AS/NZS 60335.2.9:2020

Australian/New Zealand Standard™

Household and similar electrical appliances—Safety

Part 2.9: Particular requirements for grills, toasters and similar portable cooking appliances (IEC 60335-2-9 Ed 7, MOD)

currently in preview, click buy full version

STANDARDS Australia

STANDARDS NEW ZEALAND PAEREWA AOTEAROA

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-002, Safety of Household and Similar Electrical Appliances and Small Power Transformers. It was approved on behalf of the Council of Standards Australia on 16 June 2020 and by the New Zealand Standards Approval Board on 3 June 2020.
This Standard was published on 26 June 2020.

The following are represented on Committee EL-002:

Association of Accredited Certification Bodies
Australian Industry Group
Business New Zealand
Consumer Electronic Suppliers Association, Australia
Consumers' Federation of Australia
Electrical Regulatory Authorities, Australia
Electrical consultants
Engineers Australia
JAS-ANZ
National Retailers Association (Australia)
New Zealand Electric Fence Energizer Manufacturers Standards Group
Testing Interests New Zealand
WorkSafe, New Zealand

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Site at www.standards.org.au or Standards New Zealand web site at www.standards.govt.nz and looking up the relevant Standard in the on-line catalogue.

For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of Standards Australia or the New Zealand Standards Executive at the address shown on the back cover.

This Standard was issued in draft form for comment as DR 19916.

currently in preview, click buy full version

Australian/New Zealand Standard™

Household and similar electrical appliances—Safety

Part 2.9: Particular requirements for grills, toasters and similar portable cooking appliances (IEC 60335-2-9 Ed 7, MOD)

Originated in Australia in part as AS C101-1937.
Originated in New Zealand in part as NZS 683-1949.
Jointly revised and redesignated AS/NZS 3350.2.9:1996.
Second edition 1999.
Jointly revised and designated AS/NZS 60335.2.9:2002.
Jointly revised and designated AS/NZS 60335.2.9:2009.
Jointly revised and redesignated AS/NZS 60335.2.9:2014.
Jointly revised and redesignated AS/NZS 60335.2.9:2020.

COPYRIGHT

© Standards Australia Limited

© The Crown in right of New Zealand, administered by the New Zealand Standards Executive

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Australia) or the Copyright Act 1994 (New Zealand).

ISBN 978 1 76072 905 9

currently in preview, click buy full version

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

AS/NZS 60335.2.9:2020

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2.9: Particular requirements for grills, toasters and similar portable cooking appliances

Foreword

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-002 - Safety of Household and Similar Electrical Appliances and Small Power Transformers to supersede AS/NZS 60335.2.9:2014 three years from the date of publication of this Standard. During this period AS/NZS 60335.2.9:2014 will also remain current. Regulatory authorities that reference this Standard in regulation may apply these requirements at a different time. Users of this Standard should consult with these authorities to confirm their requirements.

The objective of this Standard is to provide manufacturers, designers, regulatory authorities, testing laboratories and similar organizations with safety requirements designed to give the user protection against hazards that might occur during normal operation and abnormal operation of the appliance and which may be used as the basis for approval for sale or for connection to the electricity supply mains in Australia and New Zealand.

The text of IEC 60335-2-9 Ed 7, prepared by IEC Technical Subcommittee TC 61, was submitted to the Standards Australia/Standards New Zealand Combined Procedure (dual public comment and committee vote) for adoption of the IEC standard as a Standards Australia/Standards New Zealand joint standard.

The principal changes in this edition as compared with the 2014 edition of AS/NZS 60335.2.9 are as follows (minor changes are not listed):

– the text has been aligned with the 2011 edition of Part 1;

– revises the abnormal tests for a toaster (19.11.2, 19.102).

This Standard is an adoption with national modifications of the seventh edition of IEC 60335-*2-9, Household and similar electrical appliances – Safety – Part 2-9: Particular requirements for grills, toasters and similar portable cooking appliances.* It has been varied as indicated to take account of Australian and New Zealand conditions.

This part 2 has to be used in conjunction with the latest edition of AS/NZS 60335.1 *Household and similar electrical appliances – Safety – Part 1: General requirements* and its Amendments. It was established on the basis of AS/NZS 60335.1:2011.

This part 2 supplements or modifies the corresponding clauses of AS/NZS 60335.1 so as to convert it into the Australian/New Zealand Standard: Safety requirements for grills, toasters and similar portable cooking appliances.

Where 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 letters AZ.

COPYRIGHT

currently in preview, click buy for full version

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.

p NOTE 3 In this document, p is used in the margin to indicate instructions for preparing a consolidated version.

The essential safety requirements in AS/NZS 3820[1] that could be applicable to requirements for grills, toasters and similar portable cooking appliances are covered by this standard.

The national variations to IEC 60335-2-9 Ed 7 form the Australian and New Zealand national variations for purposes of the IECEE scheme for recognition of results of testing to standards for safety of electrical equipment (the CB scheme).

currently in preview, click buy full versi

1 AS/NZS 3820 *Essential safety requirements for electrical equipment*

COPYRIGHT

The text of the International Standard IEC 60335-2-9 Ed 7 was approved as a joint Australia/New Zealand Standard with the agreed national variations as given below.

AUSTRALIAN NATIONAL VARIATIONS

The following national variations to this Part 2 are additional to those listed in the national variations in AS/NZS 60335.1:2011.

7 Marking and instructions

p 7.1 After the first paragraph *insert* the following variation:

Toasters shall be marked with the substance of the following.

The bread may burn, therefore do not use the **toaster** near or below combustible material, such as curtains. The **toaster** should be attended when in use.

p 7.12 In the third paragraph, *delete* the fourth dashed item

p 7.15 After the first paragraph *insert* the following variations:

The marking relating to **toasters** shall be

- for **toasters** fitted with a **supply cord**, permanently attached to the **supply cord** or be permanently marked on the outside of the appliance;
- for **toasters** provided with an appliance inlet, permanently marked on the appliance inlet or be permanently marked on the outside of the appliance near the appliance inlet.

22 Construction

p 22.113 *Replace* the text by the following.

Toasters having an ejector mechanism shall be constructed so that they switch off automatically after the normal toasting time even if the ejector mechanism is blocked by the bread.

Furthermore, **toasters** having an ejector mechanism shall be constructed so that they switch off automatically after the normal toasting time even if the operating lever is held down. This requirement is not applicable to **toasters** having an ejector mechanism if the operating lever is recessed to avoid it being inadvertently held down by a vertically moving roller door or the like.

– *Compliance is checked by inspection and by the following tests for ejector mechanisms blocked by the bread and for **toasters** not having a recessed operating lever.*

– *The **toaster** is supplied at **rated voltage** and the ejector mechanism is prevented from releasing. On the completion of the normal toasting time, heating elements shall be automatically disconnected from the supply by at least an **all-pole disconnection**, micro-disconnection. However, a single pole, micro-disconnection is allowed, provided heating elements are not accessible to the test probe 12 of IEC 61032.*

– *For **toasters** not having a recessed operating lever, the test is repeated, the **toaster** being supplied at **rated voltage** with the operating lever in any position that energises the heating element and with the lever prevented from releasing. On the completion of the normal toasting time, heating elements shall be automatically disconnected from the supply by at least an **all-pole disconnection**, micro-disconnection. However, a single pole, micro-disconnection is allowed, provided heating elements are not accessible to the test probe 12 of IEC 61032.*

25 Supply connection and external flexible cords

– **p 25.7** After the first paragraph of the addition *insert* the following variation.

COPYRIGHT

currently in preview, click buy full version

– **Supply cords** for **contact grills** shall not be PVC sheathed.

NEW ZEALAND NATIONAL VARIATIONS

The following national variations to this Part 2 are additional to those listed in the national variations in AS/NZS 60335.1:2011.

7 Marking and instructions

p 7.1 After the first paragraph *insert* the following variation:

Toasters shall be marked with the substance of the following.

The bread may burn, therefore do not use the **toaster** near or below combustible material, such as curtains. The **toaster** should be attended when in use.

p 7.12 In the third paragraph, *delete* the fourth dashed item

p 7.15 After the first paragraph *insert* the following variations:

The marking relating to **toasters** shall be

– for **toasters** fitted with a **supply cord**, permanently attached to the **supply cord** or be permanently marked on the outside of the appliance;

– for **toasters** provided with an appliance inlet, permanently marked on the appliance inlet or be permanently marked on the outside of the appliance near the appliance inlet.

22 Construction

p 22.113 *Replace* the text by the following.

Toasters having an ejector mechanism shall be constructed so that they switch off automatically after the normal toasting time even if the ejector mechanism is blocked by the bread.

Furthermore, **toasters** having an ejector mechanism shall be constructed so that they switch off automatically after the normal toasting time even if the operating lever is held down. This requirement is not applicable to **toasters** having an ejector mechanism if the operating lever is recessed to avoid it being inadvertently held down by a vertically moving roller door or the like.

– *Compliance is checked by inspection and by the following tests for ejector mechanisms blocked by the bread and for **toasters** not having a recessed operating lever.*

– *The **toaster** is supplied at **rated voltage** and the ejector mechanism is prevented from releasing. On the completion of the normal toasting time, heating elements shall be automatically disconnected from the supply by at least an **all-pole disconnection**, micro-disconnection. However, a single pole, micro-disconnection is allowed, provided heating elements are not accessible to the test probe 12 of IEC 61032.*

– *For **toasters** not having a recessed operating lever, the test is repeated, the **toaster** being supplied at **rated voltage** with the operating lever in any position that energises the heating element and with the lever prevented from releasing. On the completion of the normal toasting time, heating elements shall be automatically disconnected from the supply by at least an **all-pole disconnection**, micro-disconnection. However, a single pole, micro-disconnection is allowed, provided heating elements are not accessible to the test probe 12 of IEC 61032.*

COPYRIGHT

currently in preview, click buy full version

25 Supply connection and external flexible cords

– **p 25.7** After the first paragraph of the addition *insert* the following variation.

– **Supply cords** for **contact grills** shall not be PVC sheathed.

urrently in preview, click buy full versi

COPYRIGHT

Annex ANZ
(normative)
Normative references to international publications with their corresponding joint Australia/New Zealand 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 national variations the relevant joint Australia/New Zealand publications applies if the national variations are needed to ensure the safety of the appliance for Australia/New Zealand conditions. These international publications are indicated by (mod). If an international publication is not so indicated, then either it or the listed Australia/New Zealand publication may be used.

Publication	Year	Title	AS/NZS	Year
IEC 60068-2-52		*Environmental testing – Part 2-52: Tests – Test Kb: Salt mist, cyclic (sodium chloride solution)*		
IEC 60584-1		*Thermocouples – Part 1: EMF specifications and tolerances*		
ISO 3864-1		*Graphical symbols – Safety colours and safety signs – Part 1: Design principles for safety signs in workplaces and public areas*		

currently in preview, click buy full version

COPYRIGHT

NOTES

urrently in preview, click buy full versi

COPYRIGHT

CONTENTS

FOREWORD 4
INTRODUCTION 7
1 Scope 8
2 Normative references 9
3 Terms and definitions 9
4 General requirement 14
5 General conditions for the tests 14
6 Classification 14
7 Marking and instructions 14
8 Protection against access to live parts 16
9 Starting of motor-operated appliances 17
10 Power input and current 17
11 Heating 17
12 Void 21
13 Leakage current and electric strength at operating temperature 21
14 Transient overvoltages 22
15 Moisture resistance 22
16 Leakage current and electric strength 23
17 Overload protection of transformers and associated circuits 24
18 Endurance 24
19 Abnormal operation 24
20 Stability and mechanical hazards 26
21 Mechanical strength 26
22 Construction 27
23 Internal wiring 30
24 Components 30
25 Supply connection and external flexible cords 31
26 Terminals for external conductors 32
27 Provision for earthing 32
28 Screws and connections 32
29 Clearances, creepage distances and solid insulation 32
30 Resistance to heat and fire 32
31 Resistance to rusting 33
32 Radiation, toxicity and similar hazards 33
Annexes 40
Annex C (normative) Ageing test on motors 41
Annex R (normative) Software evaluation 42
Bibliography 43

Figure 101 – Examples of appliances 35
Figure 102 – Load for testing rotating spits 36

Figure 103 – Vessel for testing hotplates 37
Figure 104 – Vessel for testing induction hotplates 37
Figure 105 – Probe for measuring surface temperatures 38
Figure 106 – Front view of appliance with identification of excluded areas 39

Table 101 – Quantity of liquid in the vessel 10
Table 102 – Temperature rises for external surfaces 19

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-9: Particular requirements for grills, toasters and similar portable cooking appliances

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.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
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 60335-2-9 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This seventh edition cancels and replaces the sixth edition published in 2008, Amendment 1: 2012 and Amendment 2:2016. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

– aligns the text with IEC 60335-1, Ed 5, and its Amendments 1 and 2;
– revises the abnormal tests for a toaster (19.11.2, 19.102).

The text of this International Standard is based on the following documents:

FDIS	Report on voting
61/5797/FDIS	61/5838/RVD

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

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

A list of all parts in the IEC 60335 series, published under the general title *Household and similar electrical appliances – Safety*, can be found on the IEC website.

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 fifth edition (2010) 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 grills, toasters and similar portable cooking appliances*.

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 committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document 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 this publication be adopted for implementation nationally not earlier than 12 months nor later than 36 months from the date of its publication.

The following differences exist in the countries indicated below:

– 3.1.9: Different loads and test methods are used (USA).
– 5.101: If the appliance incorporates a motor, the motor is tested at rated voltage (USA).
– 7.12: Identification of the connector is to be marked on the appliance (USA).
– 11.2: 9,5 mm thick plywood is used for the test corner (USA).
– 11.7: The test duration is based on the quantity of food (USA).
– 11.8: A temperature rise of 100 K is allowed for the wall of the test corner (USA).
– 11.101: There are no surface temperature limits on toasters having a metallic enclosure unless they are under cabinet or wall mounted, in which case it is allowed for the temperatures to reach 100 °C if a proper marking is provided (USA).
– 15.2: A different solution is used and the test is not carried out on ovens, hotplates or cookers (USA).
– 15.101: Appliances are immersed to the marked level only (USA).
– 19.2: A 300 mm deep simulated cabinet is located 400 mm above the countertop (USA).
– 19.2: The test is different. Additional tests are carried out on hotplates and cookers (USA):
– 19.101: Different test methods and numbers of cycles are used (USA).
– 19.102: A combustible cloth is placed above the toaster and the residual bread is left in place (USA).
– 19.104: Disks having different sizes are used (USA).
– 20.101: The test is not carried out (USA).
– 21.101: The test is different (USA).
– 22.105: The requirement is not applicable (USA).
– 22.108: The test is different (USA).
– 22.110: The test is different (USA).
– 22.111: The test is not carried out (USA).
– 22.112: The test is not carried out (USA).
– 24.1.3: The test is not carried out (USA).
– 24.101: The test is not carried out (USA).
– 25.7: The free length of the supply cord is specified; in some cases, it is 1,8 m to 2,1 m for appliances intended to be connected to fixed socket-outlets, while in others it is 0,6 m to 2,1 m for appliances normally used on a table or similar surface (USA).

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 which 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 2-9: Particular requirements for grills, toasters and similar portable cooking appliances

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric **portable appliances** for household and similar purposes that have a cooking function such as baking, roasting and grilling, their **rated voltage** being not more than 250 V.

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

– **barbecues** for indoor use;
– **breadmakers**;
– **candy floss appliances**;
– **contact grills** (griddles);
– **cookers**;
– **food dehydrators**;
– **hotplates**;
– **induction wok hotplates**;
– **pop-corn makers**;
– **portable ovens**;
– **raclette grills**;
– **radiant grills**;
– **roasters**;
– **rotary grills**;
– **rotisseries**;
– **toasters**;
– **waffle irons**;

Examples are illustrated in Figure 101.

Appliances intended for normal household and similar use and that may also be used by laymen in shops, in light industry and on farms, are within the scope of this standard. However, if the appliance is intended to be used professionally to process food for commercial consumption, the appliance is not considered to be for household and similar use only.

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 knowledge

  prevents them from using the appliance safely without supervision or instruction;
– children playing with the appliance.