

# Microwavable personal warmers — Specification

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## Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee PRI/68, Hot water bottles, upon which the following bodies were represented:

- British Retail Consortium
- British Rubber Manufacturers Association Ltd.
- Co-opted members
- Consumer Policy Committee of BSI
- Department for Trade and Industry
- National Pharmaceutical Association
- RAPRA Technology Ltd.

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The following BSI references relate to the work on this British Standard:  
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## Foreword

This British Standard has been prepared by Technical Committee PRI/68.

Attention is drawn to:

- a) the Toys (Safety) Regulations 1995 (UK Statutory Instrument SI 1995 No. 204) which is applicable to microwavable personal warmers which have any play value in the form of toys, or that include toys;
- b) the General Product Safety Regulations 1994 (UK Statutory Instrument SI 1994 No. 2328);
- c) 93/42/EEC, Council Directive concerning Medical Devices. Council of European Communities.

This British Standard calls for the use of substances and/or procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

**Compliance with a British Standard does not of itself confer immunity from legal obligations.**

### Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 4, an inside back cover and a back cover.

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## 1 Scope

This British Standard specifies performance requirements and requirements for instructions for safe use for domestic microwavable personal warmers filled with a substance that has the characteristic of storing heat. This British Standard does not cover medical devices.

NOTE Microwavable personal warmers may be used in the same way as hot water bottles.

## 2 Normative references

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.

BS EN 71-1:2001, *Safety of toys — Part 1: Mechanical and physical properties*.

BS EN 71-3:1995, *Safety of toys — Part 3: Migration of certain elements*. (BS 5665-3:1995).

BS EN 60335-2-25:1997, *Specification for safety of household and similar electrical appliances — Part 2-25: Particular requirements for microwave ovens*. (IEC 60335-2-25:1996).

## 3 Terms and definitions

For the purposes of this British Standard, the following terms and definitions apply.

### 3.1

#### **heatable medium**

substance that has the ability to store heat

### 3.2

#### **microwavable personal warmer**

##### **MPW**

product in its entirety designed to retain heat after being heated in a microwave oven

### 3.3

#### **microwave oven**

microwave oven for normal domestic use, conforming to BS EN 60335-2-25:1997

### 3.4

#### **normal use**

use as instructed in the manufacturer's user instructions

### 3.5

#### **primary cover**

envelope that retains the heatable medium

### 3.6

#### **secondary cover**

additional covering that may be removable but part of the product in normal use

## 4 Composition

When tested in accordance with BS EN 71-3:1995, the MPW shall not contain proportions (by mass) of migrateable elements in excess of the limits specified.

None of the components shall be toxic. The components shall not contain extraneous matter.

When the heatable medium consists of plant materials, it shall not contain additives, toxic substances, pesticides or other contaminants that can affect human health.

The MPW, including any secondary covers, shall not contain any metal components.

NOTE Metallic materials should not be heated in microwave ovens due to possible problems with arcing.

## 5 Performance requirements

### 5.1 Microwavability

The MPW shall be capable of being heated in a microwave oven. The MPW shall be capable of being heated from an ambient/cold state without the user having to undertake any other form of action to reactivate it other than in accordance with the manufacturer's instructions. When heating in accordance with the manufacturer's instructions, the maximum temperature of the MPW shall not exceed 90 °C at any point.

### 5.2 Accessibility

#### 5.2.1 General

The heatable medium shall be contained within the primary cover and shall not be accessible to the user. The MPW shall be tested in accordance with the test specified in 5.2.2.

The MPW shall be tested in accordance with the tests specified in 5.2.3 or 5.2.4 as appropriate.

#### 5.2.2 Determination of pressure resistance

##### 5.2.2.1 Apparatus

The apparatus shall have smooth upper and lower plates at least the size of the MPW. All contact edges of the plates shall have smooth edges of approximately three millimetres radius and free from any sharp corners. The apparatus shall be capable of cycling the upper plate to apply a load of between 0 kN and 0.9 kN in not less than three seconds, dwelling at the maximum load for a minimum of three seconds, before returning to zero load in a minimum of three seconds and not less than five cycles per minute.

##### 5.2.2.2 Procedure

Place the MPW on the lower plate of the test apparatus. Perform the cycle for 500 cycles. On completion, examine the MPW for leakage or other detrimental effects.

The MPW shall remain intact.

#### 5.2.3 MPWs having pervious primary covers

A leakage and tension test in accordance with BS EN 71-1:2001, 8.15 and 8.4.2.2 respectively shall be conducted.

#### 5.2.4 MPWs having impervious primary covers

A leakage test in accordance with BS EN 71-1:2001, 8.15 shall be conducted.

### 5.3 Heating performance

#### 5.3.1 General

During normal use, the MPW shall not emit toxic fumes, smoulder or burst into flames. No deposits shall be left in the microwave oven that could subsequently taint or contaminate food.

#### 5.3.2 Determination of resistance to overheating

5.3.2.1 Heat the MPW in a microwave oven to twice the manufacturer's recommended heating time on the highest setting of a 1 000 W microwave oven.

The MPW shall remain intact and shall not emit fumes. The MPW shall be inspected after cooling and the heatable medium shall be contained.

**5.3.2.2** Complete five heating cycles in accordance with the manufacturer's maximum heating times within a period of 30 s between each heating cycle on the high setting of a 1 000 W microwave oven.

The MPW shall remain intact and shall not emit toxic fumes. The MPW shall be inspected after cooling and the heatable medium shall be contained.

NOTE 1 In practice, the only way evidence of overheating can be achieved is for the MPW to display indications that it has been overheated, i.e. clear visual evidence or strong olfactory signals, thus making it obvious to the user that overheating has occurred.

NOTE 2 Consideration should be given to having mandatory overheating warning indication such as the use of colour change inks or fabrics incorporated in the MPWs.

NOTE 3 An element of overheating protection is vital for MPWs of this nature as they will inevitably be overheated on some, if not many, occasions during their service life. This is particularly important considering that the elderly are a large target market for MPWs. However, because a microwave oven is an extremely powerful source of heating, it is considered impossible to provide absolute protection and user awareness of the potential hazards is vital to ensure safety in use.

### 5.3.3 Pressure resistance

Following determination of resistance to overheating (see 5.3.2), the MPW shall be tested again in accordance with the test specified in 5.2.2.

### 5.3.4 Flammability

Under no circumstances shall the MPW undergo combustion in the event of overheating; this shall be tested in accordance with 5.3.2.

## 6 Informative labelling

### 6.1 Product marking

Each microwavable personal warmer shall be legibly and permanently marked or labelled (see 6.2) with the following, with a minimum font height of three millimetres for d), e) and f):

- number and date of this British Standard, i.e. BS 8433:2004<sup>1)</sup>.
- date indication: year and month of manufacture;
- identification of the European manufacturer, or the UK distributor;
- the maximum recommended heating time and wattage in the format shown in Table 1;

**Table 1 — Maximum recommended heating time and wattage**

RATING	MAXIMUM TIME
#### – #### W	# min
#### – 1 000 W	# min
ONLY REHEAT FROM ROOM TEMP	

NOTE # – needs to be recommended by the manufacturer.

- “INSPECT AT REGULAR INTERVALS. DISCARD IF FOUND WORN OR DAMAGED”;
- “CLEAN ONLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS”.

### 6.2 Durability of marking

#### 6.2.1 Procedure

Rub the marking by hand for 15 s with a piece of cloth soaked with water and again for 15 s with a piece of cloth soaked with petroleum spirit.

NOTE The petroleum spirit should be aliphatic solvent hexane having a maximum aromatics content of 0.1 % by volume, a Kauri-butanol value of 29, an initial boiling point of approximately 65 °C, a dry point of approximately 69 °C and a specific mass of approximately 0.66 kg/l.

#### 6.2.2 Inspection

After each test of this standard, the marking shall be inspected. The marking shall be clearly legible. All attached labels shall withstand a tensile force of 90 N.

<sup>1)</sup> Marking BS 8433:2004 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is solely the claimant's responsibility. Such a declaration is not to be confused with third-party certification of conformity.

### 6.3 Accompanying instructions

The following warnings shall be clearly displayed, with a minimum font height of three millimetres, in the given format:

“WARNING – THIS PRODUCT CAN CAUSE BURNS. AVOID PROLONGED DIRECT CONTACT WITH THE SKIN  
TAKE CARE WHEN REMOVING FROM THE MICROWAVE OVEN  
DO NOT INGEST CONTENTS  
DO NOT OVERHEAT  
FOR MICROWAVE USE ONLY”

The product shall be accompanied with full and comprehensive instructions for use, including instructions for:

- a) safe heating. The required heating times necessary to heat the product to its working temperature shall be provided. The times shall take into account the maximum available power of microwave ovens in normal domestic use;
- b) cleaning;
- c) safety advice in the event of overheating;
- d) safe disposal;
- e) identification of the European manufacturer, or the UK distributor;
- f) storage instructions.

### 6.4 Packaging/labelling

Contents of the MPW shall be legible to the consumer at the point of sale.

If a flexible film bag is used for packaging, the following warning shall be printed on the film in the format given:

“PLASTIC BAGS CAN BE DANGEROUS TO AVOID DANGER OF SUFFOCATION  
KEEP THIS BAG AWAY FROM BABIES AND CHILDREN”.

Where a part of the microwavable personal warmer contains natural rubber, both the accompanying instructions and those permanently marked (see 6.2) on the product shall bear the clear and legible statement:

“This microwavable personal warmer may contain natural rubber”.

Where a part of the microwavable personal warmer contains latex rubber, both the accompanying instructions and those permanently marked (see 6.2) on the product shall bear the clear and legible statement:

“This microwavable personal warmer may contain latex rubber”.





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