



**Co-ordination of the Notified Bodies  
NB-TOYS  
under the Safety of Toys Directive**

**NB-TOYS/2018/033**

**Follows: NB-TOYS  
2018/028**

**24 September 2018**

**EC type approval protocol No. 5  
Microwavable toys  
Rev1.**

Agreed by:  
NB-Toys group on: 13 May 2018  
Expert group on Toy Safety on: 21 September 2018

Will be available at: [https://ec.europa.eu/growth/sectors/toys/safety/guidance\\_en](https://ec.europa.eu/growth/sectors/toys/safety/guidance_en)

# **EC type approval protocol No. 5 Microwavable toys. (Rev1. 03-07-2018)**

## **Changes made for revision 1:**

Below the changes made in the first revision are indicated.

Par. 2:

- Addition of sentence 'risks related to inadequate instructions of use of the product'
- Specification that only specific risks that need harmonization are taken into the protocol.

Par 7.1

- Addition of instruction to maximum surface temperature and speed of cooling down after heating.

Par. 7.3:

- Instruction on the speed of cooling down after heating.

Par 7.4:

- Instruction to end the test is any smoke, smelling or other phenomena occurs which might be due to the heating.

Par 8:

- Instruction on text for label of the outer cover.
- Instruction how to indicate the ranges of values for the power of the heating
- Remarks power during testing
- Addition of a note related to labelling in case other types of heating might be used.

## Content

1	Background.....	4
2	General information.....	4
3	Scope.....	5
4	Definition.....	5
4.1	Sample (heating element).....	5
5	Supporting standards used.....	5
6	Preparation of the test sample.....	5
7	Requirements.....	6
7.1	Resistance to heating according to manufacturer's instructions. ....	6
7.2	Resistance to pressure .....	6
7.3	Resistance to overheating .....	6
7.4	Heating cycles .....	7
8	Warnings and instructions for use .....	7
9	NB-toys reference documents used .....	8

## 1 Background

The Toy Safety Directive 2009/48/EC applies to products designed or intended, whether or not exclusively, for use in play by children under 14 years of age.

The TSD guidance document clarifies the meaning of “whether or not exclusively”. The words “whether or not exclusively” have been added to the definition to indicate that the product does not have to be exclusively intended for playing purposes in order for it to be considered as a toy, but it can have other functions as well. For example, a key-ring with a teddy bear attached to it is considered as a toy, or a sleeping bag in the shape of a soft filled toy.

During the EC-Expert Group meeting on 23 May 2014 (EXP-2014-037-rev2) the following was concluded: “Microwavable warmers in the form of plush animals and similar articles are to be classed as toys and are within the scope of Directive 2009/48/EC.”

An EC-type examination is required for both those toys where the microwavable element was integrated and those where it could be separated, to ensure that they are safe”. In order to harmonise the assessment of microwavable toys, the NB-Toys group has developed this protocol.

If the manufacturer claims use as a medical treatment the product should be tested as medical device.

## 2 General information

Specific hazards addressed:

- Fire hazard: heated seeds or wood kernel can be a source of ignition. The ignition may not be detected at the start as being “hidden” inside the stuffing (smouldering fire). Therefore flame and smoke causing burns and asphyxiation may occur some time after the toy has been heated
- Accessibility to liquids: liquids could be hot or of hazardous content. The risk to this is related to the resistance of the product against pressure.
- Thermal hazards that may lead to burns:
  - Heating in microwave ovens may lead to uneven temperatures inside materials. This is likely to cause burns with unexpected hot surfaces.
  - The energy transfer from heated material inside to the outer surface of the casing may lead to hot surfaces likely to cause burns not expected by the carer when the toy is taken from the oven.
  - As children’s skin is more sensitive than that of adults and their surface/volume ratio is such that they absorb excessive heat readily, the transfer of heat may cause burns to children sleeping in contact with the toy.
- Risks related to inadequate instructions for use of the product

The objective of this protocol is to provide specifications and test methods on only specific risks that need harmonization, in addition to those contained in the harmonized standards for Directive 2009/48/EC Safety of Toys. Any additional risks as mentioned in the Toy Safety Directive and which are not covered by this protocol should be assessed by additional testing.

### 3 Scope

This protocol is intended to be used for the testing of the functional heating aspect of microwavable warmers when used in combination with toys.

Microwavable toys have a play value and mainly look like soft or plush toys. Microwavable warmers have an outer fabric cover and contain various types of grain, polymer granules, silicon gel or other filling material which retain heat when placed in a microwave oven.

The protocol applies to both of the following types of warmers:

- Warmers of which the grain, polymer granules, silicon gel or other filling material is contained within an inner casing which needs to be removed from the outer cover of the warmer and placed in the microwave oven.
- Warmers which are integrated and where the whole product is placed in the microwave oven

Note 1: Hot bottles where the heated material is water are not in the scope of this protocol.

Note 2: Similar toys intended to be heated in electric, gas ovens or other means of heating are not in the scope of this protocol.

### 4 Definition

#### 4.1 Sample (heating element)

Toy or part of the toy (inner casing) intended to be heated in microwave ovens.

### 5 Supporting standards used

- BS 8443:2004 Microwavable personal warmers.
- EN 71-series, standards related to the safety of toys
- ISO/IEC 50 Guide- Safety aspects -Guidelines for child safety in standards and other specifications guide (2014 revision should be soon available)

### 6 Preparation of the test sample

A separate new, unused sample is to be used for each of the tests in clause 7.

A minimum of four samples in total are needed for the testing in this protocol.

Check for absence of metal parts in the samples.

If the inner casing is removable, the tests are performed on only the inner casing.

If the inner casing is not removable, the tests are performed on the complete toy.

Where the manufacturing instructions indicate more than one heating condition each condition should be used for the applicable tests in clause 7. This needs to be taken into consideration for the number of samples required.

A glass plate should be used in the microwave oven unless indicated otherwise by the manufacturer.

Condition the samples for 7 hours (minimum) at  $(20 \pm 5) ^\circ \text{C}$  and  $(65 \pm 5) \%$  relative humidity.

## 7 Requirements

### 7.1 Resistance to heating according to manufacturer's instructions.

Remove the sample from the conditioning atmosphere and within 5 minutes place the toy in the microwave oven and heat the sample according to the manufacturer's instructions.

Within 1 minute (or according to the manufacturer's instructions) remove the sample from the microwave oven. Measure the temperature of the outer cover (if the inner casing is not removable) or the temperature of the cover of the inner casing (if the inner casing is removable) and check that:

- The surface temperature does not exceed 75 °C at first contact at any point;
- No smoke is observed;
- No flame or smoldering is observed.

The temperature measurement and observations shall be repeated after 5 min, 10 min and 15 min after removal of the sample from the microwave oven. The surface temperature should not exceed 75°C at any time and should have been lowered to 48 °C or less after 10 minutes.

After the test the inner stuffing material is to be observed by cutting the casing. Smoke, flame, smoldering fire should not be observed.

Note: Some parts may continue to heat up after the sample is removed from the oven.

### 7.2 Resistance to pressure

A toy or its inner casing containing gel or liquid material shall be tested according to clause 5.2.2 of BS 8433 before and after the overheating tests described in 7.3.

The sample shall not show any leakage or damage to the casing containing the gel or liquid.

### 7.3 Resistance to overheating

Remove the samples from the conditioning atmosphere and within 5 minutes place the toy in the microwave oven and heat the sample according to the manufacturer's instructions, but with the following conditions

Heat the sample according to the following conditions. These conditions should be created in separate tests using a new sample for each test:

- Heat the toy equal to twice the time recommended by the manufacturer in accordance with the instructions;
- Adjust the power of the oven to 1000 W and select the time as indicated by the manufacturer.

Within 1 minute after heating remove the sample from the microwave oven.

Measure the temperature of the outer cover (if the inner casing is not removable) or the temperature of the cover of the inner casing (if the inner casing is removable) and check that:

- The surface temperature does not exceed 90°C at any point;
- No smoke is observed;
- No flame or smouldering is observed.

The temperature measurement and observations shall be repeated after 5 min, 10 min and 15 min after removal of the sample from the microwave oven. The surface temperature should have been lowered to 48 °C or less after 20 minutes.

After the test the inner stuffing material is to be observed by cutting the casing. Smoke, flame, smoldering fire should not be observed.,

Note: Some parts may continue to heat up after the sample is removed from the microwave oven.

#### 7.4 Heating cycles

One heating cycle is defined as: Heating according manufacturers' instructions for the duration and with power adjusted to 1000W, followed by a rest time of  $(30 \pm 1)$  s out of the microwave oven.

Carry out 5 heating cycles consecutively.

Within 1 min remove the sample from the microwave oven and check:

- No flame or smoldering is observed.
- No smoke is observed;

If in one of the cycles smoke, smelling or other phenomena occur which might be due to the heating, the test can be ended.

After the test the inner stuffing material is observed by cutting the casing.

### 8 Warnings and instructions for use

In addition to any warnings required by Directive 2009/48 / EC and EN 71-1 warnings based on the BS 8433 standard are required.

Warnings shall be clearly visible, easy legible and understandable.

The outer cover (if the inner casing is not removable) or the inner casing (if the inner casing is removable) shall bear a permanent label with the following warnings and instructions:

- Warning. Heat only in a microwave oven. Only adults should operate the microwave oven.
- Indications of the maximum time and max power of the microwave oven.

The outer cover (if the inner casing is removable) shall bear a permanent label with the following warnings and instructions:

- Remove the casing and heat only the inner casing

Rating	Maximum Time
##### - ##### W	# min
##### - 1 000 W	# min
Only reheat from room temperature	

Marking should mention both ranges of values (low power and high power up to 1000W).

The power rating has to be given as range of values as the available power settings at microwave ovens may differ on the market.

While testing the product it has to be ensured that the requirements are met for each power rating of the product. It also has to be ensured that the requirements are met for the higher values of each range given by the manufacturer.

Instructions for use shall be provided either as a separate leaflet or attached to the outer casing of the toy:

Each toy shall be accompanied with instructions for use indicating clearly the following statements:

- Warning. Heat only in microwave oven. Only adults should operate the microwave oven. Heated element may cause burns.

*Note: for products that can also be heated in a conventional oven, the sentence "Heat only in microwave oven." can be left out. Separate risks analysis has to be done in the case other types of heating are allowed.*

- Respect the given time of heating and Wattage.
- Do not overheat.
- Inspect at regular intervals for damage.
- Warning. Only reheat when the element is at room temperature. It can take up to xx hours to cool down to room temperature.
- Warning. Temperature may increase after removal from the microwave oven.
- After each use store in a dry and cool place.

The instructions for use shall also contain at least the following:

- The time required to heat the product to reach the assigned temperature shall be provided. The time must take into account the maximum power available on microwave ovens
- Cleaning instructions
- In the case of a removable inner casing, instructions to remove the casing and heat only the inner casing (if applicable)

## **9 NB-toys reference documents used**

- NB-TOYS/2014/114 Call for Experts to join the working group on microwavable toys
- NB-TOYS/2014/092 Report of the COM Expert group held in 2014, May 23
- NB-TOYS/2014/059 Input from ANEC concerning "Plush hot water bottles / Microwavable toys"
- NB-TOYS/2014/046 Notified Body contribution to the Commission expert group discussion regarding toys that in addition are used as microwaveable warmers.
- NB-TOYS/2014/34 Draft Notified Body contribution to the Commission expert group discussion regarding toys that in addition are used as microwaveable warmers.
- NB-TOYS/2014/022 Draft Notified Body contribution to the expert group discussion regarding toys that in addition are used as microwaveable warmers.