Packaging — Flexible carrier bags for the transport of various retail goods — General characteristics and test methods for the determination of volume and carrying capacity
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Foreword

This standard has been prepared by the Technical Committee on packaging under the guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards.

Efficient packaging is of great importance for the distribution and the protection of goods. Insufficient or inappropriate packaging can lead to damage or wastage of the contents of the pack. There are carrier bags made from various materials, different shapes and design. The bags can be used as primary secondary or tertiary packaging material depending on how they are used. The carrier bags can be used as primary packaging if they are used to wrap or come in contact with the products directly. They can also be used as secondary packaging if a number of the primary packages are put in the bags. In tertiary packaging or unit load several of the secondary packages are put together to form a load.

The standard will help the manufacturers and Importers of the carrier bags to check on quality in terms of carrying capacity, the volume and other general characteristics. This standard is applicable to carrier bags made of paper, thermoplastic material and or any other flexible material.

During the preparation of this Standard reference was made on;

**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

Acknowledgment is hereby made for the assistance derived from this source.
1. **Scope**

This Kenya Standard specifies general characteristics and test methods for determination of volume and carrying capacity of flexible carrier bags with handles for transport of various unspecified retail goods. The standard is applicable to carrier bags made of paper, thermoplastic material and or any other flexible material.

2. **Normative references**

This Kenya Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

- **KS ISO 2233**, *Packaging - Complete, filled transport packages and unit loads - Conditioning for testing (ISO 2233:2000).*

3. **Terminology**

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

- **gusset**
  
  fold inserted in the longitudinal edge of a tube or bag

- **base gusset**
  
  fold inserted in the bottom of the bag
3.3 tube
one or more plies in the form of a flattened cylinder cut into prescribed lengths

3.4 ply
film or sheet of flexible material, or combination of such materials, forming the walls of a bag

3.5 length of bag, a
greatest distance between the transverse edges of the flat bag, perpendicular to the bottom

3.6 width of bag, b
distance between the longitudinal edges of the flat bag, gusset not included, parallel to the bottom

3.7 width of gusset, e
distance between the external creases of the unfolded gusset

3.8 width of bottom, c
distance between the two bottom edge folds or the external creases of the base gusset, measured at the centre, parallel to the bag’s length

3.9 handle
device forming part of the bag allowing the insertion of hands for the easy carrying of a load

3.10 length of handle, d
overall length from the top to the maximum possible filling height of the bag

3.11 width of handle, f
minimal width of a handle measured on the flat bag

4 General
4.1 Material

The carrier bags may be made of paper, thermoplastic material and or any other flexible material.

4.2 Shape and dimensions

This standard applies to carrier bags with any shape and dimension. Bags may be provided with gussets. Some examples are shown in Figure 1, including reference to the definitions given in paragraph 3.
For all dimensions, if not otherwise agreed, the general values of tolerances shall be in accordance with KS ISO 8367-1 and KS ISO 8367-2. The width of handles shall be such that they can fulfill their carrying purposes.

### 4.3 Volume

The volume of the carrier bag shall be determined in accordance with the test method given in Annex A.

### 4.4 Carrying capacity

The carrying capacity shall be agreed between supplier and buyer. The carrying capacity of the carrier bag shall be determined in accordance with the test method given in Annex B.
5.1 Sampling

A representative sample of the carrier bags shall be sampled from the market place, the factories and elsewhere and tested for compliance to the Standard.

6 Marking

The carrier bags shall be legibly and indelibly marked with the following information.

a) manufacturers name, trade mark or identification mark;
b) date of manufacture;
d) the carrying capacity in kilograms (kg) (the carrying capacity shall not be greater than the carrying capacity stated in Annex B;
e) the volume in litres (l) (the volume shall not be greater than the volume calculated in annex A.
Annex A
(normative)

Determination of the Volume

A.1 Filling material

A.1.1 The filling material used for testing the volume of carrier bags consist of plastic granules with bulk specific mass between 500 kg/m$^3$ and 600 kg/m$^3$. For the determination of bulk density a 1 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 weighed and the bulk specific mass is calculated.

A.1.2 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.2 Equipment

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.
Figure 2 — Example of testing equipment

Key
1 Lifting cylinder
2 Positioner
3 Time 1
4 Time 2
5 Number of lifts
6 Photocell
7 Surface: Laminated Fibreboard
8 Upper turning point
9 Lower turning point
A.2.1 The lifting and lowering movements are carried out by a mechanism which allows to control of the top and bottom turning points.

A.2.2 The equipment is constructed so that the lifting and lowering speed of the bag is \((0,65 \pm 0,05)\) m/s. The speed shall to be reached in less than 20 mm and shall be constant all throughout both the lifting and lowering procedures, with a smooth movement at the top turning point. The speed of the lifting mechanism shall be constant within the speed tolerances irrespective of the loaded weights.

A.2.3 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).

Figure 3 — Testing equipment - Grip
A.2.4 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).

Dimensions in millimetres

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.2.5 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.

A.2.6 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.

A.2.7 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.
A.3 Procedure for testing

A.3.1 Determination of the volume

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

A.3.1.1. 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.3.1.2. the bag is filled to the rim with plastic granules (A.1);
A.3.1.3. the bag is put down and completely released still holding the handles;
A.3.1.4. 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;
A.3.1.5 repeat a) to e) for 10 bags, and calculate the average weight;
A.3.1.6 calculate the average volume in litres by dividing the average weight with the bulk specific mass defined in
A.3.1.7 The volume is rounded to the nearest full litre so that an average volume of e.g. 15.5 litres is rounded to
Annex B  
(normative)

Determination of the carrying capacity

B.1 The carrier bag is placed on a balance and filled with the filling material given in A.1.2. The bag is filled to the weight calculated in A.3.

B.2 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.

B.3 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.

B.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 Kenya Standard
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.