AS/NZS 61558.2.9:2025
IEC 61558-2-9:2024

STANDARDS NEW ZEALAND
TE MANA TAUTIKANGA O AOTEAROA

STANDARDS Australia

Australian/New Zealand Standard™

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

Part 2.9: Particular requirements and tests for transformers and power supply units for class III handlamps

AS/NZS 61558.2.9:2025

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 and Power Supplies. It was approved on behalf of Standards Australia's Standards Development and Accreditation Committee on 16 May 2025 and by the New Zealand Standards Approval Board on 12 June 2025.

This Standard was published on 27 June 2025.

The following are represented on Committee EL-002:

Association of Accredited Certification Bodies
Australian Industry Group
Australian Retailers Association
Building Commission NSW
Business New Zealand
Consumer Electronic Suppliers Association, Australia
Consumers' Federation of Australia
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National Retailers Association (Australia)
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This Standard was issued for comment as DR AS/NZS 61558.2.9:2025

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ISBN: 978 1 76175 293 3

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

Part 2.9: Particular requirements and tests for transformers and power supply units for class III handlamps

Originated in part, in Australia as AS C126-1939.
Second edition C126-1958.
Revised and redesignated AS 3126-1981 (withdrawn 1989).
Originated, in part, in Australia as AS C167-1962.
Revised and redesignated AS 3167-1981 (withdrawn 1987).
AS 3126-1981 and AS 3167-1981 were revised and redesignated AS 3108.1-1984, AS 3108.2-1984 and AS 3108.3-1984.
Revised, amalgamated and redesignated AS 3108-1990.
First published in New Zealand as NZS/AS 3108:1990.
Jointly revised and redesignated AS/NZS 3108:1994.
Jointly revised and redesignated, in part, as AS/NZS 61558.2.9:2003.
Second edition AS/NZS 61558.2.9:2011.
Jointly revised and redesignated as AS/NZS 61558.2.9:2025.

NOTES

AS/NZS 61558.2.9:2025

PREFACE

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 61558.2.9:2011 and its amendments for tungsten filament lamps three years from the date of its publication. During this period, it is anticipated that regulatory authorities will approve transformers and power supply units for class III handlamps for tungsten filament lamps to either standard. For transformers and power supply units for class III handlamps, excluding tungsten filament lamps, this standard is applicable from the date of publication.

The objective of this standard is to provide manufacturers, designers, regulatory authorities, testing laboratories, and similar organisations 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 61558-2-9, Ed. 3.0, prepared by IEC Technical Committee TC 96, 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 2011 edition of AS/NZS 61558.2.9 are as follows (minor changes are not listed):

(a) Adjustment of structure and references in accordance with AS/NZS 61558.1:2018;

(b) New symbol for power supply unit with linearly regulated output voltage;

(c) Document is not only valid for transformers for tungsten filament handlamps.

This standard is an adoption with national modifications of the third edition of IEC 61558-2-9, *Safety of transformers, reactors, power supply units and combinations thereof – Part 2-9: Particular requirements and tests for transformers and power supply units for class III handlamps*. 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 61558.1, *Safety of transformers, reactors, power supply units and combinations thereof – Part 1: General requirements and tests* and its amendments. It was established on the basis of AS/NZS 61558.1:2018.

This part 2 supplements or modifies the corresponding clauses of AS/NZS 615581.1 so as to convert it into the Australian/New Zealand Standard: Safety requirements and tests for transformers and power supply units for class III handlamps.

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, and so on;

– subclauses, notes and annexes that are additional to those in the IEC standard are prefixed with the letters AZ.

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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 and tests for transformers and power supply units for class III handlamps are covered by this standard.

The national variations to IEC 61558-2-9, Ed. 3.0 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).

The text of the international standard IEC 61558-2-9, Ed. 3.0 was approved as a joint Australia/New Zealand standard, noting the effect of national variations in AS/NZS 61558.1:2018.

AUSTRALIAN NATIONAL VARIATIONS

There are no national variations to this part 2 other than those listed in the national variations in AS/NZS 61558.1:2018.

NEW ZEALAND NATIONAL VARIATIONS

There are no national variations to this part 2 other than those listed in the national variations in AS/NZS 61558.1:2018.

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

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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 publication 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 60245-4	2011	*Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 4: Cords and flexible cables*	60245.4	2020
IEC 61558-1 (MOD)	2017	*Safety of transformers, reactors, power supply units and combinations thereof – Part 1: General requirements and tests*	61558.1	2018
IEC 61558-2-16	2021	*Safety of transformers, reactors, power supply units and combinations thereof – Part 2-16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units for general applications*	61558.2.16	2022

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 2-9: Particular requirements and tests for transformers and power supply units for class III handlamps

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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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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 61558-2-9 has been prepared by IEC technical committee 96: Transformers, reactors, power supply units and combinations thereof. It is an International Standard.

This third edition cancels and replaces the second edition published in 2010. This edition constitutes a technical revision.

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

a) adjustment of structure and references in accordance with IEC 61558-1:2017;
b) addition of a new symbol for power supply unit with linearly regulated output voltage;
c) document is not only valid for transformers for tungsten filament handlamps.

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

Draft	Report on voting
96/593/FDIS	96/597/RVD

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

The language used for the development of this document is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

It has the status of a group safety publication in accordance with IEC Guide 104.

This document is to be used in conjunction with IEC 61558-1:2017.

This document supplements or modifies the corresponding clauses in IEC 61558-1:2017, so as to convert that publication into the IEC standard: *Particular requirements and tests for transformers and power supply units for class III handlamps*.

A list of all parts in the IEC 61558 series published 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 this document states "*addition*", "*modification*" or "*replacement*", the relevant text of IEC 61558-1:2017 is to be adopted accordingly.

In this document, the following print types are used:

– requirements proper: in roman type;

– *test specifications: in italic type*;

– explanatory matter: in smaller roman type.

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

Subclauses, notes, figures and tables additional to those in IEC 61558-1:2017 are numbered starting from 101; supplementary annexes are entitled AA, BB, etc.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

IEC TC 96 has a group safety function in accordance with IEC Guide 104 for transformers other than those intended to supply distribution networks, in particular transformers and power supply units intended to allow the application of protective measures against electric shock as defined by TC 64, which is about Electrical installations and protection against electric shock, but in certain cases including the limitation of voltage and horizontal safety function for SELV, in accordance with IEC 60364-4-41.

The group safety function (GSF) is used because of responsibility for example for safety extra-low voltage (SELV) in accordance with IEC 61140:2016, 5.2.6 and IEC 60364-4-41:2005, 414.3.1 or control circuits in accordance with IEC 60204-1:2016, 7.2.4.

The group safety function is used for each part of IEC 61558-2 because different standards of the IEC 61558 series can be combined in one construction but in certain cases with no limitation of rated output power.

For example an auto-transformer in accordance with IEC 61558-2-13 can be designed with a separate SELV-circuit in accordance with the particular requirements for IEC 61558-2-6 relating to the general requirements of IEC 61558-1.

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

Part 2-9: Particular requirements and tests for transformers and power supply units for class III handlamps

1 Scope

Replacement:

This part of IEC 61558 deals with the safety of **transformers for class III handlamps** and **power supply units incorporating transformers for class III handlamps**. **Transformers** incorporating **electronic circuits** are also covered by this document.

NOTE 1 Safety includes electrical, thermal and mechanical aspects.

Unless otherwise specified, from here onward, the term **transformer** covers **transformers for class III handlamps** and **power supply units incorporating transformers for class III handlamps**.

For **power supply units** (linear) this document is applicable. For **switch mode power supply units** IEC 61558-2-16 is applicable together with this document. Where two requirements are in conflict, the most severe takes precedence.

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

The **rated supply voltage** does not exceed 1 000 V AC and the **rated supply frequency** and the **internal operating frequencies** do not exceed 500 Hz.

Transformers have the following additional characteristics:

– **the no-load output voltage** and the **rated output voltage** do not exceed 50 V AC or 120 V ripple-free DC;
– there is only a small difference between the **no-load output voltage** and the **rated output voltage**.

The **rated output** does not exceed 10 kVA.

This document is not applicable to external circuits and their components intended to be connected to the input terminals and output terminals of the **transformers**.

NOTE 2 **Transformers** covered by this document are only used in applications where **double** or **reinforced insulation** between circuits is required by the installation rules or by the end product standard.

Attention is drawn to the following, if necessary:

– for **transformers** intended to be used in vehicles, on board ships, and aircraft, additional requirements (from other applicable standards, national rules, etc.);
– measures to protect the **enclosure** and the components inside the enclosure against external influences such as fungus, vermin, termites, solar-radiation, and icing;
– the different conditions for transportation, storage, and operation of the **transformers**;