

Methods of

# Measuring the performance of household electrical appliances

Part 7. Electric irons

Méthodes de mesure des caractéristiques de  
fonctionnement des appareils  
électro-domestiques  
Partie 7. Fers à repasser électriques

Verfahren zur Messung der Leistung von  
elektrischen Haushaltsgeräten  
Teil 7. Elektrische Bügeleisen

## Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Light Electrical Engineering Standards Policy Committee (LEL/-) to Technical Committee LEL/94, upon which the following bodies were represented:

Association of Manufacturers of Domestic Electrical Appliances  
Consumer Policy Committee of BSI  
Consumers' Association  
Department of Energy (Electricity Division)  
Electricity Association  
Portable Electric Tool Manufacturers' Association  
Rotating Electrical Machines Association (BEAMA Ltd.)  
Soap and Detergent Industry Association

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### Amendments issued since publication

| Amd. No. | Date | Text affected |
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**Amendment No. 1**  
**published and effective from 15 December 1995**  
**to BS 3999 : Part 7 : 1992**

**Methods of measuring the performance of**  
**household electrical appliances**  
**Part 7. Electric irons**

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**Revised text**

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**Foreword**

In paragraph 2, line 3, after 'Amendment 1 : 1991' insert 'and Amendment 2 : 1993'.

**AMD 8885/December 1995**  
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**Text of BS 3999 : Part 7**

Amend the text of BS 3999 : Part 7 in accordance with the details given on the attached pages.

**AMD 8885/December 1995**  
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### 3. Terms and definitions

#### 3.6 Steam iron

*Add to the existing text:*

It can be provided with means to supply a shot of steam.

*Add the following definitions:*

##### 3.6.1 Shot-of-steam iron

An iron provided with means to supply a shot of steam to textile materials while ironing.

##### 3.6.2 Shot of steam

A single emission of an increased volume of steam from the sole-plate for a short duration (typically between 0,5 s and 2 s).

### 5. General conditions for measurements

#### 5.2 Temperature measurement

*Replace the third paragraph by:*

A movable silver disk, having a diameter of 10 mm and a thickness of 1 mm, rests on the top of a pointed ceramic tube which contains the thermocouple wires in two separate bores. An example of the arrangement is shown in figure 1.

The centre of the silver disk is pressed on to the sole-plate of the iron by applying a force of at least 1 N. In order to improve the heat transfer between the silver disk and the sole-plate, silicone grease or heat transfer paste can be used.

#### 5.3 Steady conditions

*Add to the end of the text:*

or when the thermostat has operated four times if this occurs earlier.

*Add the following subclause:*

#### 5.6 Test sample

A new sample is used for the tests of clauses 18, 19 and 20.

### 11. Determination of the hottest point

*Replace the second and third lines by:*

voltage specified in subclause 5.4 with the thermostat set at the highest position. Immediately after the thermostat has operated twice, the iron is placed for several seconds on a sheet of white ...

### 14. Measurement of initial overswing temperature and heating-up excess temperature

*In the third line of the third paragraph, replace "nine" by "five".*

*In item 2) of the sixth paragraph, replace "five" by "three".*



## **16. Determination of temperature drop under load**

**16.1 Measurement of temperature and average input power under idling operations**  
*In the third line of the first paragraph, replace "200 ± 10 °C" by "190 °C ± 10 °C".*

## **17. Measurement of thermostatic stability**

### **17.1 Heating test**

*In the second paragraph, replace "about 200 °C" by "190 °C ± 10 °C".*

*Add the following clauses:*

## **22. Measurement of water spray**

Under consideration.

## **23. Measurement of shot of steam**

Under consideration.

## **24. Determination of smoothness of the sole-plate**

The smoothness of the sole-plate is evaluated by measuring the horizontal force required to pull the iron over the surface of a standard ironing-board.

NOTE - The specification for the standard ironing-board is under consideration.

The measurement is made at a relative humidity 65 % ± 15 %.

Before starting the test, the sole-plate is cleaned in accordance with the manufacturer's instructions. If such instructions are not given, the sole-plate is cleaned with a solution of 10 % by volume of acetic acid in water.

A standard ironing-board is positioned horizontally, the angle of inclination not exceeding 0,5 degrees.

A conditioned dry cotton cloth as specified in appendix B, is stretched on the surface of the standard ironing-board.

The iron is operated without water with the thermostat set so that the mean sole-plate temperature is maintained at 190 °C ± 10 °C when measured in accordance with clause 5 at the mid-point.

The peak temperature is not to exceed 210 °C.

The iron, immediately after switch-off of the thermostat, is placed on the ironing-board, the supply cord being attached to the handle of the iron so that the results are not affected.



Steam irons are also tested with the water reservoir filled with distilled water to the maximum capacity specified by the manufacturer, any steam control set to the maximum flow rate. The iron is placed on the ironing-board, after it has been preheated as specified for dry ironing and the thermostat has operated several times with steam emission.

Within three seconds of placing the iron on the ironing-board, the iron is pulled horizontally at a speed of  $0,25 \text{ m/s} \pm 0,05 \text{ m/s}$ .

The maximum force during the movement is measured.

The force in newtons required to pull the iron over the surface is measured by means of a spring balance having an accuracy of not less than 0,1 N, as shown in figure 7.

The test is carried out three times, the cotton cloth being replaced each time.

The test is carried out three more times, but with the spring balance attached to the back of the iron.

NOTE 1 - The temperature of the mat of the ironing-board is recorded to aid reproducibility of the test.

The average of the three measurements in each direction is calculated and the smoothness of the sole-plate is expressed in N rounded up to the nearest 0,1 N.

For steam irons it is stated for both ironing conditions.



## **Annex B**

(normative)

### **Cotton cloth**

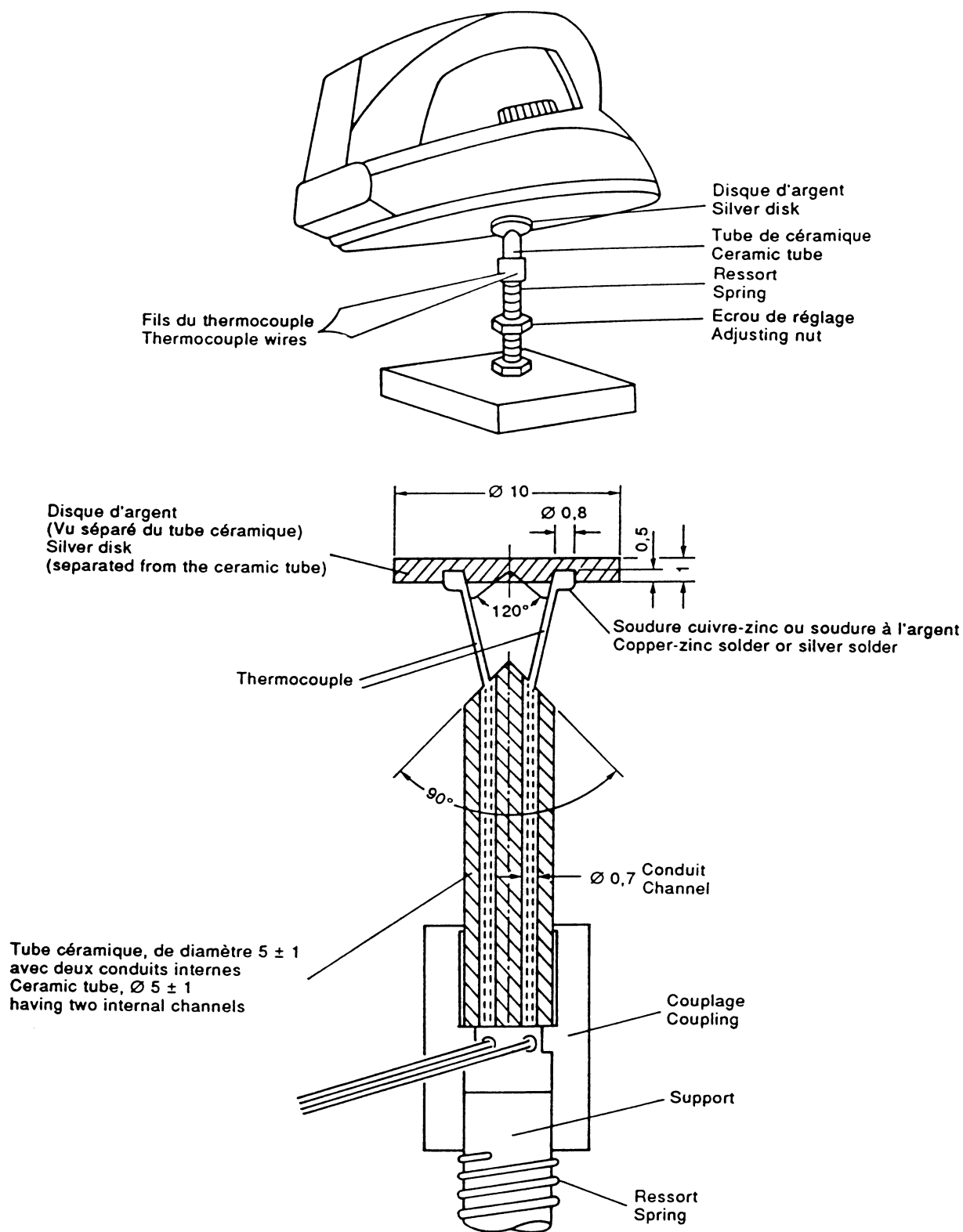
The composition of the cotton cloth used during the measurement of the smoothness of the sole-plate is as follows.

- Size: sufficient length to cover the ironing-board and be wider than the sole-plate.
- Preparation: non-starched, washed and rinsed according to ISO 6330, clause 5 and subclauses 6.2: drip flat or 6.3: dry flat.
- Number of threads per cm in warp:  $25 \pm 2$  threads of  $30 \pm 2$  tex.
- Number of threads per cm in weft:  $25 \pm 2$  threads of  $30 \pm 2$  tex.
- Mass per  $m^2$ :  $170 \text{ g} \pm 10 \text{ g}$ , after conditioning at  $20 \text{ }^\circ\text{C}$  and 65 % relative humidity.
- Tensile strength in warp: at least 500 N, determined on a 50 cm wide test sample.
- The cloth used for comparative testing of different irons shall be from the same batch.
- The cloth is kept in a container at  $20 \text{ }^\circ\text{C} \pm 2 \text{ }^\circ\text{C}$ ,  $65 \% \pm 5 \% \text{ RH}$  for at least 24 h, and then used within 1h.

*Replace figure 1 by the new figure 1, attached.*

*Replace figure 2 by the new figure 2, attached.*





CEI-IEC 673193

Figure 1 – Dispositif pour la mesure de température de la semelle  
Arrangement for measuring the sole-plate temperature

