

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

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**Amendment No. 1  
to  
AS/NZS 60335.2.81:2015  
Household and similar electrical appliances – Safety –  
Part 2.81: Particular requirements for foot warmers and heating mats**

**REVISED TEXT**

The 2015 edition of AS/NZS 60335.2.81 is amended as follows;

**SUMMARY:** This amendment applies to Foreword, Australian National Variations and New Zealand National Variations.

Published on 3 February 2017.

Approved for publication in Australia on behalf of the Council of Standards Australia on 27 January 2017.

Approved for publication in New Zealand by the New Zealand Standards Approval Board on 9 December 2016.

This amendment takes effect 2 years from the date of publication.

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**FOREWORD**

*Delete the last sentence of the first paragraph.*

*Reposition the existing second paragraph to the position of a new fourth paragraph.*

*Add the following as a new sixth paragraph.*

This standard incorporates Amendment No. 1 (February 2017). The changes introduced by the amendment 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) is indicated by the marginal bar against the part affected. Unless otherwise indicated, the application date of AS/NZS 60335.2.81:2015 is 30 November 2018 and the application date of the changes introduced by Amendment No. 1 is 3 February 2019.

**AUSTRALIAN NATIONAL VARIATIONS**

*Add the following to the national variations.*

**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 by the following variations:*

The annexes of part 1 are applicable except as follows.

ISBN 978-1-76035-666-8

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## **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:

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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 ten points on a **bladder** in order to find the thinnest point. The thickness is then measured to a resolution of 0.01mm.

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.