



Irish Standard  
I.S. EN 61558-2-5:2010

Safety of transformers, reactors, power supply units and combinations thereof  
-- Part 2-5: Particular requirements and tests for transformer for shavers, power supply units for shavers and shaver supply units (IEC 61558-2-5:2010 (EQV))

## I.S. EN 61558-2-5:2010

*Incorporating amendments/corrigenda issued since publication:*

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 61558-2-5**

July 2010

ICS 29.180

Supersedes EN 61558-2-5:1998 + A11:2004

English version

**Safety of transformers, reactors, power supply units and combinations thereof -**

**Part 2-5: Particular requirements and tests for transformer for shavers, power supply units for shavers and shaver supply units  
(IEC 61558-2-5:2010)**

Sécurité des transformateurs, bobines d'inductance, blocs d'alimentation et des combinaisons de ces éléments -  
Partie 2-5: Règles particulières et essais pour les transformateurs pour rasoirs, blocs d'alimentation incorporant un transformateur pour rasoirs et blocs d'alimentation pour rasoirs  
(CEI 61558-2-5:2010)

Sicherheit von Transformatoren, Drosseln, Netzgeräten und entsprechende Kombinationen -  
Teil 2-5: Besondere Anforderungen und Prüfungen an Transformatoren für Rasierer, Netzgeräte für Rasierer und Rasiersteckdosen-Einheiten  
(IEC 61558-2-5:2010)

This European Standard was approved by CENELEC on 2010-07-01. 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

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 96/353/FDIS, future edition 2 of IEC 61558-2-5, prepared by IEC TC 96, Transformers, reactors, power supply units and similar products for low voltage up to 1 100 V, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61558-2-5 on 2010-07-01.

This European Standard supersedes EN 61558-2-5:1998 + A1:2004.

The main changes consist of updating this part in accordance with EN 61558-1:2005 and adding power supply units to the scope.

This part has the status of a group safety publication in accordance with IEC Guide 104:1997, *The preparation of safety publications and the use of basic safety publications and group safety publications*.

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 were fixed:

- latest date by which the EN has to be implemented  
at national level by publication of an identical  
national standard or by endorsement (dop) 2011-04-01
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 2013-07-01

This part is intended to be used in conjunction with the latest edition of EN 61558-1 and its amendments. It is based on the second edition (2005) of that standard.

This part supplements or modifies the corresponding clauses in EN 61558-1, so as to convert that publication into the EN standard: *Particular requirements and test for transformer for shavers, power supply units for shavers and shaver supply units*.

A list of all parts of the EN 61558 series, under the general title: *Safety of transformers, reactors, power supply units and combinations thereof*, can be found on the CENELEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

Where a particular subclause of Part 1 is not mentioned in this part, that subclause applies as far as is reasonable. Where this part states "addition", "modification" or "replacement", the relevant text of Part 1 is to be adopted accordingly.

In this part, the following print types are used:

- requirements proper: in roman type;
- *test specifications: in italic type;*
- explanatory matters: in smaller roman type.

In the text of this part, the words in **bold** are defined in Clause 3.

Subclauses, notes, figures and tables additional to those in Part 1 are numbered starting from 101; supplementary annexes are entitled AA, BB, etc.

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directive 2006/95/EC.

Annex ZA has been added by CENELEC.

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### **Endorsement notice**

The text of the International Standard IEC 61558-2-5:2010 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 61558-2-16:2009	NOTE Harmonized as EN 61558-2-16:2009 (not modified).
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## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Annex ZA of Part 1 is applicable except as follows:

*Addition:*

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-62	1991	Environmental testing - Part 2: Test methods - Test Ef: Impact, pendulum hammer	EN 60068-2-62 <sup>1) 2)</sup>	1995
IEC 60670	Series	Boxes and enclosures for electrical accessories for household and similar fixed electrical installations	EN 60670	Series
IEC 61558-1	2005	Safety of power transformers, power supplies, reactors and similar products - Part 1: General requirements and tests	EN 61558-1 + corr. August	2005 2006

<sup>1)</sup> EN 60068-2-62 includes A1 to IEC 60068-2-62.

<sup>2)</sup> EN 60068-2-62 is superseded by EN 60068-2-75:1997, which is based on IEC 60068-2-75:1997.

## CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references.....	6
3 Terms and definitions .....	6
4 General requirements .....	6
5 General notes on tests.....	6
6 Ratings.....	7
7 Classification .....	7
8 Marking and other information.....	7
9 Protection against electric shock.....	8
10 Change of input voltage setting .....	8
11 Output voltage and output current under load .....	8
12 No-load output voltage.....	8
13 Short-circuit voltage.....	9
14 Heating.....	9
15 Short-circuit and overload protection .....	9
16 Mechanical strength.....	9
17 Protection against harmful ingress of dust, solid objects and moisture.....	10
18 Insulation resistance, dielectric strength, and leakage current .....	10
19 Construction .....	10
20 Components .....	12
21 Internal wiring .....	13
22 Supply connection and other external flexible cables or cords.....	13
23 Terminals for external conductors .....	13
24 Provision for protective earthing.....	13
25 Screws and connections .....	13
26 Creepage distances, clearances and distances through insulation .....	13
27 Resistance to heat, fire, and tracking .....	13
28 Resistance to rusting .....	14
Annexes.....	15
Bibliography .....	15
Table 101 – Values of heights of fall.....	10

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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### **SAFETY OF TRANSFORMERS, REACTORS, POWER SUPPLY UNITS AND COMBINATIONS THEREOF –**

#### **Part 2-5: Particular requirements and test for transformer for shavers, power supply units for shavers and shaver supply units**

### 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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
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- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61558-2-5 has been prepared by IEC technical committee 96: Transformers, reactors, power supply units and combinations thereof.

This second edition cancels and replaces the first edition published in 1997. It constitutes a technical revision. The main changes consist of updating this part in accordance with IEC 61558-1:2005 and adding power supply units to the scope.

This part has the status of a group safety publication in accordance with IEC Guide 104: 1997, *The preparation of safety publications and the use of basic safety publications and group safety publications*.



The text of this standard is based on the following documents:

FDIS	Report on voting
96/353/FDIS	96/360/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with ISO/IEC Directives, Part 2.

This part is intended to be used in conjunction with the latest edition of IEC 61558-1 and its amendments. It is based on the second edition (2005) of that standard.

This part supplements or modifies the corresponding clauses in IEC 61558-1, so as to convert that publication into the IEC standard: *Particular requirements and test for transformer for shavers, power supply units for shavers and shaver supply units*.

A list of all parts of the IEC 61558 series, under the general title: *Safety of transformers, reactors, power supply units and combinations thereof*, can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

Where a particular subclause of Part 1 is not mentioned in this part, that subclause applies as far as is reasonable. Where this part states "addition", "modification" or "replacement", the relevant text of Part 1 is to be adopted accordingly.

In this part, the following print types are used:

- requirements proper: in roman type;
- *test specifications: in italic type*;
- explanatory matters: in smaller roman type.

In the text of this part, the words in **bold** are defined in Clause 3.

Subclauses additional to those in Part 1 are numbered starting from 101; supplementary annexes are entitled AA, BB, etc.

The committee has decided that the contents of this publication will remain unchanged until the stability 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 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 this publication be adopted for implementation nationally not earlier than 12 months from the date of publication.

## SAFETY OF TRANSFORMERS, REACTORS, POWER SUPPLY UNITS AND COMBINATIONS THEREOF –

### Part 2-5: Particular requirements and test for transformer for shavers, power supply units for shavers and shaver supply units

#### 1 Scope

##### *Replacement:*

This part of IEC 61558 deals with the safety of **shaver transformers**, **power supply units** incorporating a **shaver transformer**, and **shaver supply units**. Shaver transformers incorporating **electronic circuits** are also covered by this standard.

NOTE 1 Safety includes electrical, thermal, mechanical and chemical aspects.

Unless otherwise specified, from here onward, the term **transformer** covers **shaver transformers** and **power supply units** incorporating **shaver transformers** and **shaver supply units**.

This part is applicable to **stationary**, single phase air-cooled (natural or forced), **independent** or **associated dry- type transformers**. The windings may be encapsulated or non-encapsulated.

This standard is applicable to **transformers** and **power supply** (linear) with **internal operational frequencies** not exceeding 500 Hz.

This standard used in combination with Part 2-16 for **switch mode power supply units (SMPS)** is also applicable to power supplies with **internal operational frequencies** higher than 500 Hz. Where the two requirements are in conflict the most severe take precedence.

The **rated supply voltage** does not exceed 250 V a.c., and the **rated supply frequency** does not exceed 500 Hz.

The **rated output** is not less than 20 VA and does not exceed 50 VA .

The **no-load output voltage** does not exceed 275 V a.c and the **rated output voltage** does not exceed 250 V a.c.

This part is not applicable to external circuits and their components intended to be connected to the input and output terminals or socket-outlets of the **transformers**.

**Transformers** covered by this part are used in applications where **double** or **reinforced insulation** between circuits is required by the installation rules for bathrooms and similar locations, or by the appliance specifications.

NOTE 2 **Transformers** covered by this part may be flush or surface mounted or incorporated in luminaires, mirrors, and other equipment containing one or more socket-outlet(s).

NOTE 3 Attention is drawn to the following:

- for **transformers** intended to be used in vehicles, on board ships, and aircraft, additional requirements (from other applicable standards, national rules, etc.) may be necessary;

- measures to protect the **enclosure** and the components inside the **enclosure** against external influences such as fungus, vermin, termites, solar-radiation, and icing should also be considered;
- the different conditions for transportation, storage, and operation of the **transformers** should also be considered;
- additional requirements in accordance with other appropriate standards and national rules may be applicable to **transformers** intended for use in special environments.

NOTE 4 Future technological development of **transformers** may necessitate a need to increase the upper limit of the frequencies, until then this part may be used as a guidance document.

## 2 Normative references

This clause of Part 1 is applicable except as follows:

*Addition:*

IEC 60068-2-62:1:1991, *Environmental testing – Part 2: Test methods – Test Ef: Impact, pendulum hammer*<sup>1</sup>

IEC 60670 (all parts), *Boxes and enclosures for electrical accessories for household and similar fixed electrical installations*

IEC 61558-1 :2005, *Safety of power transformers, power supplies, reactors and similar products – Part 1: General requirements and tests*

## 3 Terms and definitions

This clause of Part 1 is applicable except as follows:

*Addition:*

### 3.1.101

#### **shaver transformer**

**isolating transformer** for fixed installation and with a limited output, designed to supply electric shavers, toothbrushes, and similar appliances rated 50 VA or less used in a bathroom. It supplies only one shaver, or the like, at a time

### 3.1.102

#### **shaver supply unit**

accessory embodying a **shaver transformer** or a **power supply unit** incorporating a **shaver transformer**, and one or more socket outlets allowing the use of only one plug at a time

## 4 General requirements

This clause of Part 1 is applicable.

## 5 General notes on tests

This clause of Part 1 is applicable.

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<sup>1</sup> This publication was withdrawn and replaced by IEC 60068-2-75 (1997), but for the purposes of this standard, the IEC 60068-2-62 is cited.

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