



## DRAFT TANZANIA STANDARD

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### Plastic sanitary appliances- Specification -Part 1: Squatting pan

**TANZANIA BUREAU OF STANDARDS**

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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 draft Tanzania Standard is being prepared by the BCDC 7 Sanitation Structures and Sanitary Appliances Technical Committee, under the supervision of the Building and Construction Divisional Standards Committee (BCDC)

In the preparation of this draft Tanzania Standard, reference was made to FTZS 3258-4:2021/EAS 1017-4:2021 *Sanitary appliances (vitreous china)-Specification - Part 4: Squatting pan*

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## 1. Scope

This draft Tanzania Standard specifies material, finish, dimensional, installation, physical and performance requirements, marking, sampling and test methods for pour flush type squatting pans.

This standard is only applicable to squatting pans that are plastic material.

## 2. Normative reference

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

TZS 1876/ISO 472, *Plastics — Vocabulary*

TZS 651/EAS 355, *Toilet Paper-Specification*

## 3. Terms and definitions

For the purposes of this Tanzania Standard, the terms and definitions of the following apply.

### 3.1

#### **trap door**

hatch, intended to be opened temporarily to provide access through a platform or other horizontal structure.

### 3.2

#### **speck**

defect caused by agglomerates, aggregates and primary particles of the colorant and/or extender, impurities of basic test polymer

### 3.3

#### **plastic**

material which contains as an essential ingredient a high polymer and which, at some stage in its processing into finished products, can be shaped by flow.

### 3.4

#### **Bubbles**

entrapped air or material in the pan.

### 3.5

#### **reversion**

the reduction on length expressed as a percentage of the initial length of the specimen.

### 3.6

#### **Short-short**

Incomplete filling of the mold

**3.7**  
**knit lines**

lines showing where two molten masses of plastic did not fully weld upon meeting in the mold during the filling portion of the cycle.

**3.8**  
**delamination**  
poorly fused material.

**3.9**  
**burns**  
locally at the weld line or generally burned material.

**3.10**  
**one-piece installation**  
a complete set without removing the trap door

**3.11**  
**durability**  
ability of a specimen to resist the deleterious effect of its environment.

## **4. Requirements**

### **4.1 General requirements**

The general requirement relating to material, colour, weight and appearance shall apply.

#### **4.1.1 Material**

The material shall be natural or pigmented polythene or polypropylene. The density of the polymer from which the material is made shall not be greater than 1.0 g/ml and not less than 0.5 g/ml at 23 °C. It shall not contain toxic additives.

#### **4.1.2 Appearance**

The squatting pan shall be clean. Traces of any short-short, warp, knit lines, delamination, burns or bubbles shall be subjected to rejection. Any black speck exceeding 1(one) mm in diameter or any 5 (five) specks of any visual size within 324 sq. mm area shall be subjected to rejection.

#### **4.1.3 Weight**

Each plastic squatting pan shall be not less than 0.85Kg in weight.

#### **4.1.4 Colour**

The pan shall be made from natural or coloured polyethylene or polypropylene depending on the market response.

#### 4.2 Performance requirements

**4.2.1.** Squatting pans shall pass all the tests as given in annexes.

**4.2. 2** Trap door for Squatting pans shall be designed to minimize the risk of blockage and shall prevent the leakage of contaminated water and foul air into the building.

**4.2.3** Squatting pans including their trap door conforming to the requirements in clause 4, shall be deemed to be durable under normal operating conditions.

#### 4.3 Dimensions and tolerances

4.3.1 Squatting pans shall comply with the dimensions specified in Table 1 as indicated in Figure 1 and shall be subjected to the tolerances permitted.

**Table 1: Dimensions for squatting pans**

| No. | Critical dimensions                | Code lettering figure 1 | Dimensions (mm) |     | Tolerances |
|-----|------------------------------------|-------------------------|-----------------|-----|------------|
|     |                                    |                         | Min             | Max |            |
| 1   | Pan length                         | L                       | 425             | 600 | ± 2.00     |
| 2   | Pan width (at widest point)        | w                       | 200             | 310 | ± 1.00     |
| 3   | Pan height                         | H                       | 190             | 320 | ± 1.00     |
| 4   | Vertical drop in front wall of pan | E                       | 60              | 80  | ± 1.00     |
| 5   | Output hole dia.                   | Ø                       | 77              | 110 | ± 0.50     |
| 6   | Slope angle of the bottom pan      | S                       | 25°             | 28° |            |

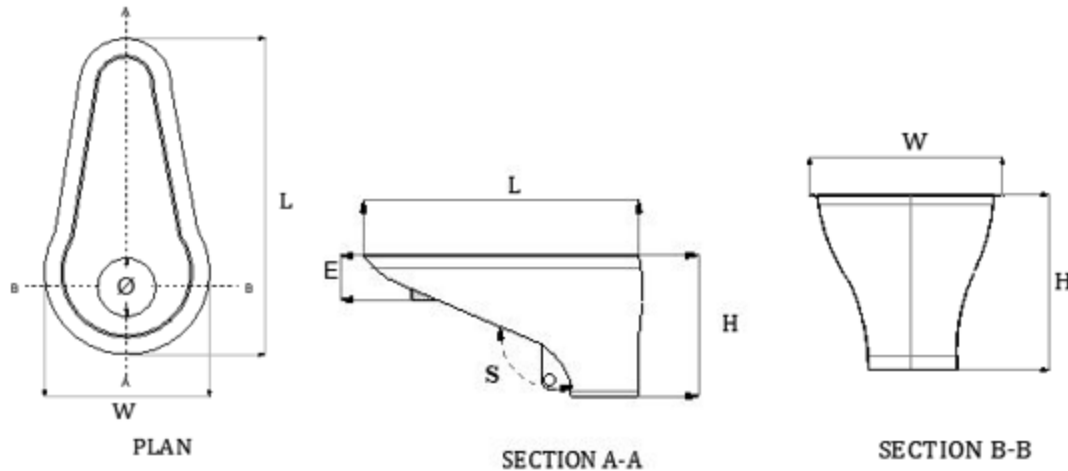


Figure 1: squatting pan

4.3.2 The overall thickness of the plastic injection moulded squatting pan shall not be less than three (3) mm.

4.3.3 The squatting pan may also be made in other patterns and/or sizes where so agreed between the manufacturer and the purchaser. However, except for functional dimensions all other requirements as laid down in this standard shall comply.

## 5. Installation

5.1 The pan shall be installed a complete set with all its parts. The inside of the bottom of the pan shall be designed with a slope of  $25^\circ$  from the front towards the outlet to enable easy and quick disposal while flushing. The designed flushing surface shall be smooth with a glazed finished quality to enable cleaning and prevent accumulation of excreta.

## 6. Finish

The surface of the pan shall be free from pinholes, unevenness and cracks. It shall contain no impurities. Surface of the pan shall be smooth and free from any sharp edges and unwanted curves.

## 7. Test method

Pan shall be tested according to validated test method(s), analysis or any other established methods. Recommended test methods are depicted in annex A, B, C and D.

## 8. Sampling and inspection

### 8.1 Visual inspection

8.1.1 While taking samples from the lot, approximately, equal number of squatting pans shall be randomly taken for each size so as to constitute the requisite sample size. Each squatting pan in the sample shall be subjected to visual inspection.

8.1.2 The number of pans to be selected from a lot shall be in accordance with Table 2. The lot shall be considered as conforming to the visual requirements if the number of defectives found in the sample does not exceed the corresponding permissible number of defective squatting pans given in Table 2. A squatting pan failing in finishing and/or marking requirements shall be considered as defective.

**Table 2 — Sampling and acceptance criteria for visual inspection**

| Lot size | Sample size | Permissible number of defective squatting pans |
|----------|-------------|--|
| ≤25      | 8           | 0  |
| 26-50    | 13          | 0  |
| 51-90    | 20          | 1  |
| 91-150   | 32          | 2  |
| 151-280  | 50          | 3  |
| 281-500  | 80          | 5  |
| 501-1200 | 125         | 7  |

### 8.2 Dimensional, Installation and performance tests

8.2.1 The number of squatting pans shall be selected at random from a lot, having been found complying with 10.1 in accordance with Table 3.

8.2.2 The lot shall be considered as conforming to dimensional, installation and performance requirements if the number of defectives do not exceed the permissible number of defective squatting pans given in Table 3.

**Table 3- Sampling and acceptance criteria for dimensional, Installation and performance tests**

| Lot size | Sample size | Permissible number of defective squatting pans |
|----------|-------------|--|
| ≤90      | 5           | 0  |
| 91-150   | 8           | 0  |
| 151-500  | 13          | 0  |
| 501-1200 | 20          | 1  |

## 9. Instructions

Each pan shall be supplied with a label giving the following instructions:

- Wash with water
- Avoid abrasive or scoring powder
- Do not place near fire
- Do not use hard or wire brush for cleaning
- Washing liquid should have a pH range between 6.5 to 8.5



## 10. Marking, labelling and Packing

Each piece of squatting pan shall be legibly and indelibly marked at a suitable place with the following:

- a) Name and/or trademark of the manufacturer;
- b) country of origin;
- c) batch/lot number and

The squatting pans shall be packed as agreed to between the purchaser and the supplier.

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## **Annex A (Normative)**

### **Flushing tests for squatting pans**

#### **A.1. General**

These tests shall be conducted by connecting the squatting pan to a low level cistern. A cistern shall be fixed such that the height between the top of the pan and the bottom of the cistern is at least 1250 mm for high level and 700 mm for low level, and the squatting pan shall be connected to the cistern by 40 mm outer diameter pipe.

##### **A.1.1 Toilet paper test**

The pan shall be filled with water to its nominal water seal level and charged with six pieces of toilet paper complying with TZS 651. It shall then be flushed. This test shall be repeated four times and the pan shall discharge the full charge of the paper at least thrice out of four times.

##### **A.1.2 Smudge test**

The whole of the interior surface of the squatting pan to 40 mm below the flushing rim shall be smudged with quartz powder of contrasting colour passing through a 1.18 mm sieve and shall then be flushed, carefully observing the surface of the pan during the flushing. Immediately after the flushing, there shall be no smudge left on the pan.

## **Annex B**

### **(Normative)**

#### **Test for resistance to staining**

##### **B.1. Outline of the method**

Surface resistance to stain is carried out by immersing the test specimen in Carbon Tetrachloride for a specified period and then examining for delamination.

##### **B.2 Specimen**

A specimen of dimension 50 mm x 2.5 mm, is cut from the side of the pan, four specimens from separate sectors of the side are examined in each case.

##### **B.3 Reagent**

Carbon Tetrachloride confirming to the relevant standard.

The chemicals are following:

- a) 0.5 % aqueous solution of methylene blue
- b) A solution of sodium hypochlorite 10 %-14 % w/v available chlorine. A 10 % dilution is prepared for the test.
- c) 3 % aqueous solution of hydrogen peroxide,
- d) Amyl acetate
- e) Carbon tetrachloride, and
- f) 13 g of iodine in 1 l of ethanol

##### **B.4 Procedure**

Four (4) specimens are immersed in carbon tetrachloride at 40 °C for 4 h. The solvent is contained in 150 mm x 25 mm test tube immersed in a water bath at 40 °C ± 0.5 °C and allowed to attain the test temperature before the introduction of the specimens. After removal from the solvent, the specimens are placed on blotting paper and allowed to dry for 1 h. The extent and nature of the effect produced on its surface is recorded.

**Annex C  
(Normative)**

**Impact strength test**

The test shall be carried out at room temperature of  $27 \pm 2$  °C. A steel ball weighing 1 kg shall be dropped on the plastic pan from a height of 180 cm. Examine for cracks.

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**Annex D**

**(Normative)****Reversion test method****D. 1 Outline of the method**

Reversion test is carried out by immersing the specimen in hot water at a temperature range of 75-80°C for a specified period and then determining the change in length. The change in length of any specimen shall not exceed five percent.

**D.2 Specimen**

A specimen of dimension 50 mm x 2.5 mm, is cut from the sidewall of the pan. The test specimen shall be cut in the direction parallel to the direction of flow of the material during the molding operation. Five such specimens from separate sectors of the pan shall be used for this test.

**D.3 Procedure**

The specimens are measured accurately and then immersed in boiling water for 30 min. On removal they are allowed to cool for 1 h, after which the length is measured again to the nearest 0.5 mm.