DRAFT TANZANIA STANDARD

GDC 4 (3) DTZS Tableware-Glass Tableware-Specification

TANZANIA BUREAU OF STANDARDS

1st Edition

1. Scope

This draft Tanzania standard specifies requirements, method of sampling and test for glass tableware.

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 7086-1:2019 Glass hollowware in contact with food — Release of lead and cadmium — Part 1: Test method

ISO 7086-2:2000 Glass hollowware in contact with food — Release of lead and cadmium — Part 2: Permissible limits

3. Terms and definitions

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

3.1 detergent resistance
degree of resistance to the chemical action of detergents

3.2 flat tableware
glassware having an internal depth not exceeding 25 mm, measured from the lowest point to the horizontal plane passing through the point of overflow

3.3 glass
inorganic material produced by the complete fusion of raw materials at high temperature into a homogeneous liquid which is then cooled to a rigid condition, essentially without crystallization

Note 1 to entry: The material may be clear, coloured or opaque

3.4 hollowware
glassware having an internal depth greater than 25 mm, measured from the lowest point to the horizontal plane passing through the point of overflow

Note 1 to entry: Hollowware is subdivided into three categories based on volume:

— small: hollowware with a capacity of less than 600 ml;
— large: hollowware with a capacity between 600 ml and 3 l;
— storage: hollowware with a capacity of 3 l or greater.

3.5 tableware
glass articles that are intended to be used in contact with foodstuffs

3.6 thermal shock
condition of stress brought about by a large temperature difference across a body

4. Requirements

4.1 General Requirements

4.1.1 The glass tableware shall be as free as possible from strain and visible defects. It shall be as far as possible free from any colour as seen transversely through the body, except in the case of coloured or decorated articles.

4.1.2 The wall thickness of the glass tableware shall be the same throughout the circumference at any given level with tolerances of ±33 percent for thickness up to 2 mm, ± 25 percent for thickness above 2 mm and up to 3 mm and ± 20 percent for thickness above 3 mm at the said level excluding embossing, if any.

4.1.3 The rim of the glass tableware shall be uniformly smooth and evenly finished.

4.1.4 For glass tableware with handles, the handles shall be well fused with the main body of the glass and shall be facing the spout, if provided. The centre of the top and the bottom parts of the handles shall be in the same vertical plane.

4.1.5 For glass tableware with spout, the spout shall be well shaped and shall be such that it is possible to pour from it in a regular stream without the liquid clinging to the outer surface.

4.1.6 The glass tableware shall be free from any colour as seen transversely through the body, except in the case of coloured or decorated articles.

4.1.7 The tableware shall be well formed and when placed on a horizontal plane shall rest evenly and shall not rock.

4.2 Specific Requirements

4.2.1 Thermal shock

The glass tableware shall not show any crack or damage when tested in accordance with the method given in Annex A.

4.2.2 Limits release of Lead and Cadmium

The permissible limits for Lead and cadmium for glass hollowware, when tested in accordance with ISO 7086-1:2019, shall conform to the requirements given in Table 1.

Table 1-Permissible limits for Lead and cadmium release

Type of glass hollowware	Lead limit mg/l (Maximum)	Cadmium limit mg/l (Maximum)
Small	1.5	0.5
Large	0.75	0.25
Storage	0.5	0.25

4.2.3 Alkalinity

When tested in accordance with Annex B, the tableware shall pass the test.

4..2.4 Detergent resistance of ceramic decorations

When tested in accordance with Annex C, the tableware with ceramic decorations shall pass the test.

5. Packing and marking

5.1 Packing

The tableware shall be packed in a suitable manner that shall not cause damage to its serviceability, either in stores or during transportation.

5.2 Marking

5.2.1 Each tableware shall be legibly and indelibly marked either at the bottom or near the rim or on a label with the following information:

a) Manufacturer's name or trade-mark, and

b) Nominal capacity excluding flatware.

5.2.2 The bulk package of the tableware shall be legibly and indelibly marked as follows;

a) Manufacturer's name or trade-mark, and

b) Nominal capacity excluding flatware.

6. Sampling

6.1 Representative tableware shall be taken at random from anywhere and tested in accordance with individual tests. For ascertaining the conformity of tableware to the requirements, all test samples shall satisfy all the requirements of this standard

ANNEX A

(*Clause* 4.2.1)

THERMAL SHOCK TEST

A-0. Principal

A-0.1 Tableware is subjected to a sudden change of temperature and examined for any cracks or damage.

A-1. Apparatus

A-1.1 For Flat Tableware

A-1.1.1 *Electrical Air-Oven* — capable of being heated through a temperature range of 35° to 120°C; provided with a thermometer, an air-stirrer or circulator to ensure temperature uniformity and also a thermostat capable of maintaining the temperature constant to ±1 deg up to 100°C.

A-1.1.2 *Water Sprayer* — suitable for spraying cold water on the outside of the flatware.

A-1.2 For Tableware Other than Flatware

A-1.2.1 *Hot Water-Bath* — provided with suitable means of heating, a stirrer to ensure uniform temperature through the bath, a thermometer capable of being read to an accuracy of ± 1 deg and a thermostat to control the temperature of water to within 70° ± 1°C.

A-1.2.2 *Cold Water-Bath* — provided with a stirrer to ensure uniformity of temperature throughout the bath and a thermometer capable of being read to an accuracy of ± 1 deg.

A-1.2.3 *Wire Net Basket* — capable of holding tableware upright and of such a size as could easily transfer tableware from hot to cold water-bath.

A-2. Procedure

A-2.1 For Flat Tableware

A-2.1.1 Heat the air-oven and adjust the temperature to within 67° ± 1°C.Quickly place the requisite number of samples in it and maintain the temperature for 30 minutes. Remove the samples one at a time by means of tongs with asbestos-covered tips and subject the outside of the ware to a spray of cold water at 27° ± 1°C, for a period of one minute, within 5 ± 1 seconds of taking out of the oven. The inside of the fiat tableware shall not be wetted.

A-2.2 For Tableware Other than Flatware

A-2.2.1 Place the requisite number of samples into the wire net basket in an upright position. Fill the baths with water and adjust the temperatures of hot and cold baths at 67° ± 1°C and 27° ± 1°C respectively. Immerse the basket containing samples into the hot water-bath so that they are filled with water. Allow to soak for 15 minutes at the temperature of 67° ± 1°C.

A-2.2.2 Transfer the basket containing samples filled with hot water to the cold water-bath. The process of transference shall be completed within 10 ± 2 seconds. Immerse the samples completely in the cold water-bath for a period of 2 minutes, without allowing cold water to enter them.

A-2.3 Samples shall be taken as having satisfied the requirements of the test if they do not crack or break.

NOTE — Samples which have not broken shall not be subjected to other tests or use

Annex B

(Clause 4.2.3)

TEST FOR ALKALINITY

B1. Apparatus

B1.1 *Autoclave* — Capable of heating the test samples up to a temperature 121 °C.

B1.2 *White glazed tile*

B2. Reagents

B2.1 *Quality of regents* — Analytical grade.

B2.2 *The following reagents are required*

B2.2.1 *Strong methyl red solution* — Dissolve 40 mg of methyl red in 75 ml of rectified spirit. Warm if necessary to effect solution. Add 1.5 ml or a sufficient quantity of 0.05 M sodium hydroxide solution to adjust the solution so that the colour corresponds to pH 5.2 and dilute to 100 ml with water.

B2.2.2 *Acid methyl red solution* — Mix 20 ml of ml of strong red solution (see Clause B2.2.1) with 8.3 ml of 0.02 ml with water.

B3. Procedure

Fill the containers completely with warm water, empty and allow to drain for 30 seconds removing the last drops of water by touching the inverted rim with filter paper; repeat the washing three times. Fill the containers to their prescribed capacity with acid methyl red solution, and seal by fusion of the glass, or if this is not practicable, apply a loosely fitting closure made of an inert material such as cellophane sheet. Heat in an autoclave at a temperature of 121 ° C for half an hour, cool and examine the colour of the solution. If necessary when the containers are of coloured glass, remove the solution for examination on to a thoroughly washed white glazed tile.

B3.1 The glass passes the test if the colour of the test solution has not changed from pink to the full yellow colour of methyl red, as indicated by comparing it with the colour of a solution prepared by adding 0.1 ml of 0.05 M sodium hydroxide to 10 ml of acid methyl red solution.

Annex C

(Clause 4.2.3)

DETERGENT RESISTANCE OF CERAMIC DECORATIONS ON GLASS TABLEWARE

C.0 Principal

This test method provides the means of estimating the qualitative performance of the glass enamel decorations that are exposed to high phosphate detergents during use.

C.1 Apparatus

C.1.1 *Test Chamber* –A thermostatically controlled tank, preferably stainless steel, that will maintain a solution temperature of 60 ± 2 °C.

C.1.2 *Specimen Holder*- A device for supporting the specimens to be evaluated in such a manner as to ensure free and unobstructed contact between the decoration and the test solution.

C.2 Reagents

C.2.1 Prepare a test solution of 5% of sodium pyro- phosphate ($Na_4P_2O_7.10H_2O$) and 95% distilled water.

C.3 Procedure

C.3.1 Immerses the sample for 2 hour periods in the test solution maintained **at** 60 ± 2 °C. Retain a duplicate piece of tableware with each decoration under test without exposure to the solution as an aid in judging the degree of chemical action on the specimens under test. At the end of the 2 hour periods, remove the specimens from the solution, rub vigorously with a cloth under running water, dry and evaluate.

C.3.2 Grade the decorations after 2-hour period of immersion in accordance with one of the following classes;

*Class 1-No loss of gloss***.**

Class 2- gloss loss, No loss of opacity.

Class 3-Noticeable loss opacity.

Class 4-Complete removal of decoration

C.3.3 The glass passes the test if there is no attack apparent on the decoration that shall be of Class 1 or 2.

Bibliography

KS 513:1985 Specification for glass tableware.