



DRAFT TANZANIA STANDARD

Plastic ballot box-Specification

TANZANIA BUREAU OF STANDARDS

This Tanzania Standard was published under the authority of the Board of Directors of Tanzania Bureau of Standards on **2022-05-13**.

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(TBS) is the statutory national standards body for Tanzania established under the Standards Act No. 3 of 1975, repealed and replaced by the Standards Act No. 2 of 2009.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 General Techniques Standards Divisional Committee Standards Committee, under whose supervision this Tanzania Standard was prepared, consists of representatives from the following organizations:

- *College of Engineering and Technology (CoET),UDSM
- *The National Environment Management Council (NEMC)
- Weights and Measures Agency (WMA)
- *College of Natural and Applied Sciences (CoNAS),UDSM
- National Bureau of Statistics (NBS)
- Tanzania Portland Cement Company Limited (TPCC)
- Simba Plastics Co Limited

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:

- Industrial Packaging Limited (IPL)
- Zanzibar Bureau of Standards (ZBS)
- Omar Packaging Industrial limited (OPIL)
- Small Industries Development Organization (SIDO)
- SilaAfrica Tanzania limited
- Kioo Limited

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0 National Foreword

The Tanzania Bureau of Standards is the statutory national standards body for Tanzania, established under the Act.No.3 of 1975, amended by Act.No.2 of 2009.

This Tanzania Standard has been adopted by Packaging Technical committee, under the supervision of the General Techniques Standards Divisional Committee (GTDC) and it is in accordance with the procedures of the Bureau.

During the preparation of this standard, reference was made to the following document:

TZS 1878: 2016 Household plastic ware — Specification

Acknowledgement is hereby made for the assistance derived from this source

0.2 Terminology and conventions

The text of the International standard is hereby being recommended for approval without deviation for publication as Tanzania standard.

Some terminology and certain conventions are not identical with those used as Tanzania Standard; attention is drawn to the following:

The comma has been used as decimal marker for metric dimensions. In Tanzania, its current practice to use a full point on the baseline as decimal marker.

Whenever the words “International Standard” appear, referring to this Finalized Tanzania Standard, they should read as “Tanzania Standard”.

1. Scope

This draft Tanzania standard specifies requirements, method of sampling and test for ballot box manufactured from plastic materials intended for use in elections, referenda, and other official voting processes. This standard does not cover temporary or disposable ballot containers used for informal or non-official polling activities.

2. Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2859-1 Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection.

ISO 527 Plastics — Determination of tensile properties Part 1: General principles.

ISO 178 Plastics — Determination of flexural properties.

ISO 4892-3 Plastics — Methods of exposure to laboratory light sources Part 3: Fluorescent UV lamps.

ISO 13468-1 Plastics — Determination of the total luminous transmittance of transparent materials Part 1: Single-beam instrument.

3. Terms and definitions

For the purpose of this document, the following terms and definitions shall apply;

3.1

ballot box

secured container designed to receive, store, and protect ballot papers cast by voters during an election or referendum

3.2

ballot slot

controlled opening on the lid designed for the insertion of ballot papers, dimensioned to prevent unauthorized retrieval

3.3

Polycarbonate (PC)

high-impact transparent thermoplastic known for strength, clarity, and durability under stress

3.4

Polypropylene (PP)

semi-transparent, lightweight thermoplastic with moderate impact strength and high chemical resistance

3.5

nominal capacity

total internal volume of the ballot box, expressed in litres, suitable for the estimated number of ballots

3.6

tamper-evident seal

physical mechanism that provides visible evidence if unauthorized access has been attempted

3.7

lid

removable or hinged cover of the top of the ballot urn

3.8

ballot urn

lower part of ballot box without the lid

4 Requirements

4.1 General requirements

- 4.1.1 Ballot boxes shall be manufactured from durable pigmented or non-pigmented plastic materials that are impact-resistant, dimensionally stable, and recyclable. Suitable materials include polycarbonate (PC), and polypropylene (PP), or equivalent plastics demonstrating comparable mechanical and environmental performance.
- 4.1.2 Ballot boxes shall be rigid, durable, and tamper-evident containers capable of securely holding paper ballots.
- 4.1.3 The design shall permit easy handling, transport, and stacking while ensuring that ballot paper cannot be removed without breaking a tamper seal.
- 4.1.4 The box and lid shall be designed to interlock securely, with sealing points clearly indicated.
- 4.1.5 All edges and corners shall not have sharp edges to avoid injury or damage during handling.
- 4.1.6 All materials shall be non-toxic, recyclable, and resistant to water, oils, and chemicals typically encountered in transport or storage.
- 4.1.7 The slot shall be designed to prevent retrieval of ballots and insertion of non-ballot materials.
- 4.1.8 The slot edges shall be smooth and reinforced to prevent deformation.
- 4.1.9 Handles shall be ergonomically designed and firmly integrated into the body or lid structure.

4.2 Specific requirements

4.2.1 Physical requirements

Ballot Box shall comply with the requirements of Table 1 when tested in accordance with the test methods specified therein.

Table 1 — Physical requirements of Ballot urn and lid

S/No.	Parameter	Requirement			Test method
		Polycarbonate (PC)	Polypropylene (PP)	Other plastic materials	
i.	Impact resistance	shall show no sign of breakage or rupture			Annex A
ii.	Tensile strength, MPa	≥ 60		≥ 60	ISO 527
iii.	Flexural modulus, MPa	≥ 2200	≥ 1200	≥ 1200	ISO 178
iv.	UV resistance	No degradation after 1000 hours			ISO 4892-3
v.	Transparency	≥ 85% light transmission (clear view of contents)	30–60% (semi-transparent)	≥ 40%	ISO 13468-1
vi.	Wall thickness, mm	3–5	≥ 2	≥ 2	Annex B

4.2.2 Dimensional Requirements

4.2.2.1 The nominal capacity of the ballot box shall be between 40 L to 60 L.

4.2.2.2 The ballot box shall have external dimensions of 400 mm to 450 mm length, 300 mm to 450 mm width, and 300 mm to 550 mm height.

4.2.2.3 The lid shall be provided with a slot having a length of 200 mm to 250 mm and a width of 10 mm to 15 mm.

4.2.3 Locking Mechanism

4.2.3.1 The lid shall fit snugly and be secured with at least two tamper-evident sealing points.

4.2.3.2 Each seal location shall accommodate wire, plastic, or numbered strip seals.

4.2.3.3 Optional locking devices (padlock or latch) may be provided if required.

4.2.3.4 The lid shall incorporate:

- a) One ballot slot
- b) Optional transparent observation window
- c) Clearly visible "LOCK" or "SEAL" markings

4.2.3.5 Seals shall be easily inspectable for tampering without opening the box.

4.2.4 Handle

Handle shall withstand a minimum static load equivalent to twice the filled weight of the box without failure or permanent deformation.

5 Packaging and marking

5.1 Packaging

5.1.1 The ballot box shall be packaged in suitable packaging materials that maintain their integrity, prevent the ingress of dust, moisture and other foreign matters during transportation and storage.

5.1.2 The ballot box shall be designed for easy transportation before and after casting ballots.

5.2 Marking

The following information shall be legibly and indelibly marked on each ballot box ;

- a) Manufacturer's name or code
- b) Batch number or year of manufacture
- c) Serial number (unique per ballot urn and lid)
- d) Material type code (per ISO 11469)
- e) election authority logo or QR/barcode

6 Sampling

The sampling criteria shall be in accordance with ISO 2859-1.

Annex A

(normative)

Determination of drop impact strength

A.1 Principle

A quantity of sand equivalent to the total brimful water capacity of the unit, constituting the set is distributed equally among the units in order to simulate its performance if dropped when in use.

A.2 Apparatus

A.2.1 Flat concrete surface or mild steel sheet.

A.2.2 Weighing balance, weighing to the nearest 0.01g.

A.3 Procedure

Weigh each unit of the box empty. Fill it with water to the brim and reweigh. Record the difference in mass, which is the brimful water capacity of the unit. Calculate the total brimful capacity of all the units of the ware. Take the equivalent mass of sand and distribute it equally into the units, which constitute the set. Seal each unit with a piece of adhesive tape to prevent spillage of the sand out of the units on impact. Link the box together into a set with the flexible strap or rigid fixture and drop the box vertically and squarely from a height of 1 meter onto the rigid flat surface with the base of the lowest member of the set hitting it. Change the position of the members of the set till each member of the set has undergone the same test as the lowest member in the set to hit the hard surface. Examine the box for signs of breakage or rupture.

Annex B

(normative)

Measurement of wall thickness

B.1 Apparatus

A suitable instrument, e.g., micrometer, vernier caliper, non-contact instrument, etc. having a measurement accuracy of 0.02 mm.

B.2 Procedure

Cut the box body horizontally into three equal sections, top, middle, and bottom. Measure the wall thickness at four places, 90° apart and offset from the parting line, in each section. Take average of four readings and report as wall thickness at top, middle, and bottom.

B.2.1 Micrometer method

Measure the wall thickness with a micrometer or screw gauge fitted with ball point tip.

B.2.2 Dial caliper gauge method

Measure the wall thickness with the help of dial caliper fitted with spherical anvils. Care shall be taken to avoid movement of the container during measurement as this can affect the reading obtained.

B.2.3 Non-contact instrument method

Measure the wall thickness according to the manufacturer's instructions.

B.3 Results

The wall thickness is recorded as the mean of the four readings each for top, middle, and bottom sections.