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DRAFT TANZANIA STANDARD

Household electric cooking appliances – Safety Requirements for Air Fryers

TANZANIA BUREAU OF STANDARDS

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Tanzania Association of Clean Cooking Stakeholders;
United Nations Development Program-Energy Efficiency Division;
Arusha Technical College; and
Tanzania Industrial Research and Development Organization.

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1 Scope

This draft Tanzania standard specifies the safety requirements for air fryers intended for household and similar use. It covers construction, electrical safety and mechanical strength. The standard also establishes testing methods and minimum performance requirements to ensure consumer protection and product reliability. It applies to all air fryers within the rated voltage of up to and including 250V for single phase and of up to and including 480V for three phase.

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 60335-2-9, Household and similar electrical appliances - Safety - Part 2-9: Particular requirements for grills, toasters and similar portable cooking appliances;

IEC 62233, Measurement methods for electromagnetic fields of household appliances and similar apparatus with regards to human exposure

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

EAS 495-1, Plugs, socket-outlets, adaptors and connection units — Part 1: Specification for rewirable and non-rewirable fused plugs

EAS 495-2, Plugs, socket-outlets, adaptors and connection units — Part 2: Specification for switched and unswitched socket outlets

EAS 495-3, Plugs, socket-outlets, adaptors and connection units — Part 3: Specification for adaptors

3. Terms and Definitions

For the purpose of this document, the terms and definitions given in IEC 60335-2-9 and the following shall apply:

3.1
basic insulation
insulation applied to live parts to provide basic protection against electric shock

3.2
supplementary insulation
independent insulation applied in addition to basic insulation, in order to provide protection against electric shock in the event of a failure of basic insulation

3.3
double insulation
insulation system comprising both basic insulation and supplementary insulation

3.4
reinforced insulation
single insulation applied to live parts, that provides a degree of protection against electric shock equivalent to double insulation under the conditions specified in IEC 60335-1

Note 1 to entry: It is not implied that the insulation is one homogeneous piece. The insulation may comprise several layers which cannot be tested singly as supplementary insulation or basic insulation.

3.5
class I appliance
appliance in which protection against electric shock does not rely on basic insulation only but which includes an additional safety precaution, in that conductive accessible parts are connected to the protective earthing conductor in the fixed wiring of the installation in such a way that conductive accessible parts cannot become live in the event of a failure of the basic insulation

Note 1 to entry: This provision includes a protective earthing conductor in the supply cord

3.6
class II appliance
appliance in which protection against electric shock does not rely on basic insulation only but in which additional safety precautions are provided, such as double insulation or reinforced insulation, there being no provision for protective earthing or reliance upon installation conditions

Note 1 to entry: Such an appliance may be of one of the following types:

a. an appliance having a durable and substantially continuous enclosure of insulating material which envelops all metal parts, with the exception of parts, such as nameplates, screws and rivets, which are isolated from live parts by insulation at least equivalent to reinforced insulation; such an appliance is called an insulation encased class II appliance;

b. an appliance having a substantially continuous metal enclosure, in which double insulation or reinforced insulation is used throughout; such an appliance is called a metal-encased class II appliance;

c. an appliance which is a combination of an insulation-encased class II appliance and a metal-encased class II appliance.

Note 2 to entry: The enclosure of an insulation-encased class II appliance may form a part or the whole of the supplementary insulation or of the reinforced insulation.

Note 3 to entry: Class II appliances may incorporate an earth for functional purposes.

3.7
class III appliance

appliance in which protection against electric shock relies on supply at safety extra-low voltage and in which voltages higher than those of safety extra-low voltage are not generated

Note 1 to entry: Basic insulation may be required in addition to supply at SELV. Refer to 8.1.4 of IEC 60335-1:2020

Note 2 to entry: Class III appliances may incorporate an earth for functional purposes.

4. General requirements

4.1 Air fryers shall be so designed and constructed as to ensure safe operation under normal use, without posing any risk to users or their surroundings, including during instances of typical user negligence.

4.2 Compliance with Clause 4.1 shall be verified through applicable testing and demonstrated by meeting the requirements of this standard.

5. Tests and Condition for testing

5.1 Except for Clauses 9, 12, 14, and 19 of IEC 60335-2-9, the applicable tests specified in IEC 60335-2-9 shall apply

5.2 Tests shall be carried out under the conditions outlined in Clause 5 of IEC 60335-2-9

6. Classification

6.1 Air fryers shall be of one of the following classes with respect to protection against electric shock:

a) Class I;
b) Class II; and
c) Class III.

6.1.1 Air fryers shall have EAS 495-1 compliant plugs or permanently fixed EAS 495-3-compliant adapters.

6.1.2 Class III appliances shall be equipped with EAS 495-1 compliant plugs, including Insulated Shutter Opening Devices (ISODs), to ensure compatibility with EAS 495-2 socket outlets and to provide protection against accidental contact with live parts.

6.2 If air fryers consist of parts of Class III construction and a detachable power supply part, the complete appliance is classified as Class I appliance or Class II appliance in accordance with the classification applicable to its detachable power supply part.

6.3 Compliance with Clause 6.1 and Clause 6.2 shall be checked by inspection and by the relevant tests.

6.4 Air fryers shall have appropriate degree of protection against harmful ingress of water.

6.4.1 Appliance intended for outdoor use shall be at least IPX4

6.5 Compliance with Clause 6.4 shall be checked by inspection and by the relevant tests.

NOTE: The degree of protection against ingress of harmful shall be in accordance with IEC 60529

7. Marking and Instructions

The Air fryers shall comply with the applicable marking and instruction requirements prescribed in IEC 60335-2-9

8. Protection against access to live parts

8.1 Air fryers shall be constructed and enclosed so that there is adequate protection against accidental contact with live parts.

8.2 Compliance with Clause 8.1 shall be checked by inspection and by the tests of 8.1.1 to 8.15 of IEC 60335-2-9, as applicable.

8.3 Class I Air fryers and Class II construction shall be constructed and enclosed so that there is adequate protection against accidental contacts with basic insulation and metal parts separated from live parts by basic insulation only.

8.3.1 It shall only be possible to touch parts, which are separated from live parts by double insulation or reinforced insulation.

8.4 Compliance with Clause 8.3 shall be checked in accordance with 8.1.1 of IEC 60335-1:2020

9. Power input and current

The power input and current for Air fryers shall be in accordance with the applicable parts of IEC 60335-2-9

10. Heating

10.1 Air fryers and their surroundings shall not attain excessive temperatures in normal use.

10.2 Compliance with Clause 10.1 shall be checked in accordance with Clause 11 of IEC 60335-2-9, as applicable.

11. Leakage current and electric strength at operating temperature

11.1 At operating temperature, the leakage current of the air fryer shall not be excessive and electric strength shall be adequate.

11.2 Compliance with 11.1 shall be checked in accordance with Clause 13 of IEC 60335-2-9, as applicable

12. Moisture resistance

12.1 The enclosure of Air fryers shall provide degree of protection against moisture in accordance with their classification.

12.2 Compliance with Clause **12.1** shall be checked in accordance with Clause 15 of IEC 60335-2-9, as applicable.

13. Leakage current and electric strength

13.1 The leakage current of air fryers shall not be excessive and its electric strength shall be adequate.

13.2 Compliance with Clause 13.1 shall be checked in accordance with Clause 16 of IEC 60335-2-9, as applicable.

14. Abnormal operation

Clause 19 of IEC 60335-2-9 shall apply

15. Stability and Mechanical hazards

15.1 Air fryers shall have adequate stability

15.2 Compliance with Clause 15.1 shall be checked in accordance with relevant sections of Clause 20.1 of IEC 60335-2-9

15.3 Protective enclosures, guards and similar parts shall be non-detachable parts and shall have adequate mechanical strength.

15.4 Compliance with Clause 15.3 shall be checked by relevant sections of Clause 20 of IEC 60335-2-9

16. Mechanical strength

16.1 Air fryers shall have adequate mechanical strength and be constructed to withstand such rough handling that may be expected in normal use

16.2 Compliance with Clause 16.2 shall be checked in accordance with relevant sections of Clause 21 of IEC 60335-2-9

17. Construction

17.1 Air fryers shall be constructed in accordance with relevant sections of Clause 22 of IEC 60335-2-29.

17.2 Compliance with Clause 17.1 shall be verified in accordance with Clause 22 of IEC 60335-2-29

17.3 If the air fryer is marked with the first numeral of the Ingress Protection (IP) system or any additional letter, it shall comply with the relevant requirements of IEC 60529.

17.4 Compliance with Clause 17.3 shall be verified in accordance with IEC 60529

17.5 Means shall be provided to ensure the disconnection of air fryers from the supply mains.

17.6 Compliance with Clause 17.5 shall be checked by inspection.

18. Internal wiring

Relevant parts of Clause 23 of IEC 60335-2-9 shall apply

19. Supply connection and flexible cords

Relevant parts of Clause 25 of IEC 60335-2-9 shall apply.

20. Provision for Earthing

20.1 Class I air fryers that may become live in the event of basic insulation failure, shall be permanently and reliably connected to an earthing terminal within the appliance or to the earthing contact of the appliance inlet.

20.2 Compliance with Clause 20.1 shall be checked by inspection.

20.3 Earthing terminals and earthing contacts shall not be connected to the neutral terminal.

20.4 Compliance with Clause 20.3 shall be checked by inspection.

20.5 Class II air fryers and Class III air fryers shall have no provision for protective earthing

20.6 Compliance with Clause 20.5 shall be checked by inspection.

20.7 Applicable requirements and compliance verification procedures of Clause 27 of IEC 60335-2-9:2019 shall apply.

21. Clearances, creepage distances and solid insulation

Relevant sections of Clause 29 of IEC 60335-2-9 shall apply

22. Resistance to heat and fire

Relevant sections of Clause 30 of IEC 60335-2-9 shall apply.

23. Resistance to rusting

Applicable sections of Clause 30 of IEC 60335-9 shall apply.