**DRAFT TANZANIA STANDARD** TDC 3 $CD_3$ (1514)

**First Edition**

# Textiles — Polyolefin Woven Storage Bags – Specification.





First edition 2022

## Foreword

This Draft Tanzania Standard is being developed by the Household Textile Technical Committee under supervision of the Textile and Leather Divisional Standards Committee and it is in accordance with the procedures of the Bureau.

This Draft Tanzania Standard has been prepared with assistance drawn from:

*EN 13590, Packaging – Flexible carrier bags for the transport of various retail goods – General characteristics and test methods for the determination of volume and carrying capacity.*

*TZS 1257, Textiles — Open mouth woven poly-sacks made from High Density Polyethylene (HDPE)/polypropylene (PP) tape-yarns- Specifications.*





 First edition 2022

## 1 Scope

This Draft Tanzania Standard Specifies the requirements and test methods for Polyolefin Woven Storage Bags. The bags can either be with or without lamination.

## 2 Normative References

The following referenced documents are indispensable for the application of this document.

TZS 4, *Rounding off numerical values.*

TZS 21: *Textiles — Woven or knitted fabrics — Determination of mass per unit length and per unit area.*

TZS 22, *Textiles — Woven fabrics — Determination of breaking load and extension.*

TZS 44, *Textiles — Woven or knitted fabrics — Determination of width and length purpose of this Draft Tanzania Standard the following references shall apply:*

ISO 13935, *Textiles — Seam tensile properties of fabrics and made-up textile articles — Part 1: Determination of maximum force to seam rupture using the strip method.*

ISO 3451, *Plastics — Determination of ash — Part 1: General methods.*

## 3 Terms and Definition.

For the purpose of this Draft Tanzania Standard the following Terms and Definitions shall apply:

**3.1 woven polyolefin sack (bag)**

flexible container made from fabric manufactured from woven polyolefin tape yarns.

**3.2 Polyolefin polymer**

linear polymer obtained by polymerization of an unsaturated hydrocarbon to give a linear saturated hydrocarbon. These are polyethylene and polypropylene.

**3.3 polymer (polymerization)**

combination or association of molecules that may be of one compound or two or more reacting simultaneously to form a regular system of molecules behaving as one unit

**3.4 coated fabric**

fabric coated on one or both sides with a suitable polymer

**3.5 lamination**

thin coating of poly film which is adhered to either the inside or outside of bag





 

## 4. Materials

### 4.1 Fabric

4.1.1 The fabric shall be woven from polyolefin tapes and either be with or without lamination.

4.1.2 The Ultra – Violet (UV) treatment of the fabric, shall be upon agreement between buyer and seller.

### 4. 2 Stitching thread

Where required, the stitching thread shall be made from either polypropylene, or other material provided they are not adversely affected by the contents of the bag or by the expected climatic conditions in transit, storage and use.

### 4. 3 Zipper

The Top base with an opening of a Woven Polyolefin Storage Bags shall have zipper complying with the requirements as specified in Table 1 and attached to the middle of a top base with a double stitch.

## 5 Construction

### 5.1 Shape and Dimension

**5.1.1** The Dimension of the Polyolefin Woven Storage Bags shall be upon agreement between buyer and seller and declared to the tolerance of ±2mm.

**5.1.2** The polyolefin Woven Storage Bag's shape consist of the following parts.

#### 5.1.2.1 Walls

Tube of one layer, seamless or made out of one or more panels joined together.

#### 5.1.2.2 Side Base

The part of the Polyolefin woven storage bag which is connected to or integral with the walls and forms the base of the Storage bag.

#### 5.1.2.3 Bottom base

Base without an opening

#### 5.1.2.4 Top base

A top base with an opening (Zipper)

#### 5.1.2.5 Handle.

The Handle of the Polyolefin woven storage bag





 

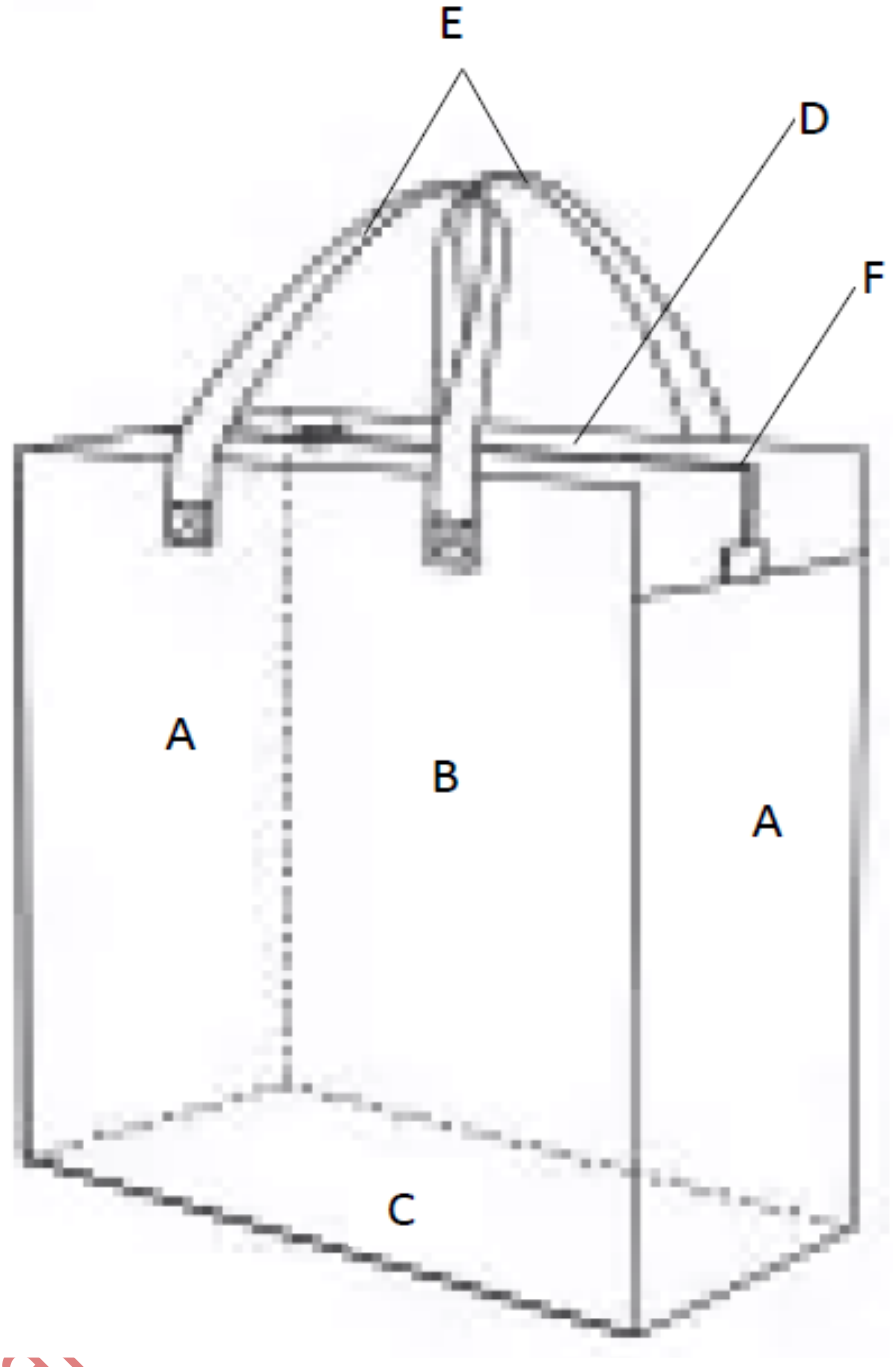


Figure 1 – The shape of the woven polyolefin storage bag.

**KEY**

A – Walls; B – Side base; C – Bottom base; D – Top base; E – Handle; F – Zipper

**5.2 Volume**

The Volume of the woven polyolefin storage bag shall be agreed between buyer and seller.



 

### 5.3 Carrying Capacity

The Capacity of the woven polyolefin storage bag shall be agreed between buyer and seller. However the capacity of the bag shall not exceed 100kg comforming to the International Labour Organization (ILO) Regulations.

## 6 Performance requirements

The Performance requirements of the storage bag shall be as prescribed on table 1.

**Table 1 – Performance requirements for floor mats**

| SN | Parameters | Requirements | Test method |
|---|---|---|---|
| 1 | Capacity | The carrying capacity of the bag shall be upon an agreement between buyer and seller. However the capacity of the bag shall not exceed 100kg (check and confirm to DC members – 100kg??) comforming to the International Labour Organization (ILO) Regulations. | Annex A |
| 2 | Volume | The Volume of the bag shall be upon an agreement between buyer and seller. | Annex A |
| 2 | Dimensions | The dimension of the bag shall be upon an agreement between buyer and seller with a tolerance of ±2cm of the declared value | TZS 44 |
| 3 | Total mass per unit area ($g/m^2$), min | 65 | TZS 21 |
| 4 | Average breaking strength (ravelled strip method, (200mm x 50mm), minimum, N<br>a) Length wise<br>b) Width wise | <br><br><br>500<br>500 | TZS 22 |
| 5 | Elongation at break of fabric (%), min<br>i) Length wise<br>ii) Width wise | <br><br>20<br>20 | TZS 22 |
| 6 | Minimum breaking strength of bottom seam, ravelled strip method, N, min | 250 | ISO 13935 |
| | | | |
| 8 | Handle strength, N, min | 300 | ISO 13935 |





 

| | | | |
|---|---|---|---|
| 9 | Average breaking strength and elongation at break of UV stabilized HDPE/PP fabric after being exposed to UV radiation and weathering, min. | Not less than 50 % of original strength | Annex A |
| 10 | Ash content (for UV stabilized fabrics), max percent. | 2.2 | ISO 3451 – 1: 2008 Method A. |
| | | | |

## 7 Labelling

**7.1** A label shall be attached to an end part of the bag in the inside, indelibly and clearly, marked in English or Kiswahili;

with the following information:

- **a)** The name of the product.
- **b)** Manufacturer's name and/or trademark.
- **c)** Size of the bag
- **d)** Carrying capacity of the bag
- **e)** Country of manufacture.
- **f)** Material used
- **g)** Batch number

## 8 Packing and marking

The packages shall be as agreed between buyer and seller. The packages shall also be marked with the information mentioned on clause 7.

NOTE 2 – Each sack shall be compulsory marked with visible recycling logo as given below at a space on bottom of the bag compatible with the art work of the buyer for printing the sack and bale.






 

# Annex A
# (normative)
# Capacity and Volume Test Methods

## A.1 Sampling

In order to assure the performance of the bags produced, a type test has to be done once for each type with at least 100 bags manufactured under normal industrial conditions selected at random.

### A.1.1 Conditioning

The samples shall be conditioned and tested in accordance with TZS 513 (see clause 2) condition G, i.e. temperature 23 °C ± 2 °C (with relative humidity 50 % ± 5 % for bags sensitive to humidity).

### A.1.2 Filling material

**A.1.2.1** *Filling material for the determination of the volume*

The filling material used for testing the volume of carrier bags consists of plastic granules with bulk specific mass between 500 kg/m$^3$ and 600 kg/m$^3$. For the determination of bulk density, a one litre capacity cylinder with an inner diameter of 75 mm ± 5 mm is filled to the top with the plastic granules.

The cylinder content is compacted by impacting the cylinder twice onto a table and then the volume is measured. The granules are weighted and the bulk specific mass is calculated.

**A.1.2.2** *Filling material for testing the carrying capacity*

The filling material used for testing the carrying capacity of carrier bags shall consist of high density polyethylene (HDPE) cylinders as specified in annex A.

### A.1.3 Equipment

**A.1.3.1** An example of equipment for testing the volume and the carrying capacity is shown in figure 2. This equipment tests one carrier bag at a time.



 

**A.1.3.2** The lifting and lowering movements are carried out by a mechanism which allows to control of the top and bottom turning points.

**A.1.3.3** The equipment is constructed so that the lifting and lowering speed of the bag is (0.65 ± 0.05) m/s. The speed shall be reached in less than 20 mm and shall be constant throughout both the lifting and lowering procedures, with a smooth movement at the top turning point.

**A.1.3.4** The speed of the lifting mechanism shall be constant within the speed tolerances irrespective of the loaded weights.

**A.1.3.4** The filled carrier bag is hung using both its handles on the grip of the machine which is formed like a hand (see example in figure 3).

**A.1.3.5** A handle stop is required. The handle stop shall be so constructed that it fits perfectly in the grip and keeps the handles tight to the grip without damaging them. The handle stop shall prevent the handles from coming loose (see example in figure 4 and the general view of grip and handle stop figure 5).

**A.1.3.6** The bag is free lifted for 0.5 s ± 0.05 s (i.e. approximately 300 mm - 350 mm) and then lowered again. The number of lifts is counted. The bottom turning point is controlled by a photocell or an equivalent device, so that the relaxation of the bag is the same whether it is stretched or not. When the bottom of the bag has touched the bottom plate during the downward move, the machine handle is lowered additionally 50 mm ± 5 mm. At the lower turning point the carrier bag is placed and rested on a horizontal rigid smooth surface.





 

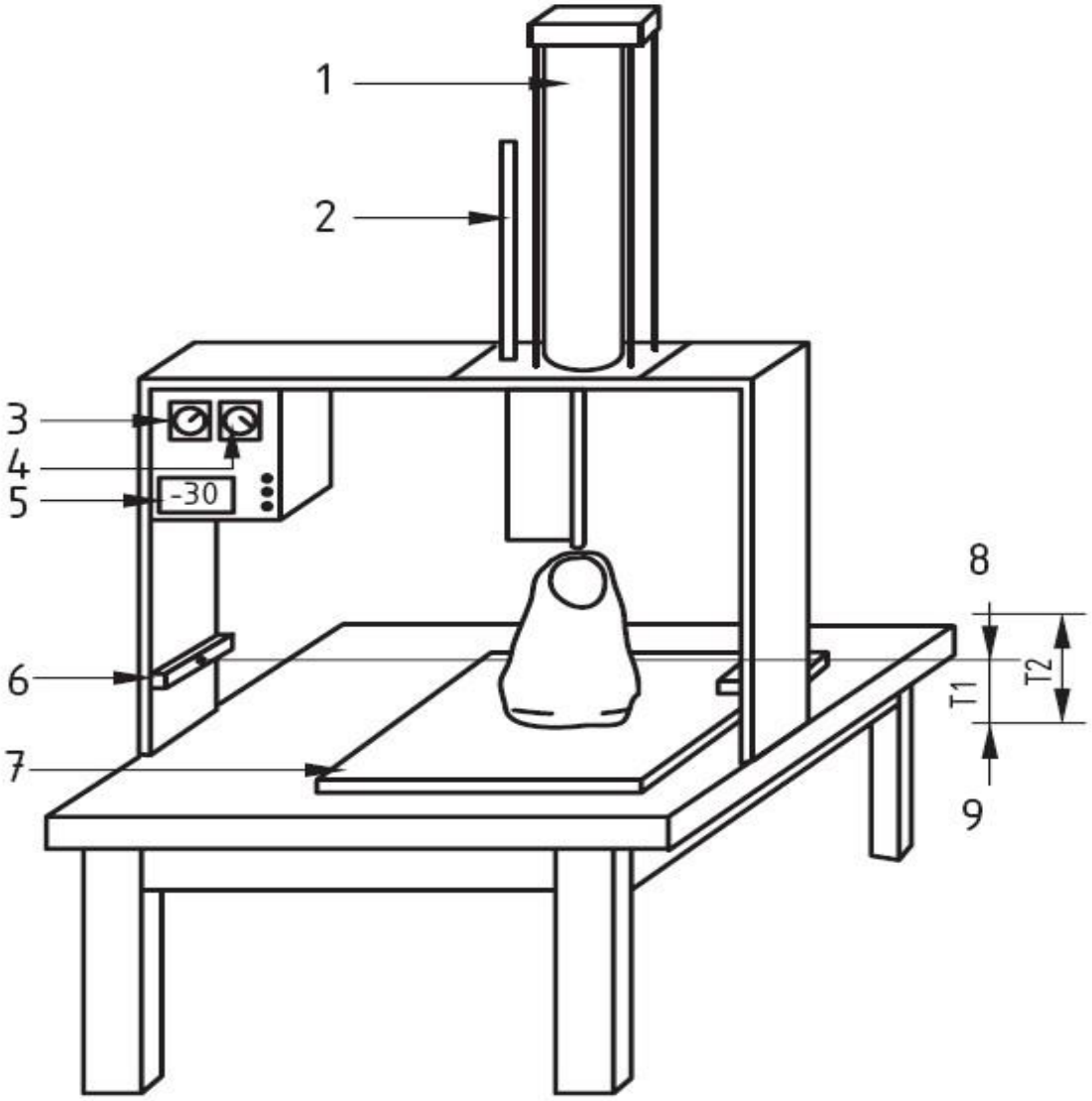


**Figure 2 – Example of testing equipment**

**Key**

| | | |
|---|---|---|
| 1 Lifting cylinder | 4 Timer 2 | 7 Surface: Laminated fibreboard |
| 2 Positioned | 5 Number of lifts | 8 Upper turning point |
| 3 Time 1 | 6 Photocell 4 | 9 Lower turning |





 

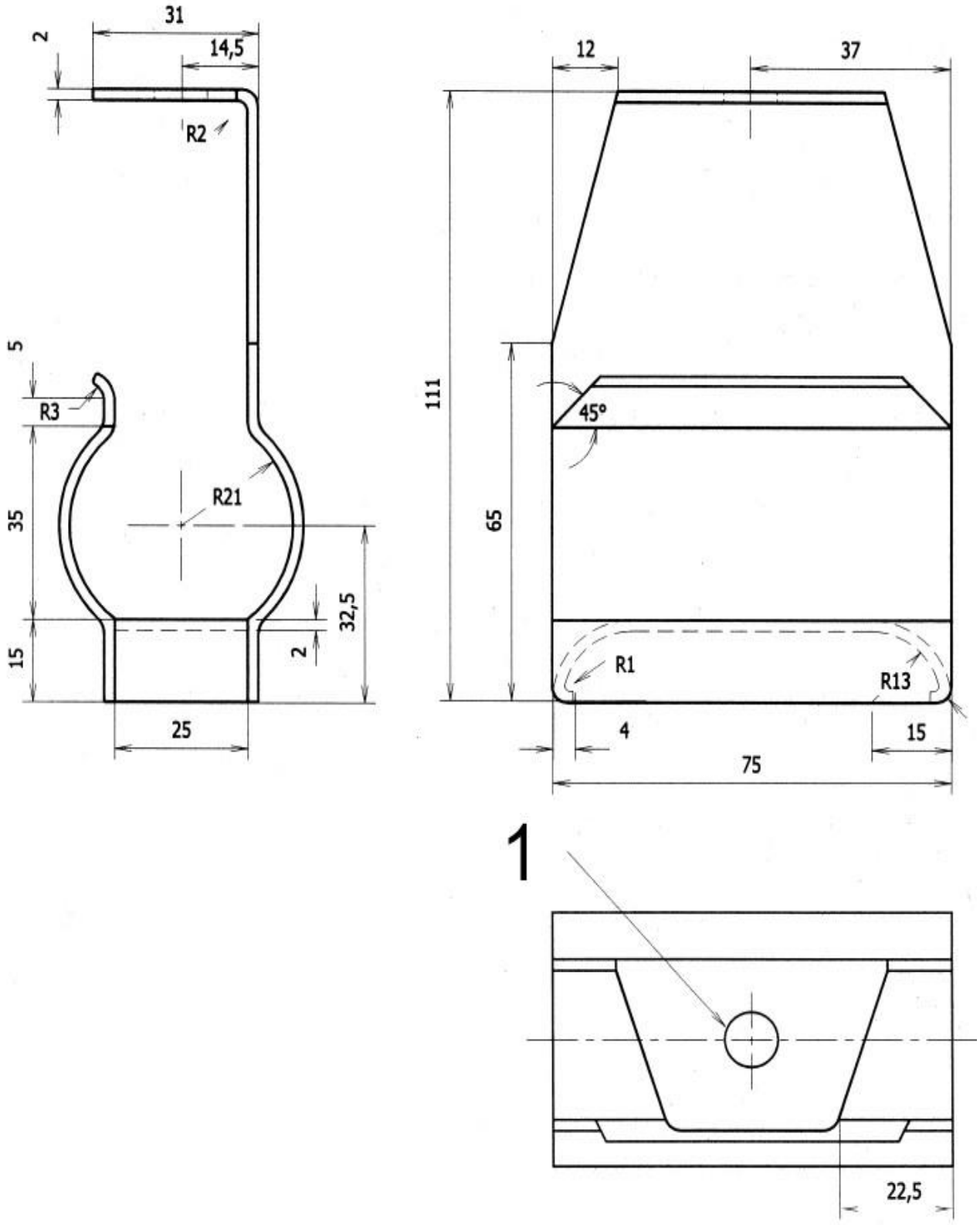


**Figure 3 – Testing equipment –Grip**
**(***Tolerance ± 0.5 mm, no sharp edges, Symmetric and (1) Excluded from the Standard)*


 

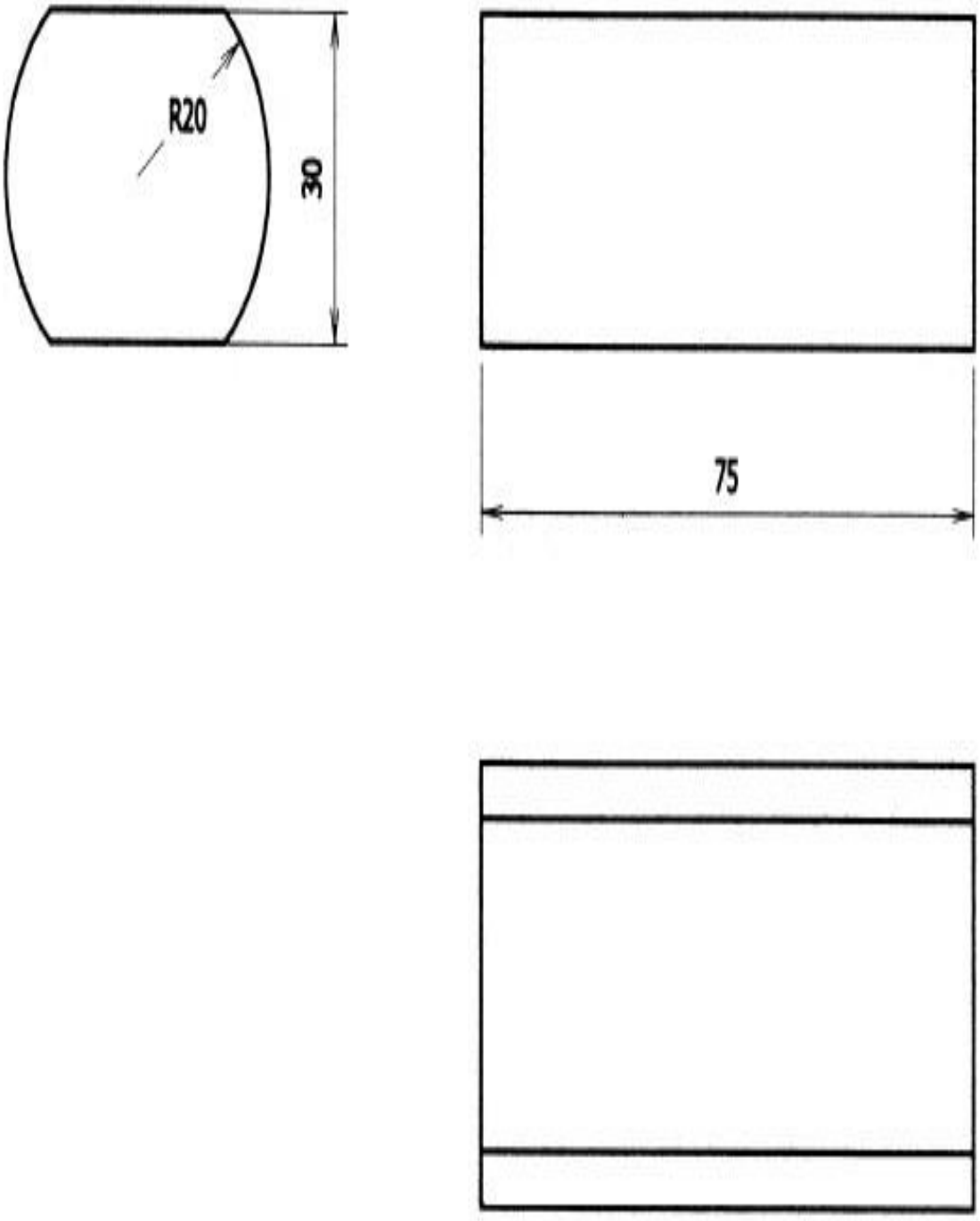


**Figure 4 – Testing equipment – Handle stop**
(*Tolerance ± 0.1 mm; Material: Plastic, rubber or wood*)

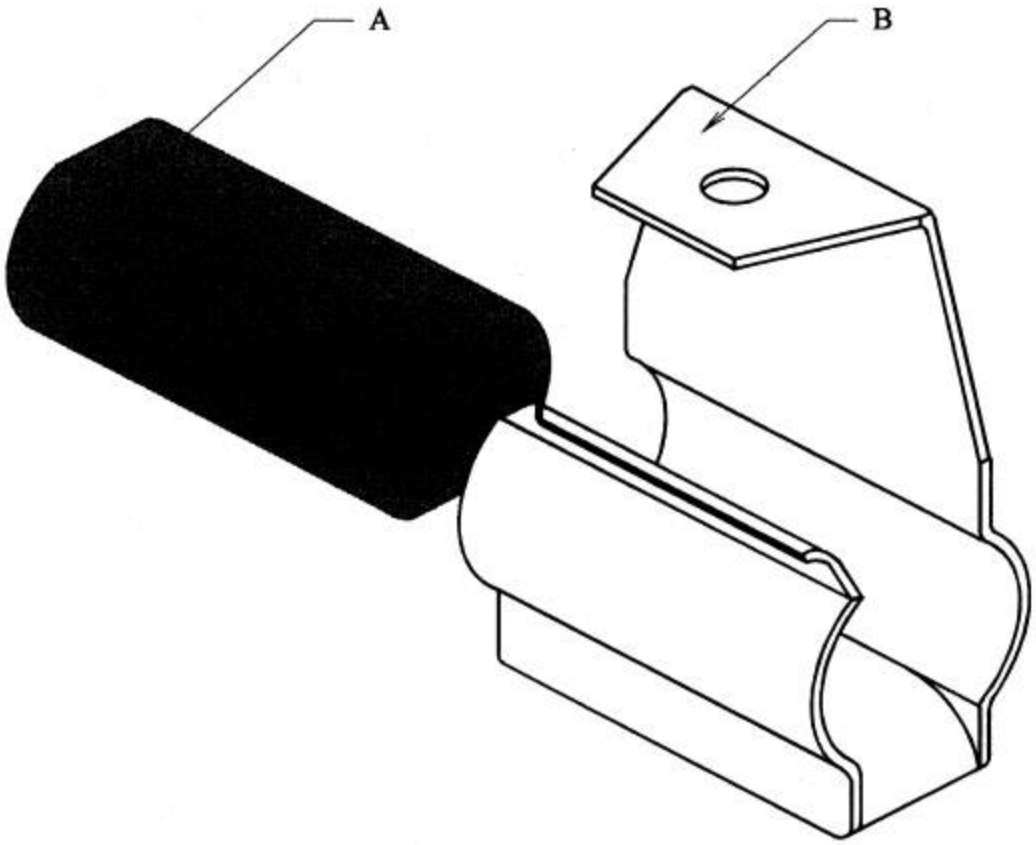


**Figure 5 – General view of grip and handle stop assembly**

**Key**
A - Handle stop
B - Grip



## A.2 Procedure for Testing

### A.2.1 Determination of the volume

For the determination of the volume the following steps are needed;

The carrier bag is hung in both its handles so that it is hanging free, e.g. on the grip of the testing machine;

a) The bag is filled to the rim with plastic granules (see 5.3.1);
b) The bag is put down and completely released still holding the handles;
c) The bag is lifted again and hung freely as in a) and it is then filled up with granules to 2 cm from its upper edge or patch handles; the bag is weighed and its weight is noted;
d) repeat a) to e) for 10 bags, and calculate the average weight;
e) Calculate the average volume in litres by dividing the average weight with the bulk specific mass defined in 5.3.1. The volume is rounded to the nearest full litre so that an average volume of e.g. 15.5 litres is rounded to 16 litres.

### A.2.2 Determination of the carrying capacity

The carrier bag is placed on a balance and filled with the filling material given in 5.3.2. The bag is filled to the weight calculated in 5.5.1 or, otherwise, as agreed between supplier and buyer. The bag is lifted by both its handles from the balance. Then it is hung in its handles on the grip of the testing machine. The handle stop is then pushed into the grip. The lifting bar with the filled carrier bag is placed in its upper position. The machine is started and the bag is lowered and lifted until it breaks or has been lifted 20 times.

The pass/fail are as follows:

a) holes with a maximum dimension of 30 mm, while the bag is hanging, are permitted;

b) if holes are bigger than 30 mm, or in the case of handle ruptures, the bag is considered as broken.

If only 1 bag out of 20 bags fails, the carrying capacity is accepted and the test is finished. If more than 1 bag fails, the load is decreased by 1 kg and another test series of 20 bags is started and so on.

If at least 4 out of the 5 first tested bags don't break until 20 lifts, the weight is increased by 1 kg and a new test series of 5 new bags is started and so on.

If at least 2 out of 5 first bags break before they have been lifted 20 times, the test is interrupted, the weight is reduced by 1 kg and a new test series of 5 new bags is started, and so on.

After at least 4 bags have passed the test with the last weight, the test is extended until 19 out of 20 bags stand 20 lifts.

### A.3 Test report

The test report shall include:

a) Name and address of testing laboratory;
b) Name and address of responsible supplier;
c) Full description of the tested carrier bag type and test date(s);
d) Reference to the present Tanzania Standards;
e) Total number of bags tested and test result for each bag;
f) Measured volume of the bags in litres;
g) Carrying capacity in kilograms.





 

## Annex B
## (normative)
## UV resistance test

**B.1** To determine the effect of UV radiation and weathering on the breaking strength, the HDPE/PP Woven fabrics shall be exposed as given in A.2 and A.3.

**B.2 Test procedure**

The test shall be carried out with fluorescent UV – Lamp type B (313nm or its equivalent).

The duration of the test shall be 192h (that is eight days) in continuous mode.

The test cycle shall be: 8h at 60℃ ± 3℃ with UV – radiation alternating with 4h at 50℃ ±3℃ condensation. Irradiance level throughout the test shall be maintained at 0.63 (+0.04/ -0) W/m$^2$.

**B.3 Test procedure**

**B.3.1** Determine the original average breaking strength of fabric as per test method specified in IS 1969 (part 1)

**B.3.2** Expose the specimens alternately to ultraviolet light and condensation in respective test cycle in continuous mode for total 192h.

The type of fluorescent UV lamp, the timing of the UV and condensation exposure and the temperature of the UV exposure and condensation shall be specified in B-2.

**B.3.3** Determine the average breaking strength of the fabric separately after UV exposure as mentioned above.

**B.3.4** Determine the percent retention of original strength as follows:

Percentage retention of original breaking strength = $\frac{a}{b}\ x\ 100$

Where

a= average breaking strength before UV exposure as obtained in B – 3.1

b= average breaking strength after UV exposure as obtained in B – 3.3

NOTE –

1. The UV source is an array of fluorescent lamps (with lamp emission concentrated in the UV range).
2. Condensation is produced by exposing the test surface to a heated, saturated mixture of air and water vapour, while the reverse side of the test specimen is exposed to the cooling influence of ambient room air.





 