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Household and similar electrical appliances - Safety - Part 2-27: Particular requirements for appliances for skin exposure to ultraviolet and infrared radiation

Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke - Teil 2-27: Besondere Anforderungen für Hautbestrahlungsgeräte mit Ultraviolett- und Infrarotstrahlung

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Appareils électrodomestiques et analogues - Sécurité - Partie 2-27: Règles particulières pour les appareils d'exposition de la peau aux rayonnements ultraviolets et infrarouges

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 60335-2-27

June 2010

ICS 97.170; 13.120

Supersedes EN 60335-2-27:2003 + A1:2008 + A2:2008

English version

**Household and similar electrical appliances -
Safety -
Part 2-27: Particular requirements for appliances for skin exposure
to ultraviolet and infrared radiation**
(IEC 60335-2-27:2002, modified + A1:2004, modified + A2:2007, modified)

Appareils électrodomestiques
et analogues -
Sécurité -
Partie 2-27: Règles particulières
pour les appareils d'exposition
de la peau aux rayonnements ultraviolets
et infrarouges
(CEI 60335-2-27:2002, modifiée +
A1:2004, modifiée + A2:2007, modifiée)

Sicherheit elektrischer Geräte
für den Hausgebrauch und ähnliche
Zwecke -
Teil 2-27: Besondere Anforderungen
für Hautbestrahlungsgeräte
mit Ultraviolett- und Infrarotstrahlung
(IEC 60335-2-27:2002, modifiziert +
A1:2004, modifiziert + A2:2007,
modifiziert)

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This European Standard was approved by CENELEC on 2010-06-01. 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, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the 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 60335-2-27:2002 (61/2181/FDIS), prepared by IEC TC 61, Safety of household and similar electrical appliance, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 60335-2-27 on 2003-05-01.

The texts of IEC 60335-2-27:2002/A1:2004 and IEC 60335-2-27:2002/A2:2007, together with common modifications prepared by CENELEC Technical Committee TC 61, were approved by CENELEC on 2008-10-01.

During the meeting of CENELEC TC 61 in London in December 2008, it was decided to submit a consolidated text to a formal vote.

The text of the draft was circulated in July 2009 and was approved by CENELEC as a new edition of EN 60335-2-27 on 2010-06-01.

This European Standard supersedes EN 60335-2-27:2003 + A1:2008 + A2:2008.

In this document, the modifications to the International Standard are indicated by a vertical line in the left margin.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

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) 2010-12-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2011-10-01

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: *Particular requirements for electric appliances for skin exposure to ultraviolet and infrared radiation*.

When a particular subclause of Part 1 is not mentioned in this Part 2, that subclause applies as far as reasonable. When this standard states “addition”, “modification” or “replacement”, the relevant text in 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.

There are no special national conditions causing a deviation from this European Standard, other than those listed in Annex ZA to EN 60335-1.

National deviations from this European Standard are listed in Annex ZB and are in addition to those in EN 60335-1.

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Introduction

It has been assumed in the drafting of this European 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 covers appliances used for intentional tanning. Irradiance limit values are not to be used as safety guidelines for non-intentional UV-exposure.

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.

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, 2006/95/EC. For products having mechanical moving parts, a risk assessment in accordance with the Machinery Directive, 2006/42/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.

1 Scope

This clause of Part 1 is replaced by the following.

This European Standard deals with the safety of electrical appliances incorporating emitters for exposing the skin to ultraviolet or infrared radiation, for household and similar use, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances.

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 in tanning salons, beauty parlours and similar premises, are also within the scope of this standard.

As far as 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 knowledge
 prevents them from using the appliance safely without supervision or instruction;
- children playing with the appliance.

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;
- IEC 60598-1 is applicable as far as is reasonable.

NOTE 102 This standard does not apply to

- appliances for medical 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.

3.101

ultraviolet emitter (UV emitter)

radiating source constructed to emit non-ionizing electromagnetic energy at wavelengths of 400 nm or less

NOTE A fluorescent UV lamp for tanning is an example of a **UV emitter**.

3.102

infrared emitter (IR emitter)

radiating source constructed to emit electromagnetic energy at wavelengths of 800 nm or longer

3.103

effective irradiance

irradiance of electromagnetic radiation weighted according to a specified action spectrum

3.104**UV filter**

device used to reduce or modify the ultra-violet radiation passing through it by altering the spectral distribution of the radiation

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.

5.1 Addition:

*Appliances with **UV emitters** are tested as **motor-operated appliances**.*

*Appliances with **IR emitters** only are tested as **heating appliances**.*

6 Classification

This clause of Part 1 is applicable except as follows.

6.101 Appliances shall be one of the following types with respect to the type of ultraviolet radiation:

- **UV type 1 appliance;**
- **UV type 2 appliance;**
- **UV type 3 appliance;**
- **UV type 4 appliance.**

Compliance is checked by inspection and by the relevant tests.

NOTE **UV type 1 appliances** and **UV type 2 appliances** are intended to be used in tanning salons, beauty parlours and similar premises, under supervision of appropriately trained persons.

UV type 3 appliances may be used by unskilled persons.

UV type 4 appliances are intended to be used following medical advice.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 Addition:

Appliances having **UV emitters** shall be marked with the appropriate UV type number in the following form:

UV type X

NOTE Z101 X is replaced by the appropriate number.

Appliances having fluorescent UV lamps for tanning shall be marked with the fluorescent UV lamp equivalency code range. This equivalency code range identifies the fluorescent UV lamps for tanning that shall be used in the appliance.

NOTE 101 Details of the fluorescent UV lamp code that is marked on the lamp are given in IEC 61228 and are reproduced in Annex CC for information. An example of the fluorescent UV lamp equivalency code range to be marked on the appliance is given in 22.111.

For **UV emitters** other than fluorescent UV lamps for tanning, the appliance shall be marked with the type reference of the emitters that are recommended for use.

Appliances having **UV emitters** shall be marked with the substance of the following:

WARNING: Ultraviolet radiation may cause injury to eyes and skin, such as skin aging and eventually skin cancer. Read instructions carefully. Wear the protective goggles provided. Certain medicines and cosmetics may increase sensitivity.

NOTE 102 For appliances having **UV emitters** intended only for use in tanning salons, beauty parlours and similar premises, this warning may be given on a permanent label intended to be fixed on the wall adjacent to the UV appliance. The wording "Read instructions carefully" may be replaced by "Consult the attendant for further information".

UV type 4 appliances shall be marked with the substance of the following:

WARNING: Only to be used following medical advice.

Appliances having **UV emitters** with a luminance exceeding 100 000 cd/m² shall be marked with the substance of the following:

WARNING: Intense light. Do not stare at the emitter.

NOTE 103 The method of measuring luminance is given in Annex AA.

NOTE 104 If these warnings are combined, the word "warning" need not be repeated.

7.12 Addition:

The instructions shall give clear information with regard to the proper use of the appliance.

UV appliances shall include a statement that non-users, especially children, must not be present when the appliance is being operated.

The instructions for appliances having UV emitters shall include the substance of the following:

– a statement that UV appliances are not to be used by:

- persons under the age of 18 years;
- persons who tend to freckle;
- persons with a natural red hair colour;
- persons having abnormal discoloured patches on the skin;
- persons having more than 16 moles (2 mm or more in diameter) on the body;
- persons having any atypical moles (atypical moles are defined as asymmetrical moles larger than 5 mm in diameter with variable pigmentation and irregular borders; in case of doubt, seek medical advice);
- persons suffering from sunburn;
- persons not able to tan at all or not able to tan without burning when exposed to the sun;
- persons that burn easily when exposed to the sun;

- persons having a history of frequent severe sunburn during childhood;
 - persons suffering from or previously suffering from skin cancer or predisposed to skin cancer;
 - persons having a first-degree relative with a history of melanoma;
 - persons under a doctor's care for diseases that involve photosensitivity;
 - persons receiving photosensitising medications;
- a statement that exposures should not exceed a person's minimal erythema dose (MED), i.e. the minimal amount of UV radiation exposure required to cause perceptible reddening of the skin. If erythema (skin reddening) appears hours after any exposure, further exposure should cease. After one week, exposures could be restarted from the beginning of the schedule of exposure;
 - a statement that if unexpected side effects, such as itching, occur within 48 h of the first session of using a UV appliance, medical advice should be sought prior to further UV exposure;
 - information concerning the intended exposure distance (unless this is controlled by the construction of the UV appliance);
 - recommended schedule of exposure specifying duration and intervals (based on the **UV emitter** characteristics, distances and skin sensitivity);

NOTE 101 The recommended exposure time for the first test session for untanned skin is to correspond to a dose not exceeding 100 J/m², weighted according to the erythema action spectrum shown in Figure 101, or as a result of a test on a small area of the skin. The second and following sunbed exposures should be at least 10 min.

- recommended number of exposures that should not be exceeded in one year;

NOTE 102 As any exposure to UV radiation increases the risk of skin cancer, there is no safe value of maximum yearly dose, but it is recommended not to exceed 25 kJ/m², weighted according to the non-melanoma skin cancer action spectrum shown in Figure 101 and taking into account the recommended schedule of exposure.

- a statement that the appliance must not be used if the timer is faulty or the filter is broken or removed;
- identification of alternative components that may influence the ultraviolet radiation, such as filters and reflectors;
- identification of replaceable **UV emitters** and a statement that they are only to be replaced by types marked on the appliance. For fluorescent UV lamps for tanning, it shall be stated that they are only to be replaced by types marked with an equivalency code, the UV component of which falls within the UV component equivalency code range that is marked on the appliance. In this case, an example of the equivalency code shall be given and the UV component aspect of the fluorescent UV lamp for tanning equivalency code shall be explained.

The instructions for appliances having **UV emitters** shall contain the substance of the following information and precautions:

- ultraviolet radiation from the sun or from UV appliances can cause skin or eye damage that may be irreversible. These biological effects depend upon the quality and quantity of the radiation as well as the skin sensitivity of the individual;
- the skin may develop sunburn after overexposure. Excessively repeated exposures to ultraviolet radiation from the sun or from UV appliances may lead to premature ageing of the skin as well as