capacity. This indication shall be visible when the appliance is being filled.

- 2 | If the temperature of the water vapour exceeds 60 °C, the appliance shall be marked with symbol IEC 60417-5597 (2002-10) or with the substance of the following:

CAUTION: Hot water vapour

NOTE 101 This symbol is a warning sign and the rules of ISO 3864-1 apply.

**7.6** *Addition:*



[symbol IEC 60417-5597 (2002-10)]

steam

**7.12** *Addition:*

The instructions shall include details regarding filling, cleaning and descaling.

The instructions shall state the substance of the following:

- care should be taken when using the appliance due to the emission of hot water vapour;
- unplug the appliance during filling and cleaning.

The instructions for **electrode-type appliances** shall include the substance of the following:

- the composition and quantity of solution to be used and advice not to use an excessive amount of salt;
- the appliance is not to be operated from a d.c. supply.

- 2 | If symbol IEC 60417-5597 (2002-10) is used, its meaning shall be explained.

**7.12.1** *Addition:*

The installation instructions for appliances intended to be connected to the water mains shall state the maximum permissible water pressure in pascals.

2 | **7.15** *Addition:*

Symbol IEC 60417-5597 (2002-10) or the marking relating to hot water vapour shall be near the vapour outlet.

## **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 except as follows.

#### 10.1 Addition:

For **electrode-type appliances**, the negative deviation is not limited.

### 11 Heating

This clause of Part 1 is applicable except as follows.

#### 11.4 Modification:

**Electrode-type appliances** are supplied at 1,06 times **rated voltage**.

*Addition:*

If the temperature rise limits are exceeded in appliances incorporating motors, transformers or **electronic circuits**, and the power input is lower than the **rated power input**, the test is repeated with the appliance supplied at 1,06 times **rated voltage**.

#### 11.6 Replacement:

**Combined appliances** are operated as **heating appliances**.

#### 11.7 Replacement:

Appliances are operated until steady conditions are established.

#### 11.8 Addition:

The temperature rise limits of motors, transformers and components of **electronic circuits**, including parts directly influenced by them, may be exceeded when the appliance is operated at 1,15 times **rated power input**.

### 12 Void

### 13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable except as follows.

#### 13.1 Modification:

**Electrode-type appliances** are supplied at 1,06 times **rated voltage**.

#### 13.2 Addition:

For **electrode-type appliances**, the leakage current is measured between a metallic mesh placed in the water vapour, 10 mm from the outlet, and **accessible metal parts** including the metal foil.

The leakage current shall not exceed 0,25 mA.

### 14 Transient overvoltages

This clause of Part 1 is applicable.

## 15 Moisture resistance

This clause of Part 1 is applicable except as follows.

### 15.2 Addition:

*In case of doubt, the spillage test is carried out with the appliance deviating from the normal position of use by an angle not exceeding 5°.*

*Appliances intended to be connected to the water mains are operated until the maximum water level is reached. The inlet valve is held open and the filling continued for 15 min after the first evidence of overflow or until the inflow stops automatically.*

## 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

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(standards.iteh.ai)

This clause of Part 1 is not applicable.

## 19 Abnormal operation

[IEC 60335-2-98:2002+AMD1:2004+AMD2:2008 CSV](https://standards.iteh.ai/catalog/standards/sist/9907d14a-c08a-42cb-bcd8-a62c91ca2061/iec-60335-2-98-2002amd1-2004amd2-2008-csv)  
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This clause of Part 1 is applicable except as follows.

### 19.2 Addition:

*The container of **electrode-type appliances** is filled with a saturated solution of NaCl at 20 °C ± 5 °C, the appliance being supplied at **rated voltage**.*

NOTE 101 A solution is saturated when no more salt can be dissolved.

### 19.3 Addition:

*The test is not applicable to **electrode-type appliances**.*

### 19.4 Modification:

*Appliances are only filled with sufficient water to cover the heating elements.*

*Fans are switched off.*

## 20 Stability and mechanical hazards

This clause of Part 1 is applicable.