DRAFT TANZANIA STANDARD

TBS/GTDC4 (6323) P3-Garbage bags -Specification

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1 Scope

This Draft Tanzania standard specifies the general characteristics, requirements and test methods for garbage bags made from thermoplastic materials containing a minimum of 10% of postconsumer recyclate that ensures fitness for purpose and which can be handled without additional support when they are filled.

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.

ASTM – D2103-15 Standard Specification for Polyethylene Film and Sheeting

ASTM – D1709-16a Standard Test Methods for Impact Resistance of Plastic Film by The Free-Falling Dart Method

ASTM – D1922-15 Standard Test Method for Propagation Tear Resistance of Plastic Film and Thin Sheeting by Pendulum Method

IS 2508-1984 Specification for low density polyethylene film.

IS 12395:1988 Specification For Disposable Trash Bags Of Plastics

3.Terms and definition

For the purpose of this standard, the following definitions shall apply:

3.1 Garbage bag

open mouthed bag that is primarily used for storage and transport of refuse

3.2 Nominal Length

length of the bag from its top to the uppermost part of the heat seal at thebottom excluding the width of the heat seal and any surplus material beyond the sealed area

3.3 Nominal Width

effective width of the bag with gussets extended where applicable

3.4 Nominal Thickness

average thickness of the wall of the bag

3.5 Plastic film

continuous, thin, non-woven membranous skin, or layer of flexible material, made of plastic materials

4. Types

Bags covered by this specification shall be of the following type;

a) *Type I* — Low Density or Linear Low-Density polyethylene bags for general use.

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b) *Type II* — High Density polyethylene bags for general use.

c) *Type III* — Low Density or Linear Low-Density polyethylene bagsfor disposal of biohazardous materials.

5. Requirements

5.1 General requirements

5.1.1 The bags shall have good workmanship, the bags shall be uniformly constructed, free from sharp creases, crinkles and other defects that will affect serviceability and impair the performance of the bags.

5.1.2 The seam shall be uniform, straight, continuous, and free from gaps and creases.

5.1.3 The bags used for unique needs and applications like medical waste bags and others shall be marked with universal biohazards symbol.

5.1.4 Colour and opacity

The colour and level of opacity of the package shall be as agreed to between the purchaser and the supplier.

5.1.5 Ease of opening

Perforation at open end shall be clean so that bag can be readily opened by hand without crimping or sticking.

5.1.6 Odour

The bag shall be constructed in a manner that will not allow odours or contents to escape when properly closed.

5.1.7 Material

5.1.7.1 Material shall be formulated from polyethylene containing octene, butene or hexene type copolymer resins with a minimum of 10% pre-consumer or post-consumer reprocessed copolymer.

5.1.7.2 The material shall conform to the requirements of tensile strength at break, elongation at break and impact resistance as given in IS2508-1984 'Specification for low density polyethylene film *(second revision).*

5.1.7.3 No additives shall be included to the polyethylene that decrease the stability, storage or use requirements of the garbage bag.

5.1.7.4 Material used for product shall be recyclable or biodegradable.

6.Dimensions

6.1 *Length* - The nominal length of the bag shall be agreed between the supplier and purchaser. The tolerance on the nominal length shall be ± 2.6 percent.

6.2 *Width* - The nominal width of the bag shall be agreed between the supplier and purchaser. The tolerance on the nominal width shall be ± 2.5 percent.

6.3 The bottom seal dimensions from the outside edges of bag to the inside of the seam shall be 25 mm maximum.

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6.4 The bottom seal dimension from the outside edge of the bag to outside of the seam shall be 5 mm minimum.

6.6*Thickness*

6.6.1 The minimum thickness when determined by the method described in Annex E shall be 30 microns.

6.6.2 The spot thickness shall be not less than the nominal thickness minus 10 percent.

7. Specific Requirements.

7.1 Resistance to Drop Impact

Ten bags shall be tested from each consignment or lot in accordance with ISO 7765-1: 1988 or the method given in Annex A ,No split or tear exceeding 50 mm in length shall occur in more than one of the ten bags tested.

7.2 Resistance to leakage

When tested in accordance with method given in Annex C, not more than one defective bag shall be permitted out of 10 bags.

7.3 Heat seals

All heat seals on the garbage bag shall be continuous.

NOTE -Bags can be either side sealed or bottom sealed. Side sealed bags have a continuous heat seal along the entire length of the two ends of the bag. Bottom sealed bags have a continuous heat seal along the entire length of the bottom of the bag.

7.3.1 Heat seals shall withstand the application of a 9.8 N force for a period of 10 min when tested in accordance with Annex D.

7.4 Density

Density requirements are given in Table 1.

Table 1- density requirements

Type	Load duty	Density (gram/cc) when tested in accordance with ASTM D792-13
I	Light	0.915 – 0.923
	Medium	
	Heavy	
II	Light	0.94-0.965
	Medium	
	Heavy	
III	Medium	0.92(Minimum)
	Heavy	

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8.Marking

The packaging and accompanying documents shall be marked with the followingInformation:

a) Name of the product “Garbage bag/ Mfuko wa kubebea Taka”
b) Thickness of the polyethylene film;
c) Colour of the bag, if other than black;
d) Length of the bag;
e) Width of the bag;
f) Carrying capacity (volume and weight);
g) Type of the bag supplied;
h) Packages for biohazardous bags shall also be marked accordingly to the specifications here in.

9.Sampling and Criteria for Conformity

9.1*Lot-In* any consignment, all the trash bags produced from the same raw material at one time shall be grouped together to constitute a lot,

9.1.1*Scale of sampling-* For ascertaining the conformity of the lot to the requirements of this standard, tests shall be carried out on bags from each lot separately. The number of bags to be sampled from a lot shall be chosen in accordance with Table 2.

Table 2 -Scale of sampling and criteria for conformity *(clauses 9.1.1 and 9.*2.1)

Lot Size	Sample Size	Acceptance Number of Defective
Up to 300	8	0
301 to 500	13	1
501 to 1000	20	1
1 001 and above	32	2

9.1.2The bags shall be selected at random from the lot and in order to ensure the randomness of selection, the procedure given in IS 4905-1968'Methods for random sampling, may be followed.

9.2 Criteria for Conformity

9.2.1The sample bags selected in accordance with Table 2 shall be examined visually and fordimensions and thickness tests. Any bag failing in anyone or more of the requirements shall be termed as defective. The lot shall be accepted if the number of defective bags in the sample does not exceed the acceptance number given in Table 2.

9.2.2A lot of 10 bags as given in the 'Test Method' (7.1)shall be drawn from the lot and shall be subjected to the test, Samples shall pass the test for acceptance of the lot in respect of drop Impact test.

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ANNEX A

(Clause7.1)

RESISTANCE TO DROP IMPACT TEST

A-1. Fill each bag with wet wood shavings of dry bulk density between 128 kg/ml and 114 kg/ml to three-quarters length of the bag. Add water until the mass of the contents amounts to a corresponding bulk density of 200 kg/ml.

A-2. Exclude excess air from the bag without compressing the contents and close the bag just above the contents, in such a way that the failure of this closure cannot take place during drop testing.

A-3. Drop the bag once on to its butt end from a height of 1.5 m on to a clear, flat concrete surface.

A-4. Test ten bags from each consignment and examine each beg for splitsor tears.

ANNEX B

MEASUREMENT OF DIMENSIONS

(*Clause* 6.1 and 6.2)

B.1 Apparatus

B.1.1Rule, capable of measuring lengths to an accuracy of 1 mm.

B.1.2 Micrometre.

B.2 Nominal length

B.2.1With the bag lying flat, measure internally thenominallength along the two edges from the top (opening) of the bag to the bottom seam, or to the bottom of the bag for bags without a bottom seam.

B.2.2The nominal length is the arithmetic mean of the two measurements, expressed in millimetres (mm).

B.3 Nominal width

B.3.1In the case of bags with gussets, cut the bottom seam and unfold the gussets.

B.3.2Measure the nominal width at mid-length between the top and the bottom of the bags. The nominal width is expressed in millimetres (mm).

B.3.3In the case of bags with edge seams, the nominal width shall be measured between the inner sides of the seams.

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ANNEX C

RESISTANCE TO LEAKAGE
***(Clause* 7.2)**

C.2 Apparatus

C.2.1 Adequate spill tray.

C.2.2 Wire/plastic tie, for closure.

C.2.3 Tap water.

C.2.4 Wet mixture, prepared with one volume of tap water and one volume of wood sawdust.

Volumes of water and wet mixture for testing are given in table 2.

Table 3 — Volume of materials for testing

1	2	3	4
Material	Volume (Litres) L		
Tap water	$W \leq 400$ and $L \leq 500$	$400 < W \leq 520$ and $500 < L \leq 700$	$W > 520$ and $L > 700$
	1	3	6
Mixture of water and sawdust (50/50 in volume)	1	3	6

Test procedure

C.2.3.1 General

When bags are supplied with a draw string sealed to the bag, do not remove the draw string before performing this test.

C.2.3.2 Step 1

Put 1 L, 3 L or 6 L of water, as applicable (see table 2), in the bag under test. Bunch-tie the top with a wire/plastic tie. Suspend the bag by the top over the spill tray.

Monitor the bag for 5 min for any evidence of leaking. Count the number of drops, *n*, if any, escaping from the bag in 1 min.

If *n* is less than, or equal to 20, the bag passes the test and is declared compliant .

If *n* is greater than 20, proceed with the second step, using the same bag.

C.2.3.3 Step 2

Prepare 1 L, 3 L or 6 L as applicable (see table 2) of a mixture of 50% water and 50% sawdust. Put the mixture in the bag. Bunch-tie the top with a wire/plastic tie and suspend the bag by the top over the spill trays.

Monitor the bag for 5 min for any evidence of leaking. Count the number of drops, *n*, if any, escaping from the bag in 1 min.

If *n* is less than or equal to 20, the bag passes the test and is declared compliant.

If *n* is greater than 20 or if all water escaped during the first 5 min, the batch is declared noncompliant.

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ANNEX D

HEAT SEAL TEST

(*Clause* 7.3)

D.1 General

This annex sets out a method for determining the resistance of the garbage bag heat seal to a tensile force.

D.2 Apparatus

D.2.1The following equipment is required*:*

a. a matched set of clamping support jaws, suitably finished, to ensure that the film is adequately supported without being damaged;
b. a matched set of suitably finished lower jaws from which a weight may be suspended; and
c. one weight with a means of suspension such that when added to the lower jaw assembly the total mass is 1.00 kg ± 0.05 kg.

D.2.2Alternatively, a universal testing tensile machine with pneumatic action grips which satisfies the requirements of ASTM F 88: 2007 may also be used.

D.3Test specimen preparation

Garbage bag samples are selected from the lot in accordance with 7.1and are prepared in the following manner:

a. three equally interspaced 25.0 mm ± 0.2 mm wide test specimens are cut from a bag;
b. the specimens are as shown in Figure 1, cut across the seal such that the seal is perpendicular to the long axis of the test specimen; and
c. the total length of each test specimen is not more than 150 mm and the seal is situated 75 mm from either end.

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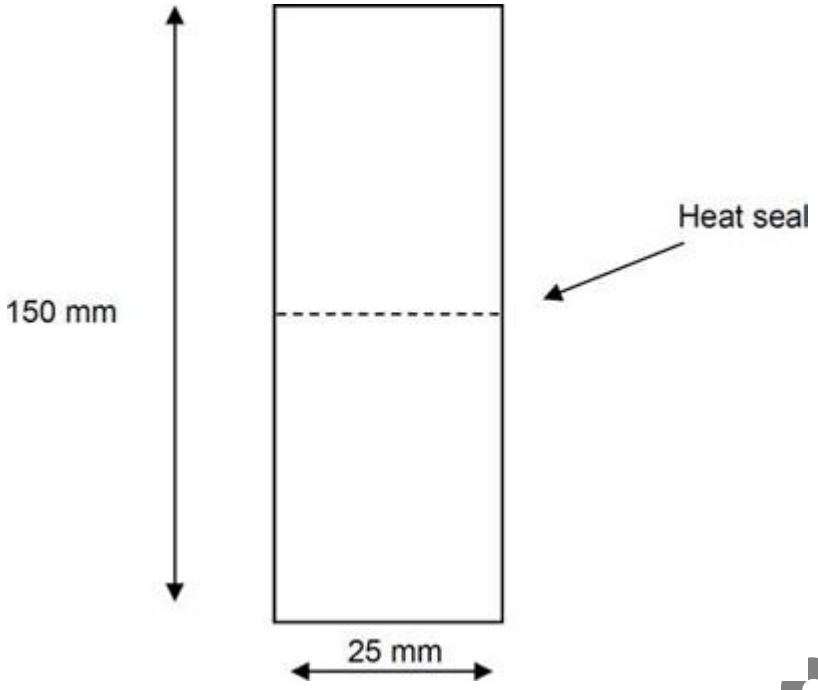

Figure 1 - Heat seal test specimen

D.4 Procedure

D.4.1The test procedure using clamps is as follows:

a. one end of the specimen is clamped between the support jaws such that the remainder of the specimen is firmly suspended with the seal in a horizontal position, 20 mm to 25 mm below the jaws;
b. the second set of clamping jaws is freely suspended with the weight attached from the other end of the film sample and 25 mm to 50 mm below the seal; and
c. if after 10 min in this position the seal is still intact, the test specimen is deemed to have passed.

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ANNEX E

(Clause 6.6)

DETERMINATION OF THICKNESS

E-1 APPARATUS

E-1.1A dead weight dial micrometer with a flat anvil of 6 mm diameter or larger in area and 4.8 mm diameterflat surface on the head of the spindle or a spring dial micrometer (dial thickness gauge) which has been calibrated against a dead weight dial micrometer shall be used. In case of dispute, only dead weight dial micrometer shall be used and the reading shall be taken between 15 s and 2 min after the load is applied.

E-2 SPECIMENS

Test five specimens, at least 5 × 5 cm^2 in area, taken uniformly across the width of the test piece.

E-3 PROCEDURE

a. Dry and clean the surface of the anvil and spindle head, and of the specimen.
b. Place the specimen onthe anvil and lower the spindle head on to it slowly. The total load applied by the spindle shall be 110 g.
c. Make one measurement on each specimen approximately at the centre of the specimen.
d. Take mean of the measurements of all the specimens of a sample to obtain the average thickness of the sample.

E-4 ACCURACY

This method is capable of producing measurements with a maximum error of + 0.000 25 cm.

ANNEX F

(Informative)

(Clause 5.1.4)

COLOUR AND MEANINGS

F.1 The garbage bags are of four (4) colours as follows;

a) Black garbage bagsfor general use.
b) Green garbage bags for glass waste.
c) Yellow garbage bags for infectious wastes and shall have universal Biohazard symbol with the wording “ÍNFECTIOUS WASTE” (Biohazard).
d) Red garbage bags for Anatomical/Pathological waste (Biomedical) shall have the universal Biohazard symbol with the wording “Anatomical/Pathological waste” (Biomedical).

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