COMMITTEE: EL-002
Safety of Household and Similar Electrical Appliances and Small Power Transformers

DR **25013** CP

DRAFT

COMBINED POSTAL BALLOT/ AUSTRALIAN / NEW ZEALAND STANDARD FOR COMMENT

LIABLE TO ALTERATION DO NOT USE AS A STANDARD

DATE OF ISSUE: 2 June 2025
CLOSING DATE FOR COMMENT: 28 July 2025

DR 25013 CP

AS/NZS 60335.2.81:202x

Household and similar electrical appliances – Safety

Part 2.81: Particular requirements for foot warmers and heating mats

STANDARDS Australia

STANDARDS NEW ZEALAND TE MANA TAUTIKANGA O AOTEAROA

COMBINED DRAFT FOR COMMENT/POSTAL BALLOT
STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Committee EL-002, *Safety of household and similar electrical appliances and small power transformers*

DRAFT

Australian/New Zealand standard

Household and similar electrical appliances – Safety

Part 2.81: Particular requirements for foot warmers and heating mats

Please note that this document is currently being voted on by the committee and the results of the postal ballot will be contingent on public comments received.

Comments on the proposal are invited from persons and organisations concerned with this subject.

Attention is drawn to the fact that this document is a draft only and is liable to alteration in the light of comments received. It is not to be regarded as an Australian/New Zealand standard until it is issued as such by Standards Australia and Standards New Zealand.

NOTES OF THE SECRETARY:
THE INTRODUCTION OF ANY NATIONAL VARIATIONS TO BE INCLUDED IN THIS STANDARD WILL OCCUR AFTER PUBLIC COMMENTS HAVE BEEN CONSIDERED AND PRIOR TO THE PUBLICATION OF THE STANDARD.
THIS DOCUMENT MUST BE READ IN CONJUNCTION WITH IEC 60335-2-81, ED. 4.0, COPIES OF WHICH MAY BE VIEWED BY CONTACTING enquiries@standards.govt.nz.

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 Standards Australia's Standards Development and Accreditation Committee on YYYY and by the New Zealand Standards Approval Board on YYYY.

It was published on YYYY.

The following interests 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

Electrical consultants

Electrical Regulatory Authorities, Australia

Engineers Australia

International Accreditation New Zealand

JAS-ANZ

National Retailers Association (Australia)

New Zealand Electric Fence Energizer Manufacturers' Standards Group

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.

For more information about joint standards, visit www.standards.govt.nz or www.standards.org,au. 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 organisation.

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 comment to either the Chief Executive of Standards Australia or the New Zealand Standards Executive at the address shown on the title page.

This standard was issued in draft form for comment as DR 25013.

DR AS/NZS 60335.2.81:202x
(IEC 60335-2-81, Ed. 4.0, MOD)

Australian/New Zealand Standard

Household and similar electrical appliances – Safety

Part 2.81: Particular requirements for foot warmers and heating mats

Superseding AS/NZS 60335.2.81:xxxx on YY YYYY YYYY

Originated as AS/NZS 3350.2.81:1998.
Jointly revised and redesignated AS/NZS 60335.2.81:2006.
Jointly revised and redesignated AS/NZS 60335.2.81:2012.
Jointly revised and redesignated AS/NZS 60335.2.81:2015.
Jointly revised and redesignated AS/NZS 60335.2.81:202x.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

AS/NZS 60335.2.81:202x

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY

Part 2.81: Particular requirements for foot warmers and heating mats

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 60335.2.81:2015 3 years from the date of publication of this standard. During this period, AS/NZS 60335.2.81:2015 and its amendments will remain current. Regulatory authorities that reference this standard in regulation may apply these requirements at a different time. Users of this standard should consult these authorities to confirm their requirements.

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 60335-2-81, Ed. 4.0, prepared by IEC Technical Committee 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 2015 edition of AS/NZS 60335.2.81 are as follows (minor changes are not listed):

(a) Alignment with AS/NZS 60335.1:2022;

(b) Conversion of some notes to normative text (clause 1 and subclauses 13.2, 16.2, 21.103, 21.104, 21.105, and 21.106)

(c) Addition of test probe 19 for accessibility (subclauses 8.1.1, 8.1.3, 20.2, B.22.3, and B.22.4);

(d) Addition of external surface temperatures (clause 11);

(e) Addition of the test of 21.107 for control units intended to be placed on a surface;

(f) Alignment of subclause 30.102 with IEC 60335-2-17.

This standard is an adoption with national modifications of the fourth edition of IEC 60335-2-81, *Household and similar electrical appliances – Safety – Part 2-81: Particular requirements for foot warmers and heating mats*. 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, unless that edition precludes it. In that case, the latest edition that does not preclude it is used. It was established on the basis of AS/NZS 60335.1:2022.

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 foot warmers and heating mats.

When a particular subclause of AS/NZS 60335.1 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 AS/NZS 60335.1 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 AS/NZS 60335.1;

– unless notes are in a new subclause or involve notes in AS/NZS 60335.1, 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.

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 associated noun are also in bold.

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 foot warmers and heating mats are covered by this standard.

Where national variations listed in AS/NZS 60335.1 (adopting IEC 60335-1) affect IEC 60335-2-81, Ed. 4.0, these, along with the variations listed below, 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).

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

The text of the international standard IEC 60335-2-81, Ed. 4.0 was approved as a joint Australian/New Zealand standard, noting the effect of national variations in AS/NZS 60335.1:2022.

AUSTRALIAN NATIONAL VARIATIONS

The following national variations to this Part 2 are additional to those listed in the national variations of AS/NZS 60335.1:2022.

1 Scope

p *Insert* the following variation after the first paragraph:

This standard also deals with the safety of electric hot water bottles. Additional requirements for these appliances are given in Annex AZ.

p **Annexes** *Replace* the text with the following variations:

The annexes of part 1 are applicable except as follows:

Annex AZ
(Normative)

Electric hot water bottles

The following modifications to this standard are applicable for **electric hot water bottles**:

AZ.2 Normative references

IEC 60320-3, *Appliance couplers for household and similar general purposes – Part 3: Standard sheets and gauges*

AS/NZS ISO 8124.1: 2010*, Safety of toys – Part 1: Safety aspects related to mechanical and physical properties*
Amendment 1 (2011)

BS 1970:2012, *Hot water bottles manufactured from rubber and PVC – Specification*

AZ.3 Terms and definitions

AZ.3.101

electric hot water bottle

appliance that is for application of heat to parts of the human body and incorporates a bladder containing a liquid and internal electrical components that are used in heating the internal liquid

AZ.3.102

electric hot water bottle bladder (bladder)

material that encloses and retains, and is in contact with, the liquid that is in contact with the internal electrical components and may comprise multiple layers

AZ.3.103

electric hot water bottle cover (cover)

any removable material that encloses the bladder

AZ.3.104

cradle

device specific for each electric hot water bottle that incorporates the appliance inlet for attaching the electric hot water bottle to the supply

AZ.5 General conditions for the tests

AZ.5.1 *Additional samples are required for the tests of AZ.16.3, AZ.22.7, AZ.22.101, AZ.22.102 and AZ.22.103.*

AZ.5.5 *The tests are carried out with any **cover** removed.*

AZ.6 Classification

AZ.6.1 **Electric hot water bottles** shall be **Class I**, **Class II**, or **Class III**.

AZ.7 Marking and instructions

AZ.7.1 The appliance shall be marked with the substance of the following:

– Details of the composition of the contained liquid.

– Do not use while charging.

– This appliance cannot be refilled.

The appliance shall be marked with the following warning:

WARNING: Use a Residual Current Device (RCD) while charging

AZ.11 Heating

AZ.11.2 ***Electric hot water bottles*** *are placed on the floor of the test corner away from the walls.*

AZ.11.7 ***Electric hot water bottles*** *are operated for a period of one hour or until steady conditions are established, whichever occurs first.*

AZ.11.8 *The temperature rise of the **bladder** surface in contact with the floor of the test corner and the temperature rise of the upper surface of the **bladder** shall not exceed 45 K. The internal fluid shall be mixed before determining the maximum temperature. After heating but before measurement of the temperature, the internal fluid shall be mixed by inverting the **bladder** 10 times and then allowing one minute to settle before determining temperatures of the **bladder**.*

AZ.16 Leakage current and electric strength

AZ.16.3 ***Electric hot water bottles*** *with heating elements of **Class II construction** are subject to the following additional electric strength test:*

*In a new sample of the appliance, **double insulation** between the electric components and the liquid are separated and the **basic insulation** and the **supplementary insulation** are subject to the relevant electric strength test values of Table 7. For this test, it is not permitted to test the two layers of insulation to the **reinforced insulation** electric strength test in lieu of conducting the separate tests on the **basic insulation** and **supplementary insulation**. If the layers cannot be separated, specially prepared samples may need to be supplied.*

AZ.19 Abnormal operation

AZ.19.4 *The appliance is operated until steady conditions are established.*

AZ.19.13 *During the test of 19.4, the temperature of the:*

– ***bladder*** *surface shall not exceed 90 °C; and*

– *liquid shall not exceed 10 K below its boiling point.*

AZ.22 Construction

AZ.22.7 *A new sample of the **electric hot water bottle** is tested as described in Annex F of BS 1970, modified as follows:*

The upper and lower plates shall incorporate cut-outs to avoid any contact between the plates and any incorporated appliance inlet or other solid components.

At the conclusion of the test, there shall be no sign of leakage or other detrimental effect.

AZ.22.101 The **bladder** shall have adequate thickness.

Compliance is checked by the following test:

*In a new sample of the appliance, find the most likely thinnest point in the **bladder** material. If there is doubt as to the thinnest point, randomly choose 10 points on a **bladder** in order to find the thinnest point. The thickness is then measured to a resolution of 0.01 mm.*

A total of three specimens are subjected to this measurement.

All measurements shall exceed 0.7 mm.

AZ.22.102 Bonded or welded seams shall have adequate tensile strength.

Compliance is checked as described in Annex E of BS 1970 on a new sample of the appliance.

The tensile force so obtained shall be not less than 72 N.

AZ.22.103 The **bladder** shall have adequate strength against penetration from sharp objects.

Compliance is checked by the test procedure specified in 5.19 of AS/NZS ISO 8124.1.

At the conclusion of the test, there shall be no leakage of liquid, there shall be no access to the liquid with the test probe B of IEC 61032, and there shall be no damage that would impair compliance with clause 8.

AZ.22.104 The **bladder** shall not be user refillable.

Compliance is checked by inspection.

AZ.22.105 The **electric hot water bottle** shall be supplied with a dedicated **cradle** that has the means of connection to supply. The **cradle** shall obstruct at least 10% of the largest projected surface area of the **bladder** on two opposing sides. The **cradle** shall extend 25% of the longest distance across the largest surface of the **bladder** on two opposing sides. The surface coverage shall be maintained during charging.

The **cradle** shall be made of a rigid material.

Compliance is checked by inspection and measurement.

AZ.23 Internal wiring

AZ.23.101 The internal wiring shall remain intact during **normal operation**.

Consideration shall be given when conducting this test as to how the internal wiring and fluid will behave. The most onerous operation is to be conducted based on good engineering judgement. This test is to be conducted twice, once each on different samples at right angles to one another to ensure that the assessment is thorough.

Compliance is checked by the following test.

A new sample of the appliance is mounted on a flexing machine by supporting the appliance at four diagonally dispersed points of the enclosure. The cover, if supplied, can be suitable to hold the appliance.

*The unit is flexed by rotating the **electric hot water bottle** through 5000 flexings each of 360 degrees, with one flexing being a rotation of 360 degrees in one direction back to its original position.*

A second test is taken on a new sample of the appliance, with the new axis of rotation taken at 90 degrees to the axis of the preceding test.

*The appliance is supplied at **rated voltage** during the test.*

There shall be no damage or displacement of conductors or leakage of liquid.

After this, the test in subclause 16.3 is repeated on each sample tested.

AZ.24 Components

AZ.24.101 The **electric hot water bottle** shall have a detachable **cradle** incorporating an appliance inlet that complies with AS/NZS 60320.1 as a Group 2 appliance inlet. The **electric hot water bottle** shall not incorporate an appliance inlet complying with the standard sheets of IEC 60320-3 or AS/NZS 60320.1.

Compliance is checked by inspection and appropriate tests.

AZ.24.102 Devices incorporated in **electric hot water bottles** in order to comply with 19.4 shall not be self-resetting or manually resettable by disconnection of the appliance from the supply mains.

Compliance is checked by inspection.

AZ.25 Supply connection and external flexible cords

AZ.25.1 **Electric hot water bottles** shall not be fitted with a **supply cord** fitted with a plug or pins for insertion into socket outlets.

Compliance is checked by inspection.

AZ.30 Resistance to heat and fire

AZ.30.101 The **bladder** and **cover** of **electric hot water bottles** shall be resistant to fire.

Compliance is checked by the following test:

*The **electric hot water bottle** is emptied of liquid by puncturing the enclosure or by some other suitable method. It is then supplied at **rated voltage**.*

*The **bladder** and **cover** shall not ignite or deform to such an extent that **live parts** become accessible to test probe B of IEC 61032.*

NEW ZEALAND NATIONAL VARIATIONS

The following national variations to this Part 2 are additional to those listed in the national variations of AS/NZS 60335.1:2022.

1 Scope

p *Insert* the following variation after the first paragraph:

This standard also deals with the safety of electric hot water bottles. Additional requirements for these appliances are given in Annex AZ.

p **Annexes** *Replace* the text with the following variations:

The annexes of part 1 are applicable except as follows:

Annex AZ
(Normative)

Electric hot water bottles

The following modifications to this standard are applicable for **electric hot water bottles**:

AZ.2 Normative references

IEC 60320-3, *Appliance couplers for household and similar general purposes – Part 3: Standard sheets and gauges*

AS/NZS ISO 8124.1: 2010*, Safety of toys – Part 1: Safety aspects related to mechanical and physical properties*
Amendment 1 (2011)

BS 1970:2012, *Hot water bottles manufactured from rubber and PVC – Specification*

AZ.3 Terms and definitions

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appliance that is for application of heat to parts of the human body and incorporates a bladder containing a liquid and internal electrical components that are used in heating the internal liquid

AZ.3.102

electric hot water bottle bladder (bladder)

material that encloses and retains, and is in contact with, the liquid that is in contact with the internal electrical components and may comprise multiple layers

AZ.3.103

electric hot water bottle cover (cover)

any removable material that encloses the bladder

AZ.3.104

cradle

device specific for each electric hot water bottle that incorporates the appliance inlet for attaching the electric hot water bottle to the supply

AZ.5 General conditions for the tests

AZ.5.1 *Additional samples are required for the tests of AZ.16.3, AZ.22.7, AZ.22.101, AZ.22.102 and AZ.22.103.*

AZ.5.5 *The tests are carried out with any* ***cover*** *removed.*

AZ.6 Classification

AZ.6.1 **Electric hot water bottles** shall be **Class I**, **Class II,** or **Class III**.

AZ.7 Marking and instructions

AZ.7.1 The appliance shall be marked with the substance of the following:

– Details of the composition of the contained liquid.
– Do not use while charging.
– This appliance cannot be refilled.

The appliance shall be marked with the following warning:

WARNING: Use a Residual Current Device (RCD) while charging.

AZ.11 Heating

AZ.11.2 ***Electric hot water bottles*** *are placed on the floor of the test corner away from the walls.*

AZ.11.7 ***Electric hot water bottles*** *are operated for a period of one hour or until steady conditions are established, whichever occurs first.*

AZ.11.8 *The temperature rise of the* ***bladder*** *surface in contact with the floor of the test corner and the temperature rise of the upper surface of the* ***bladder*** *shall not exceed 45 K. The internal fluid shall be mixed before determining the maximum temperature. After heating but before measurement of the temperature, the internal fluid shall be mixed by inverting the* ***bladder*** *10 times and then allowing one minute to settle before determining temperatures of the* ***bladder****.*

AZ.16 Leakage current and electric strength

AZ.16.3 ***Electric hot water bottles*** *with heating elements of* ***Class II construction*** *are subject to the following additional electric strength test:*

In a new sample of the appliance, ***double insulation*** *between the electric components and the liquid are separated and the* ***basic insulation*** *and the* ***supplementary insulation*** *are subject to the relevant electric strength test values of Table 7. For this test, it is not permitted to test the two layers of insulation to the* ***reinforced insulation*** *electric strength test in lieu of conducting the separate tests on the* ***basic insulation*** *and* ***supplementary insulation****. If the layers cannot be separated, specially prepared samples may need to be supplied.*

AZ.19 Abnormal operation

AZ.19.4 *The appliance is operated until steady conditions are established.*

AZ.19.13 *During the test of 19.4, the temperature of the:*

– ***bladder*** *surface shall not exceed 90 °C; and*

– *liquid shall not exceed 10 K below its boiling point.*

AZ.22 Construction

AZ.22.7 *A new sample of the* ***electric hot water bottle*** *is tested as described in Annex F of BS 1970, modified as follows:*

The upper and lower plates shall incorporate cut-outs to avoid any contact between the plates and any incorporated appliance inlet or other solid components.

At the conclusion of the test, there shall be no sign of leakage or other detrimental effect.

AZ.22.101 The **bladder** shall have adequate thickness.

Compliance is checked by the following test:

In a new sample of the appliance, find the most likely thinnest point in the ***bladder*** *material. If there is doubt as to the thinnest point, randomly choose 10 points on a* ***bladder*** *in order to find the thinnest point. The thickness is then measured to a resolution of 0.01 mm.*

A total of three specimens are subjected to this measurement.

All measurements shall exceed 0.7 mm.

AZ.22.102 Bonded or welded seams shall have adequate tensile strength.

Compliance is checked as described in Annex E of BS 1970 on a new sample of the appliance.

The tensile force so obtained shall be not less than 72 N.

AZ.22.103 The **bladder** shall have adequate strength against penetration from sharp objects.

Compliance is checked by the test procedure specified in 5.19 of AS/NZS ISO 8124.1.

At the conclusion of the test, there shall be no leakage of liquid, there shall be no access to the liquid with the test probe B of IEC 61032, and there shall be no damage that would impair compliance with clause 8.

AZ.22.104 The **bladder** shall not be user refillable.

Compliance is checked by inspection.

AZ.22.105 The **electric hot water bottle** shall be supplied with a dedicated **cradle** that has the means of connection to supply. The **cradle** shall obstruct at least 10% of the largest projected surface area of the **bladder** on two opposing sides. The **cradle** shall extend 25% of the longest distance across the largest surface of the **bladder** on two opposing sides. The surface coverage shall be maintained during charging.

The **cradle** shall be made of a rigid material.

Compliance is checked by inspection and measurement.

AZ.23 Internal wiring

AZ.23.101 The internal wiring shall remain intact during **normal operation**.

Consideration shall be given when conducting this test as to how the internal wiring and fluid will behave. The most onerous operation is to be conducted based on good engineering judgement. This test is to be conducted twice, once each on different samples at right angles to one another to ensure that the assessment is thorough.

Compliance is checked by the following test:

A new sample of the appliance is mounted on a flexing machine by supporting the appliance at four diagonally dispersed points of the enclosure. The cover, if supplied, can be suitable to hold the appliance.

*The unit is flexed by rotating the **electric hot water bottle** through 5000 flexings each of 360 degrees, with one flexing being a rotation of 360 degrees in one direction back to its original position.*

A second test is taken on a new sample of the appliance, with the new axis of rotation taken at 90 degrees to the axis of the preceding test.

*The appliance is supplied at **rated voltage** during the test.*

There shall be no damage or displacement of conductors or leakage of liquid.

After this, the test in subclause 16.3 is repeated on each sample tested.

AZ.24 Components

AZ.24.101 The **electric hot water bottle** shall have a detachable **cradle** incorporating an appliance inlet that complies with AS/NZS 60320.1 as a Group 2 appliance inlet. The **electric hot water bottle** shall not incorporate an appliance inlet complying with the standard sheets of IEC 60320-3 or AS/NZS 60320.1.

Compliance is checked by inspection and appropriate tests.

AZ.24.102 Devices incorporated in **electric hot water bottles** in order to comply with 19.4 shall not be self-resetting or manually resettable by disconnection of the appliance from the supply mains.

Compliance is checked by inspection.

AZ.25 Supply connection and external flexible cords

AZ.25.1 **Electric hot water bottles** shall not be fitted with a **supply cord** fitted with a plug or pins for insertion into socket outlets.

Compliance is checked by inspection.

AZ.30 Resistance to heat and fire

AZ.30.101 The **bladder** and **cover** of **electric hot water bottles** shall be resistant to fire.

Compliance is checked by the following test:

*The **electric hot water bottle** is emptied of liquid by puncturing the enclosure or by some other suitable method. It is then supplied at **rated voltage**.*

*The **bladder** and **cover** shall not ignite or deform to such an extent that **live parts** become accessible to test probe B of IEC 61032.*

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. Where there is no equivalent international publication listed, then the Australian/New Zealand publication applies.

Publication	Year	Title	AS/NZS	Year
IEC 60320-1 (MOD) IEC 60320-1/AMD 1 IEC 60320-1/AMD 2	2014 2018 2022	*Appliance couplers for household and similar general purposes – Part 1: General requirements*	60320.1	2023
IEC 60320-3 (MOD)		*Appliance couplers for household and similar general purposes - Part 3: Standard sheets and gauges*	60320.3	2023
IEC 60584-1		*Thermocouples – Part 1: EMF specifications and tolerances*		
ISO 2439		*Flexible cellular polymeric materials – Determination of hardness (indentation technique)*		
ISO 8124-1	2022	*Safety of toys Part 1: Safety aspects related to mechanical and physical properties*		
BS 1970	2012	*Hot water bottles manufactured from rubber and PVC – Specification*		