

Household and similar electrical appliances — Safety —

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

ICS 97.030

National foreword

This British Standard is the UK implementation of EN 60335-2-98:2003+A2:2008. It is identical with IEC 60335-2-98:2002, including amendments 1:2004 and 2:2008. It supersedes BS EN 60335-2-98:2003 which will be withdrawn on 1 August 2013.

The start and finish of text introduced or altered by IEC amendment is indicated in the text by tags **A1** **A1**. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment 1 is indicated by **A1** **A1**.

The UK participation in its preparation was entrusted by Technical Committee CPL/61, Safety of household electrical appliances, to Subcommittee CPL/61/07, Heated appliance group.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Amendments issued since publication

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English version

**Household and similar electrical appliances -
Safety
Part 2-98: Particular requirements for humidifiers
(EC 60335-2-98:2002)**

Appareils électrodomestiques
et analogues -
Sécurité
Partie 2-98: Règles particulières
pour les humidificateurs
(CEI 60335-2-98:2002)

Sicherheit elektrischer Geräte für den
Hausgebrauch und ähnliche Zwecke
Teil 2-98: Besondere Anforderungen
für Luftbefeuchter
(EC 60335-2-98:2002)

This European Standard was approved by CENELEC on 2003-05-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of the International Standard IEC 60335-2-98:2002 (61/2231/FDIS), prepared by IEC Technical Committee 61, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60335-2-98 on 2003-05-01.

This European Standard replaces EN 60335-2-98:1997 + A1:2000.

The following dates are applicable:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2004-05-01
- date on which national standards conflicting with the EN have to be withdrawn (dow) 2006-05-01

This part 2 has to be used in conjunction with EN 60335-1, Household and similar electrical appliances – Safety – Part 1: General requirements. It was established on the basis of the 2002 edition of that standard. Amendments and revisions of Part 1 have also to be taken into account and the dates when such changes become applicable will be stated in the relevant amendment or revision of Part 1.

This part 2 supplements or modifies the corresponding clauses of EN 60335-1, so as to convert it into the European 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 of Part 1 is to be adapted accordingly.

NOTE 1 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.;
- subclauses, notes and annexes that are additional to those in the IEC standard are prefixed with the letter Z.

NOTE 2 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.

Special national conditions causing a deviation from this European Standard are listed in annex ZA and are in addition to those in EN 60335-1.

There are no national deviations from this European Standard, other than those listed in Annex ZB to EN 60335-1.

Introduction

An investigation by CENELEC TC 61 has shown that all risks from products within the scope of this standard are fully covered by the Low Voltage Directive, 73/23/EEC. For products having mechanical moving parts, a risk assessment in accordance with the Machinery Directive, 98/37/EC, has shown that the risks are mainly of electrical origin and consequently this directive is not applicable. However, the relevant essential safety requirements of the Machinery Directive are covered by this standard together with the principal objectives of the Low Voltage Directive.

Endorsement notice

The text of the International Standard IEC 60335-2-98:2002 was approved by CENELEC as a European Standard without any modification.

Foreword to amendment A1

The text of document 61/2746/FDIS, future amendment 1 to IEC 60335-2-98:2002, prepared by the IEC Technical Committee 61, Safety of household and similar electrical appliances, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A1 to EN 60335-2-98:2003 on 2004-12-01.

The following dates are applicable:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2005-09-01
- date on which national standards conflicting with the amendment have to be withdrawn (dow) 2007-12-01

This amendment supplements or modifies the corresponding clauses of EN 60335-2-98:2003.

There are no special national conditions causing a deviation from this amendment.

There are no national deviations from this amendment.

Endorsement notice

The text of amendment 1:2004 to the International Standard IEC 60335-2-98:2002 was approved by CENELEC as an amendment to the European Standard without any modification.

Foreword to amendment A2

The text of document 61/3645/FDIS, future amendment 2 to IEC 60335-2-98:2002, prepared by IEC TC 61, Safety of household and similar electrical appliances, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as amendment A2 to EN 60335-2-98:2003 on 2008-08-01.

The following dates are applicable:

- latest date by which the amendment has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2009-05-01
- date on which national standards conflicting with the amendment have to be withdrawn (dow) 2013-08-01

This amendment supplements or modifies the corresponding clauses of EN 60335-2-98:2003.

There are no special national conditions causing a deviation from this amendment.

There are no national deviations from this amendment.

Endorsement notice

The text of amendment 2:2008 to the International Standard IEC 60335-2-98:2002 was approved by CENELEC as an amendment to the European Standard without any modification.

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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.

A1) 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. **A1)**

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 2-98: 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

- A1** – appliances for heating liquids (IEC 60335-2-15); **A1**
- 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

- A2** – 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. **A2**

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

- 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 Ωcm 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

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.

 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. 

A₂ 7.6 *Addition:*

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

steam **A₂****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.

A₂ If symbol IEC 60417-5597 (2002-10) is used, its meaning shall be explained. **A₂**

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.

A₂ 7.15 *Addition:*

Symbol IEC 60417-5597 (2002-10) or the marking relating to hot water vapour shall be near the vapour outlet. **A₂**

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 **A₁** *Addition:*

For **electrode-type appliances**, the negative deviation is not limited. **A₁**

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

This clause of Part 1 is not applicable.

19 Abnormal operation

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.

21 Mechanical strength

This clause of Part 1 is applicable.

22 Construction

This clause of Part 1 is applicable except as follows.

22.6 Addition:

Drain holes shall be at least 5 mm in diameter or 20 mm² in area with a minimum dimension of at least 3 mm.

Compliance is checked by measurement.

22.33 Modification:

Liquids may be heated using electrodes and may be in direct contact with their **live parts**.

22.101 The vapour outlet of appliances incorporating means for heating water shall be free from obstructions that could give rise to a significant pressure within the container. The container shall be vented to the atmosphere, the aperture being at least 5 mm in diameter or 20 mm² in area with a minimum dimension of at least 3 mm.

Compliance is checked by inspection and by measurement.

22.102 Appliances for wall mounting shall have reliable provision for fixing to a wall, independent of the connection to the water mains.

Compliance is checked by inspection.

22.103 Electrode-type appliances shall be constructed to ensure that when the filling aperture of the container is open, both electrodes are disconnected to provide **all-pole disconnection** under overvoltage category III conditions.

\square_{A1} This requirement does not apply to an appliance that requires the withdrawal of an appliance connector in order to gain access to the filling aperture. \square_{A1}

Compliance is checked by inspection.

22.104 Appliances intended to be connected to the water mains shall withstand the water pressure expected in normal use.

Compliance is checked by connecting the appliance to a water supply having a pressure equal to twice the maximum inlet water pressure or 1,2 MPa, whichever is the higher, for a period of 5 min.

There shall be no leakage.

23 Internal wiring

This clause of Part 1 is applicable.

24 Components

This clause of Part 1 is applicable except as follows.

24.101 Thermal cut-outs incorporated in appliances for compliance with Clause 19 shall not be self-resetting.

Compliance is checked by inspection.

25 Supply connection and external flexible cords

This clause of Part 1 is applicable.

26 Terminals for external conductors

This clause of Part 1 is applicable.

27 Provision for earthing

This clause of Part 1 is applicable.

28 Screws and connections

This clause of Part 1 is applicable.

29 Clearances, creepage distances and solid insulation

This clause of Part 1 is applicable except as follows.

29.2 Addition:

For **electrode-type appliances**, the microenvironment of the insulation supporting the electrodes is pollution degree 3.

30 Resistance to heat and fire

This clause of Part 1 is applicable except as follows.

30.2.2 Not applicable.

31 Resistance to rusting

This clause of Part 1 is applicable.

32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.

Annexes

The annexes of Part 1 are applicable.

Annex ZA (normative)

Special national conditions

Addition:

<u>Clause</u>	<u>Special national condition</u>
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25.3	Netherlands
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Class I electrode-type appliances and class I appliances with bare heating elements shall only be intended to be permanently connected to fixed wiring.

Bibliography

The bibliography of Part 1 is applicable except as follows.

Addition:

IEC 60335-2-88, *Household and similar electrical appliances – Safety – Part 2-88: Particular requirements for humidifiers intended for use with heating, ventilation or air-conditioning systems*

ISO 3864-1, *Graphical symbols – Safety colours and safety signs – Part 1: Design principles for safety signs in workplaces and public areas*

ISO 13732-1, *Ergonomics of the thermal environment – Methods for the assessment of human responses to contact with surfaces – Part 1: Hot surfaces*

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