



## DRAFT TANZANIA STANDARD

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Specifications for waxed cartons for packaging of ice-cream

*Draft for stakeholders' comments only*

**TANZANIA BUREAU OF STANDARDS**

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## 0. Foreword

A variety of cartons is being used in the country for packing ice-cream. This standard is intended to achieve standardization in the cartons and at the same time ensure safe and hygienic packaging of ice-cream. This standard is intended to achieve standardization in the cartons and at the same time ensure safe and hygienic packaging of ice-cream.

In preparation of this draft standard assistance was drawn from IS 7162:1973 specification for waxed cartons for packaging of ice-cream published by bureau of Indian standards (BIS)

In reporting the result of a test or analysis made in accordance with this standard, if the final values observed or calculated, is to be rounded off it shall be done in accordance with TZS 4 Rounding off numerical values.

## 1. Scope

This standard specifies requirements for waxed cartons for intimate packaging of ice cream as well as chocolate bars

## 2. Normative References

The following referenced standards referred to in the text in such a way that some or all of their content constitutes requirements 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.

*TZS 80: Paper – Sampling methods for testing*

*TZS 890: Paper and board – Determination of roughness / smoothness (air leak methods) – Part 1: General method*

*TZS 2146: Corrugated fibreboard boxes for general packaging - Specification*

*TZS 2290: Waxed paper for packaging of confectionery - Specification*

## 3. Terms and Definitions

### 3.1 petroleum wax (or paraffin wax)

is a soft colorless solid derived from petroleum, coal or oil shale that consists of a mixture of hydrocarbon molecules containing between  $C_{20}$  and  $C_{40}$ .

### 3.2 melting Point (Cooling Curve) of Petroleum Wax.

The temperature at which petroleum wax first shows a minimum rate of temperature change when allowed to cool under prescribed conditions.

### 3.3 stiffness

is the extent to which an object resists **deformation** in response to an applied force

## 4. materials

### 4.1 paperboard

4.1.1 The paperboard used for the cartons shall be a food grade material capable of being waxed, made from virgin chemical wood pulp.

#### 4.1.2 thickness

The thickness of the unwaxed board shall be not less than 0.30mm when measured in accordance with method detailed in *Annex C*

#### 4.1.3 wax contents

The minimum wax content of the waxed board shall be 5.0g/m<sup>2</sup> on each side. The minimum total wax content of the board shall be 10.0g/m<sup>2</sup> when determined by the method given in annex A.

#### 4.1.4 Stiffness

The stiffness of the waxed board shall be not less than 110g.cm in machine direction and 40g.cm in cross direction when determined by the method prescribed in annex B

### 4.2 Ink

The ink used for printing the carton shall be

- i. commercially free from heavy elements such as lead and chromium.
- ii. suitable for food packaging and
- iii. fast to light and wax.
- iv. shall not have any residual odour, when tested as prescribed in TZS 2290

### 4.3 Coating Materials

#### 4.3.1 wax

The wax for coating the board shall be extra refined food grade paraffin wax with melting point not lower than 60°C

#### 4.3.2 varnish and lacquer

The material used shall be food grade

### 4.4 adhesive

The adhesive used to form and seal the carton shall withstand a temperature of -35°C and shall be non-toxic

### 4.5 Odour and Taint

The composition of the board, ink, coating materials and adhesive shall not cause any effect on the flavour, odour and appearance of the product packed

### 4.6 toxicity



The composition of the board, ink, coating materials and adhesive shall not introduce into the product packed any substance which is injurious to health or which might contaminate the packed product

## **5. Dimensions**

Shall be agreed between the purchaser and supplier

## **6. Deep freezing**

the waxed board carton shall withstand a deep-freeze conditions (-35°C) for a period of 30 days

## **7. prefolding**

in order to produce suitable forming of the carton, the prefolding shall be such that the glue seams are square and glue spots are absent when examined as describe in *TZS 890*

## **8. packing and marking**

### **8.1 Packing**

The cartons shall be supplied in collapsed form and ready to use after erection. They shall be packed in protective transit containers as agreed to between the supplier and the purchaser.

### **8.2 Marking and labeling**

#### **8.2.1 Individual Cartons**

Each carton shall be marked with the following information Trade-mark or brand name of the product

- a. Manufacturers or packer's name and address
- b. Batch or code number, and
- c. Any other information required by the food safety rules of the importing country

Note: trade mark/name/contacts of the manufacturer of the cartons shall be included in the label

#### **8.2.2 transit container**

Each protective transit container shall be marked with the following information in respect of cartons packed in it:

- a. Name or trade mark of the manufacturer
- b. Name of the product to be packed
- c. Batch number; and
- d. Date or year of manufacture

8.2.3 the cartons and transit containers may also be marked with TBS Certification Mark

## ANNEX A

### METHOD FOR DETERMINATION OF WAX CONTENT

#### A-0. principle

A-0.1 A known amount of waxed board cuttings is extracted with carbon tetrachloride in a Soxhlet apparatus. The extract is evaporated to dryness and the residue is re-extracted with alcoholic potassium hydroxide and evaporated to dryness. The dried mass is then dissolved in water and petroleum ether and the two layers are separated. The petroleum ether layer is evaporated to dryness and the residue weighed.

#### A-1. Apparatus

A-1.1 Soxhlet apparatus

A-1.1 separating funnel

#### A-2 reagents

A-2.1 carbon tetrachloride

A-2.2 alcoholic potassium hydroxide solution -Approximately 0.5N

A-2.3 petroleum ether- boiling range 40 to 60°C

#### A-3 Procedure

A-3.1 weigh accurately about 10g of the specimen, cut it into strips and give numerous small crosswise folds to each strip. Extract the strips in a Soxhlet apparatus with carbon tetrachloride for four hours or until the wax is all removed

A-3.2 evaporates the extract to dryness on a water-bath, add 25mL of alcoholic potassium hydroxide solution and again evaporate to dryness. Cool the residue, take it up with petroleum ether and water (**See Note**) and transfer to a separating funnel. Shake the contents of the funnel thoroughly and then allow the two layers to separate completely. Draw off the water layer into another separating funnel.

Note: the volume of the petroleum ether should be about 25mL and that of water about 150mL. the water should contain a small amount of sodium chloride to prevent emulsification.

A-3.3 Re-extract the water layer one or more times, as may be found necessary, with fresh 25mL aliquot of petroleum ether.

A-3.4 wash the petroleum ether extract obtained as in A-3.2 and A-3.3 with fresh 100mL aliquot of water until the water layer is perfectly clear. Addition of a concentrated solution of sodium chloride may be found necessary while washing.

A-3.5 transfers the petroleum ether extract to a weighed evaporating dish or flask and evaporate to dryness. Dry at 103±2°C for 1 hour and weigh.



#### A-4. Calculation

A-4.1 calculate the wax content of the board by the following formula:

$$\text{Wax, Percent by Mass} = \frac{100(W_3 - W_2)}{W_1}$$

Where:

W3 = mass in g of the evaporating dish or flask with residue (**A-3.5**)

W2 = tare in g of the evaporating dish or flask (A-3.3), and

W1 = mass in g of the specimen taken for the test (A-3.1)

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## ANNEX B

### DETERMINATION OF STIFFNESS OF THE WAXED BOARD

#### B-0. PRINCIPLE

B-0.1 One end of a rectangular test piece is gripped and a bending force is applied to the test piece at a distance of 50mm from the grip. The bending moment exerted by the force for deflecting the test piece through an angle of 15° is measured.

#### B-1. Apparatus

B-1.1 any instrument which is capable of applying a bending force to the test piece and measuring the bending moment in gf.cm, and is provided with jaws for gripping one end of the test piece across full width with the length of the portion gripped not less than 13mm, and is complying with the following requirements may be used:

Bending angle	15°±10'
Bending length	50±2.50mm
Rate of bending	15° in not less than 2.5 seconds and not more than 30 seconds

#### B-2 sampling and conditioning

B-2.1 representative sample shall be drawn and conditioned as given in *TZS 80*

#### B-3 procedure

B-3.1 cut a minimum of 16 test pieces measuring 38±0.3mm in width and minimum 70mm in length from each of the machine and cross directions of each specimen.

B-3.2 deflect each test piece, gripping it firmly in the jaws of the instrument, through an angle of 15° to one side of the unstressed position and then immediately bring the test piece to its original position and deflect it through an angle of 15° to the other side of the unstressed position. In each direction, read the bending moment as soon as the 15° deflection is reached.

B-3.3 when the instrument employed is so designed that the deflection is possible to only one side of the unstressed position, for each of the machine and cross directions drawn double the number of test pieces specified in B-3.1 and test half of them with one particular face of the board towards the direction of deflection and the other half with the other face. Do not re-use any test piece after it has been removed from the instrument jaws

B-3.4 records the readings separately for the machine and cross directions

#### B-4 calculation

B-4.1 for each of the machine and cross direction, calculate the arithmetic mean of the readings correct to one place of decimal and report it as the stiffness in gf.cm of the board for that direction.

## Annex C

### Determination of thickness of paper

#### C.1 Apparatus

C.1.1 micrometer- Properly calibrated dead weight micrometer, fitted with a dial gauge reading correct to 0.01mm or, alternatively, a micrometer fitted with a dial gauge reading correct to 0.000 5 in. A screw micrometer shall not be used on a yielding material like paper.

C.1.2 shell-holder- The device consists of two parallel plane faces, which are parallel to within 0.005 mm and constrained to move apart in the direction perpendicular to their planes. The smaller of the faces, which generally moves, is circular, with 14 to 16.5mm diameter, corresponding to an area of 160 to 210mm<sup>2</sup>. The moving member is geared to the micrometer dial gauge indicator reading correct up to 0.01mm

#### C.2 procedure

C.2.1 for a sheet having a thickness of below 0.25mm - Take a pack of not less than 5 specimens or test pieces. cut to a size of 20x25 cm.

the number of specimen or test pieces in each pack shall be so chosen that all the sheets (See 3.4) are represented in the test. Each specimen or test piece to be tested shall be independent of the remainder, that is, one specimen or test piece folded and inserted in the pack to form two or more specimens or test pieces shall not be used. Raise the moving member of the apparatus by means of the lever, introduce this pack and relax the lever gently to enable the moving member to fall down and touch the pack and exert a steady pressure of  $1.00 \pm 0.10$  kg/cm<sup>2</sup>. Test at 5 places, near the edge as well as in the central portion of the specimen or test piece, to check for uniformity of thickness.

C.2.1.1 *Report*-Take the average of 5 readings as the thickness of the pack. Take mean of the average of all the packs. Divide the mean of the average and the highest and lowest values by the number of specimens or test pieces contained in each pack and report these as the average thickness of each specimen or test piece and the range of variation.

C.2.2 For Sheets Having a Thickness of More than 0.25mm - Test each specimen or test piece singly and test a piece each from all the specimens. Raise the moving member of the apparatus by means of the lever, introduce the specimen or test piece and relax the lever gently to enable the moving member to fall down and touch the specimen or test piece and exert a steady pressure of  $1.00 \pm 0.10$  kg/cm<sup>2</sup>. Test at 5 places, near the edge as well as in the central portion of the specimen or test piece, to check for uniformity of thickness.

C.2.2.1 **Report**-Take the average of 5 readings on each specimen or test piece as its thickness. Take the mean of the average of all specimens or test pieces. Report the mean of the average, maximum and minimum value of the readings as the average thickness and range.





### C.3 Precautions

C.3.1 Before starting, it is essential to see that there is no clearance between the two parallel faces and that when the moving face touches the other parallel plane face, the pointer on the dial is at zero reading. The pointer should be brought to zero position, if necessary.

C.3.2 Care shall be taken to see that the sheets are free from folds and creases

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