EDC 7(3675) CD2

ICS……

DRAFT TANZANIA STANDARD

Household electric cooking appliances - Minimum Energy Performance-Requirements and Test Methods-Part 2: Rice Cooker

TANZANIA BUREAU OF STANDARDS

First Edition 2025

This Tanzania Standard was published under the authority of the Board of Directors of Tanzania Bureau of Standards on …….

Tanzania Bureau of Standards (TBS) is the statutory national standards body for Tanzania established under the Standards Act No. 3 of 1975, repealed and replaced by the Standards Act No. 2 of 2009.

The Electrical Engineering Divisional Standards Committee, under whose supervision this Tanzania Standard was prepared, consists of representatives from the following organizations:

College of Engineering and Technology, University of Dar es Salaam
Tanzania Telecommunications Company Limited
Tanzania Electric Supply Company Limited
Ministry of Energy
Ministry of Information, Communication and Information Technology
Energy and Water Utilities Regulatory Authority
Tanzania Electric Goods Company Limited
Tanzania Electrical Mechanical and Electronics Service Agency
Tanzania Renewable Energy Association
Engineers Registration Board (ERB)
Dar es salaam Institute of Technology

The organizations marked with an asterisk (*) in the above list, together with the following were directly represented on the Technical Committee entrusted with the preparation of this Tanzania Standard:

……..
…….
……..

EDC 7(3675) CD2
ICS……

1 Scope

This Tanzania standard applies to electric rice cooker of general purpose for household and similar purposes, rated up to and including 2200W. This standard applies to electric rice cookers using electric resistance or induction heating method, operating at normal atmospheric pressure.

This standard specifies minimum energy performance and labelling requirements, heating efficiency calculations, technical requirements and test methods for assessing energy performance of electric rise cookers. It is applicable to household electric rice cookers with rated voltages not exceeding 250V AC.

2. Normative references

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies:

IEC 60335-1, Household and similar electrical appliances - Safety - Part 1: General requirements;

IEC 60335-2-15, Household and similar electrical appliances - Safety - Part 2-15: Particular requirements for appliances for heating liquids; and

IEC 62301, Household electrical appliances - Measurement of standby power.

TZS 3335, Packaging materials and articles in contact with food-General requirements

3. Terms and Definitions

For the purposes of this document, the terms and definitions given in IEC 60335-2-15, IEC 62301 and the following apply:

3.1
heating efficiency
ratio of effective output energy to the input energy of an electric rice cooker

3.2
warm keeping energy consumption
electricity consumption when electric rice cooker enters the warm keeping state

4. Requirements

Electric rice cookers within the scope of this standard shall meet the following requirements:

4.1 Safety Requirements

Electric rice cookers shall meet safety requirements given in TZS 448-2-15/IEC 60335-2-15. Rice cooker pots shall comply with the requirements of TZS 3335.

4.2 Energy Performance and labelling requirements

Rice cookers shall comply with the energy performance and labelling requirements given in 4.2.1 and 4.2.2 respectively.

4.2.1 Energy Performance requirements

Electric rice cookers within the scope of this standard shall meet or exceed the energy efficiency levels given in Table 1. Rice cookers shall not exceed the standby power and warm-keeping energy consumption given in Table 2 and Table 3 respectively.

Table 1 — Minimum Efficiency Requirements

Rated Power, P(W)	**Efficiency (%)**
P≤400	72
400<P≤600	73
600<P≤1000	74
1000<P≤2200	76

Table 2 — Standby power Requirements

Cooking methodology	**Network Modes configuration**	**Standby power (W)**
Heated by electrical heating element	Network mode unavailable	1.8
	Network mode available	2.0
Electromagnetic induction heating	Network mode unavailable	1.8
	Network mode available	2.0

Table 3 — Warm-keeping energy consumption

Rated Power, P(W)	**Warm-energy consumption (W.h)**
P≤400	40
400<P≤600	50
600<P≤1000	66
1000<P≤2200	76

4.2.2 Energy star rating classification

The energy star rating for rice cookers is classified into 5 categories, in which five (5) stars category represents the most efficient rice cooker. The energy performance classes shall be as in Table 4. The heating efficiency, standby power (if applicable) and warm-keeping energy consumption (if applicable) for each grade of products shall meet the requirements of Table 4

Table 4 — Energy star rating classification

Energy star rating classification			Number of stars				
			5	4	3	2	1
Heating efficiency/%	$P \leq 400$		≥88	≥84	≥80	≥76	≥72
	$400 < P \leq 600$		≥89	≥85	≥81	≥77	≥73
	$600 < P \leq 1{,}000$		≥90	≥86	≥82	≥78	≥74
	$1{,}000 < P \leq 2{,}200$		≥91	≥87	≥83	≥79	≥76
Standby power/W	Heated by electrical heating element	Network mode is not available	≤1.8				
		Network mode is available	≤2.0				
	Electromagnetic induction heating	Network mode is not available	≤1.8				
		Network mode is available	≤2.0				
Warm-keeping energy consumption/(W·h)	$P \leq 400$		≤40				
	$400 < P \leq 600$		≤50				
	$600 < P \leq 1{,}000$		≤66				
	$1{,}000 < P \leq 2{,}200$		≤76				

Note 1: *P* refers to the rated power of electric rice cookers in Watts (W).

Note 2: If the network mode can be turned off, it is also necessary to test the standby power when the network mode is not available.

4.2.3 Labelling

The label shall be visibly affixed on the appliance, and shall be legible with the following information:

a) Type of appliance;
b) Total volume in liters;
c) Energy star rating;
d) Energy efficiency in percentage;
e) Rated input power;
f) Standby power consumption;
g) Standard number;
h) Label serial number; and
i) Warm-keeping energy consumption.

Note: Requirements in clause 4.2.3 (f), (i) and any other relevant information shall be included in the QR code of this label.

The label specification and user guide shall be in accordance with **Annex A**.

4.2.4 Label Positioning and attachment

Rice cookers shall display the label at the point of sale. The label shall be,

a) Non-sticky pop-up type label affixed at the side; and
b) Self–adhesive affixed on the packaging box.

5. Test Method and Energy Performance calculations

5.1 Test Conditions

The tests to be conducted shall adhere to the following conditions:

5.1.1 Environmental Conditions

Unless otherwise specified, the test shall be conducted indoor under the following environmental conditions:

a) ambient temperature: 23℃±2℃, wind speed <0.5m/s, with no significant influence of heat radiation;
b) relative humidity: 45% - 75%;
c) atmospheric pressure: 98kPa -106kPa.

5.1.2 Power Supply

The test shall be carried out at a rated voltage of 220V±2.2V and a rated frequency of 50Hz±1Hz.

Note: A stabilized power supply shall be used to meet these requirements.

5.1.3 Measuring instruments and apparatus for testing

The test instruments and apparatus shall meet the following requirements:

a) the accuracy of voltmeter, power meter and electrical energy meter is not less than ±0.5%;
b) the temperature measuring instrument has a resolution of 0.1℃ and an accuracy of not less than ±0.5%;
c) the timer has a resolution of 0.01s and an accuracy of ±2s/h;

d) when the weighing instrument is in full scale, the relative error is not greater than ±0.1%, and the minimum display (scale) value is 1g;

e) fine-wire thermocouple with a wire diameter not exceeding 0.3mm is adopted.

5.1.4 Water

Potable water shall be used for the test.

5.1.5 Initial test conditions

Prior to each test, the temperature difference between the electric rice cooker and the Environment shall be within 5℃ or the appliance shall be in idle state for at least 6h.

5.1.6 Setting of control device

The test shall be carried out in the normal cooking mode. For electric rice cookers with various cooking modes, the test shall be carried out in the most energy-saving mode indicated in the instructions for use. When the instructions for use fails to indicate the energy-saving mode and the normal cooking mode, the default cooking mode shall be adopted.

5.2 Test methods

5.2.1 Determination of heating efficiency

During the test, the initial water temperature is 23℃±2℃, which shall be consistent with the ambient temperature (with a temperature difference not exceeding 1℃). Add water up to 80% of the rated capacity into the container by the weighing method, and measure the initial water temperature t1, pass the thermocouple through the lid, which shall not affect the normal cooking state of the appliance; try to place the temperature measuring point of thermocouple at a test point (10±2)mm from the container bottom in the φ50mm cylindrical space at the center of the container, connect to the rated voltage and measure the power (electricity) consumption of the appliance with a watt-hour meter. When the temperature of water in the container rises to 90℃, immediately cut off the power supply and read the power (electricity) consumption; after the power is cut off, due to the thermal capacity and lag of the heating device, the temperature of water in the container will still rise. Observe and read the maximum temperature t_2 after 1min of power failure.

5.2.2 Calculation of heating efficiency

The heating efficiency of electric rice cookers shall be calculated using the equation below:

$$n_r = \frac{c \times \lambda \times G \times (t_2 - t_1)}{3.6 \times E} \times 100\%$$

Where,

η_r——the heating efficiency of electric rice cookers, accurate to one decimal place;

c——the specific thermal capacity of water, 4.1875, kJ/(kg·℃);

λ——the correction coefficient, λ=1.15 for products heated by electromagnetic induction, λ=1.0 for products heated by electric heating elements; λ=1.2 for products with non-metallic inner pot;

G——the mass of water before the test, kg;

t2——the maximum water temperature after the test, ℃, accurate to one decimal place;

t1——the initial water temperature before the test, ℃, accurate to one decimal place;

E——the electricity consumption, W·h, accurate to two decimal places.

5.2.3 Test on warm-keeping energy consumption.

During the test on warm-keeping energy consumption of electric rice cookers, the initial water temperature shall be 23℃±2℃. The test procedure is as follows:

a) add water up to 80% of the rated capacity into the inner pot;

b) try to fix the temperature measuring thermocouple in the φ50mm cylindrical space at the center of the inner pot, 10mm±2mm away from the bottom of the pot;

c) heat by powering on the electric rice cooker, force the electric rice cooker to enter the warm-keeping state when the water temperature reaches 90℃, and start to record the time and electricity consumption;

d) measure the electricity consumption within 5h, and then calculate the electricity consumption per hour as warm-keeping energy consumption; start to measure the temperature at the 4th hour, and monitor the temperature continuously until the 5th hour, during which the temperature in the pot shall be above 60℃.

If the electric rice cooker is heated by electromagnetic induction, and its magnetic field excessively affects the measurement results, other applicable methods which are not affected by excessive magnetic field may be used.

5.2.4 Standby power test

The standby power test method is as follows:

a) **Standby power when the network mode is not available**

Determine the electricity consumption of the electric rice cooker in standby state for 4h, and then calculate the electricity consumption per hour as the standby power. For electric rice cookers with wake-up function, they shall be kept in the non-wake-up state during the test.

b) Standby power when the network mode is available

Determine the electricity consumption of the electric rice cooker in network standby state for 4h, and then calculate the electricity consumption per hour as the network standby power. For networked electric rice cookers with wake-up function, they shall be kept in the non-wake-up state during the test.

ANNEX A
(Normative)
ENERGY LABEL SPECIFICATION AND USER GUIDE FOR RICE COOKERS

The Energy Efficiency labels shall be affixed to the side of an appliance in a clearly visible and upright position. The label shall be self-adhesive or non-sticky and shall be as per the example attached in **A.1**

A.1. Energy Label Example

Figure B.1 Typical example for rice cooker's energy label

The following information shall be included on the label:

A.2. Dimensions and positions of Label Elements

The label shall be 125mm long and 72mm wide. The dimensions and positions of the elements constituting the label shall be as indicated below:

a) **NATIONAL FLAG**: The Tanzania flag shall be in a 15mm by 13 mm rectangular area, placed 2.25 mm from the left margin and 1.95mm from the top margins of the label.

b) **"ENERGY LABEL" title:** This shall be 13 mm wide and 52.5 mm long, positioned 1.95 mm from the top margin and 2.25 mm from right margin of the label.
c) **Type of Unit:** The word '**RICE COOKER**' shall be 3 mm from the left margin and 17.55 mm from the top margin.
d) **Colour bars:** They shall be 0.975 mm wide. The first and last bars, starting from the left, shall be 22.5 mm long, while each intermediate bar shall be 7.5 mm long. All bars shall be positioned 22.10 mm from the top margin
e) **Most efficient" text:** The text shall be located 3 mm from the left margin and 27.30 mm from the top margin**.**
f) **Least efficient" text:** The text shall be located 3 mm from the left margin and 63.05 mm from the top margin**.**
g) **Stars bars:** The enclosing bar for the 5-star rating shall measure 5.525 mm in width and 37.50 mm in length. The subsequent bars for the 4-star, 3-star, 2-star, and 1-star ratings shall maintain the same width of 5.525 mm with a uniform spacing of 0.975 mm between each subsequent bar. The length of the enclosing bar shall decrease in length by 7.50 mm for each level, starting from 37.50 mm for the 5-star rating and reducing progressively. The 5-star enclosing bar shall be positioned 3 mm from the left margin and 30.55mm mm from the top margin.
h) **Stars:** Shall be 5.20mm wide, 6.30 mm long, with a uniform spacing of 1.20 mm between each star, and centered within in the star bar.
i) **The pointing arrow:** The arrow indicating the Rice cooker star rating shall be 7.80 mm wide and 17.25 mm long, with a pointer angle of 73.74°, positioned 2.25 mm from the right margin and aligned centrally with the corresponding star bar (ranging from 1 to 5)."
j) **Rice cooker icon:** The Rice cooker icon shall fit within a rectangle measuring 20.80 mm in height and 22.50 mm in width, positioned 2.25 mm from the left margin and 37.50 mm above the bottom margin
k) **QR code:** The QR code shall measure 20mm by 20mm. It shall be 3.75 mm from the right margin and 50mm above the bottom margin.

l) **Footer:** The bar shall be 26 mm wide and 72 mm long.

A.3 Label Design and Colour Specifications

- **Background:** The background of the label shall be 100% white.
- **Border:** The label border shall be 0.325 mm wide.
- **Typeface:** The typefaces used shall be Verdana and Calibri.

- **Colour Specifications (CMYK format):** The label's colours shall follow the CMYK format:
  - **Label and squares Border:** 100, 50, 0, 0
  - **National flag Logo:** Original colours as per the official logo
  - **Background of the Energy Label section:** 100, 0, 100, 50.
  - **The text colour for 'ENERGY LABEL'** shall be 100% white (CMYK: 0, 0, 0, 0), while the text colour for '**Rice cooker**' shall be 100% black
  - **Bars enclosing the star ratings:** Similar to the corresponding star's colour codes

B.3.1 Star bars size

The star efficiency rating bars shall follow these dimensions:

- **5-star bar:** 5.525 mm width, 35.50 mm length.
- **4-star bar:** 5.525 mm width, 30 mm length.
- **3-star bar:** 5.525 mm width, 22.50 mm length.
- **2-star bar:** 5.525 mm width, 15 mm length.
- **1-star bar:** 5.525 mm width, 7.5 mm length.

A.3.2 The star colours for energy efficiency rating:

- **5 stars (most efficient):** 100, 0, 100, 0.
- **4 stars:** 30, 0, 100, 0.
- **3 stars**: 0, 0, 100, 0.
- **2 stars**: 0, 30, 100, 0**.**
- **1 star (least efficient):** 0, 100, 100, 0.

A.3.3 Energy Efficiency Class Number (star rating) inside the stars arrow:

The energy efficiency class number shall be:

- **Colour:** 100% white.
- **Font:** Calibri Bold, size 22 pt.
- The rectangular black section of the arrow shall contain the star rating number, which is centered.

A.3.4 Rice cooker icon

- Colour shall be 100% black.
- The background color shall be 100% white.

A.3.5 QR Code

The QR code shall be 100% black.

A.3.6 Additional Text Elements

- **The phrase "MORE STARS, MORE SAVINGS":**
  - **Font:** Calibri Bold, size 10 pt.
  - **Colour:** 100% black.
- **Texts within the Rice cooker symbol squares:**
  - **Font:** Verdana Bold, 10 pt for the main element, Verdana Regular 10 pt for the unit.

- **Colour:** 100% black.
-

A.3.8 Footer

- **Background shall be:** 100, 50, 0, 0.
- **The texts:**
  - **Font:** Calibri, size 10 pt.
  - **Colour:** 100% white.