

AS/NZS 61558.1:2018  
(Incorporating Amendments up to and including No. 2)



Australian/New Zealand Standard™

# Safety of Power Transformers, Power Supplies, Reactors and Similar Products

Part 1: General requirements and tests (IEC 61558-1 Ed 3, MOD)



AS/NZS 61558.1:2018

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 the Council of Standards Australia on 24 October 2018 and by the New Zealand Standards Approvals Board on 6 November 2018.

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The following are represented on Committee EL-002:

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

This Standard was issued in draft form for comment as DR 18923.

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## Part 1: General requirements and tests (IEC 61558-1 Ed 3, MOD)

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**AS/NZS 61558.1:2018**

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

**Part 1: General requirements and tests**

**Foreword**

A1 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 61558.1:2008 and its amendments when the titles and contents of the parts 2 in the AS/NZS 61558 series have been updated to be used with AS/NZS 61558.1:2018. During this period AS/NZS 61558.1:2008 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.

A2 This standard incorporates Amendment No.1 (March 2020) and Amendment No. 2 (November 2020). The changes introduced by amendments are indicated in the text by a marginal bar and amendment number against the part affected. Where an application date other than immediate is applicable to an amendment the date of application (DOA) and the date of withdrawal (DOW) if relevant, is indicated by the marginal bar against the part affected.

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

- a) fully insulated winding wires (FIW), new tables and aging tests for FIW constructions,
- b) overvoltage categories 1, 2, 3 and 4 for clearances and dielectric strength tests (new tables) are included,
- c) development of new symbols for the different overvoltage categories,
- d) symbol for maximum altitudes, if higher than 2 000 m,
- e) symbol for plug in power supply units, if the pins are damaged (tumbling barrel test),
- f) symbol for minimum temperature (even during the transportation),
- g) alternative temperature measurement, simulated load and back to back method according to IEC 60076-11,
- h) short circuit and overload protection, simulated load and back to back method according to IEC 60076-11,
- i) adjustment of temperatures in Table 2 according to IEC Guide 117,
- j) establishing partial discharge test above 750 V for FIW constructions,
- k) requirements for toroidal core constructions, division for basic and for supplementary isolation,
- l) modification of protection indexes for enclosures (IP-code),
- m) dimensioning of rectangular cross section connectors for transformers,
- n) repetition test, 80 % of required dielectric strength test voltage of Table 14,
- o) vibration test for vehicles and railway applications,

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- p) two Y1 Capacitors for working voltages above 250 V and not exceeding 500 V with overvoltage category 3.

This Standard is an adoption with national modifications of the third edition of IEC 61558-1 *Safety of transformers, reactors, power supply units and combinations thereof – Part 1 General requirements and tests*. It has been varied as indicated to take account of Australian and New Zealand conditions.

This Standard, referred to as Part 1, is to be used in conjunction with the appropriate Part 2, which contains clauses that supplement or modify the corresponding clauses in Part 1, to provide the relevant requirements for each type of product.

A1

The 2018 edition of AS/NZS 61558.1 is only to be used in conjunction with parts 2 based on this edition. Titles of existing standards in this series will be updated at the time of their next edition.

This standard may be applied, as far as is reasonable to transformers, reactors, power supply units and combinations not mentioned in the parts 2, and to transformers, reactors, power supply units and combinations designed on new principles.

In this document, the following print types are used:

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

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

NOTE 1 Subclauses, notes and annexes that are additional to those in the IEC standard are prefixed with the letters AZ.

- p NOTE 2 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<sup>1</sup> that could be applicable to transformers, reactors, power supply units and combinations thereof are covered by this standard taken in conjunction with any other relevant requirements affecting safety requirements for transformers, reactors, power supply units and combinations thereof are covered by this standard.

The national variations to IEC 61558-1 Ed 3 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).

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

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