PAKISTAN STANDARD

METHODS FOR MEASURING THE PERFORMANCE OF ELECTRIC KETTLES AND JUGS FOR HOUSEHOLD AND SIMILAR USE

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METHODS FOR MEASURING THE PERFORMANCE OF ELECTRIC KETTLES AND JUGS FOR HOUSEHOLD AND SIMILAR USE

0. FOREWORD

0.1 This Pakistan Standard was adopted by the authority of the Board of Directors of Pakistan Standard and Quality Control Authority after the draft prepared by the Technical Committee for "Electrical Appliances And Accessories (EDC- 3)" (EDC-3)" had been approved & endorsed by the Electro-technical National Standards Committee on 27th April 2010.

0.2 This Pakistan Standard has been prepared and finalized after into consideration the view and suggestions put foreword by the representatives section of technologists, manufacturers and utilizing agencies.

0.3 This Pakistan Standard is revised on the basis of latest IEC 60530/2004 with Amendment I /1999 & Amendment II / 2004 "methods for measuring the performance of electric kettles and jugs for Household and similar use" and its use hereby acknowledged with thanks.

0.4 This Standard is subject to periodical review in order to keep pace with the changing requirements and latest development in the industry. Any suggestion for improvement will be recorded and placed before the revising committee in due course.

0.5 This Standard covers the technical provisions and it does not purport to include all the necessary provision of a contract.

1. SCOPE

This Pakistan Standard applies to electric Kettles and Jugs for household and similar use with a capacity up to 2.51.

2. OBJECT

The purpose of this standard is to state and to define the principal performance characteristics of electric kettles and jugs which are of interest to the user and to describe the standard methods for measuring these characteristics.

This standard is concerned neither with safety nor with performance requirements.

SECTION TWO – DEFINITIONS

3. KETTLE OR JUG

A portable appliance for boiling water with means for pouring, either a lip or spout. Typical examples are shown in Appendix A.

SECTION THREE – GENERAL NOTES ON MEASUREMENTS

4. LIST OF MEASUREMENTS

- Overall dimensions
- Mass
- Length of flexible cord
- Water capacity
- Time to boil 11 of water
- Time to boil water capacity
- Minimum quantity of water that can be boiled
- Temperatures of supporting surface
- Clean Pouring

5. GENERAL CONDITIONS FOR THE MEASUREMENTS

Unless otherwise specified, the measurements are made under the following conditions:

- Ambient temperature: 20 $\pm$ 5 ^{0}C
- Cold water temperature: 15 $\pm$ 1 ^{0}C
- Input: rated input.
- Testing room: substantially draught free.
- Placing of the appliance: on a black matt painted wooden support, projecting beyond the appliance by at least 50 mm on all sides, at least 30 cm away from walls.

For the measurements of Clauses 10 and 11, a support with thermocouples is used consisting of a plywood board 20 mm thick and painted black matt. At intervals of 50 mm, copper disks 15 mm in diameter and 1 mm thick are embedded so that they are flush with the surface. The outer side of the disks is blackened and on their inner side fine-wire thermocouples are fastened.

SECTION FOUR – MEASURING METHODS

6. OVERALL DIMENSIONS

The maximum overall dimensions of the appliance- either length, width and height or diameter and height – are measured and indicated in millimeters together with the general shape of the appliance (e.g. cylindrical, rectangular). Handles and any projections on the appliance itself are taken into account including control knobs, lids, cord guards of any flexible cord and appliance connectors of a cord set, if supplied with the appliance.

7. MASS

The mass of the empty appliance with flexible cord, if attached, is measured and indicated in kilogrammes to the nearest 0.1 kg.

8. LENGTH OF FLEXIBLE CORD

The distance between the point of entry into the appliance and the plug, including ay cord guard, is measured and indicated in meters downwards to 0.05 m.

9. WATER CAPACITY

The water capacity stated by the manufacturer is indicated in liters. In the absence of a stated water capacity the water container is filled. This quantity is measured and 90 % there of is indicated in liters to the nearest 0.1 liter.

10. TIME TO BOIL 11 OF WATER

This measurement is made only appliances having more than 11 water capacity.

One liter of cold water is poured into the appliance which has been preconditioned at a temperature of 23 $\pm$ 2 ^{0}C. The appliance is switched on immediately, any control being set to its maximum position. The water temperature is measured by a watertight thermocouple situated 10 mm above the bottom centre of the water container. The time to boil 11 of water is the time taken to raise the temperature of the water 80 ^{0}C above its initial value. The time is indicated in minutes and seconds to the nearest 10 $_{S.}$

11. TIME TO BOIL WATER CAPACITY

The test according to Clause 10 is made with the quantity of water as indicated in Clause 9.

12. MINIMUM QUANTITY OF WATER THAT CAN BE BOILED

This measurement is made only on appliances is where the heating element is intended to be immersed.

The appliance is filled with cold water so that the major part of the heating element is just covered, unless the manufacturer's instructions give a minimum quantity of water, in which case this quantity is used.

With any control set to its maximum position, the appliance is switched on and the water is allowed to boil for 15_S after boiling has started, or in the case of an automatic appliance until the thermostat operate.

If a safety device operates, the test is repeated with the increased quantity of water necessary to ensure that the appliance will boil the water for at least 15_S.

The quantity of water is measured and indicated in liters to the nearest 0.11 or in the case of an automatic appliance until the thermostat operates.

13. TEMPERATURES OF SUPPORTING SURFACE

For the measurements of Clauses 10 and 11, the appliance is placed on the support as described in Clause 5 so that any external part of the appliance for which high temperatures may be expected can touch or be as close as possible to the disks. The temperatures of the disks are recorded and the maximum value is indicated in ^{0}C.

SECTION FIVE – FUNCTIONAL PROVISIONS

14. CLEAN POURING

Fill the kettle or jug with cold water to the maximum capacity and place the lid on the appliance, ensuring that it is correctly seated.

Hold the appliance in a vertical position so that the spout is 5 cm $\pm$ 1 cm above a container and move it steadily through an arc of 90^0 from the vertical so that the water leaves as quickly as possible but only be the spout.

Observe and record whether the water flows smoothly from the spout. It shall be noted if any dripping occurs. Single drops are allowed to flow back on to the sidewall but any continuous dripping shall be noted.

The test is repeated with the kettle or jug half full. A further test is carried out with the kettle or jug containing only one cup of water. The ease of handling shall be noted.

15. DESIGN OF INTERNAL SURFACE

The material of the parts coming into contact with water, including surface coatings, is determined and stated.

16. CONTROL

The type of control provided, if any, shall be determined and stated.

17. TYPE OF SUPPLY CONNECTION

It is determined and indicated whether the kettle or jug is provided with a non-detachable cord or with an appliance inlet, and whether, in the latter case, it is supplied with or without cord set.