DRAFT TANZANIA STANDARD

GDC 4 (1078) DTZS Plastics- Thermoplastic silage films and tubes - Specification

TANZANIA BUREAU OF STANDARDS

1st Edition

EXECUTIVE SUMMARY OF GDC 4 (1078) DTZS Plastics- Thermoplastic silage films and tubes - Specification

This draft Tanzania standard specifies requirements, method of sampling and test for thermoplastic silage films and tubes for agriculture purposes.

This draft Tanzania standard is applicable to transparent, black, white or colored thermoplastic silage films and tubes.

This draft standard does not cover silage films obtained by sealing two or more films in machine direction.

It is anticipated that this draft Tanzania Standard will be made **COMPULSORY i**n its application.

NATIONAL FOREWORDS

0.1 The Tanzania Bureau of Standards is the statutory national standards body for Tanzania, established under the Act.No.3 of 1975, amended by Act.No.2 of 2009.

This draft Tanzania Standard has been adopted by Packaging Technical committee, under the supervision of the General Techniques Standards Divisional Committee (GTDC) and it is in accordance with the procedures of the Bureau.

During preparation of this standard, assistance was drawn from the following document:

EN 13207 Plastics - Thermoplastic silage films and tubes for use in agriculture.

Acknowledgement is hereby made for the assistance derived from this source.

0.2 Terminology and conventions

Some terminology and certain conventions are not identical with those used as Tanzania Standard; attention is drawn to the following:

The comma has been used as decimal marker for metric dimensions. In Tanzania, its current practice to use a full point on the baseline as decimal marker.

Whenever the words “International Standard” appear, referring to this draft Tanzania Standard, they should read as “Tanzania Standard”.

1. Scope

This draft Tanzania standard specifies requirements, method of sampling and test for thermoplastic silage films and tubes for agriculture purposes.

This draft Tanzania standard is applicable to transparent, black, white or colored thermoplastic silage films and tubes.

This draft standard does not cover silage films obtained by sealing two or more films in machine direction.

2. Normative references

The following documents are referred to in the text in such a way that some or all of their contents constitute 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 527-3:2018 Plastics — determination of tensile properties — part 3: test conditions for films and sheets

ISO 7765-1 Plastics film and sheeting — determination of impact resistance by the free-falling dart method — part 1: staircase methods

ISO 15105-2:2003 Plastics — Film and sheeting — determination of gas-transmission rate — part 2: equal-pressure method

ISO 2528:2017 Sheet materials — determination of water vapour transmission rate (WVTR) — gravimetric (dish) method

3. Terms and definitions

For the purpose of this document, the following terms and definitions shall apply.
ISO and IEC maintain terminological databases for use in standardization at the following addresses:

IEC Electropedia: available at http://www.electropedia.org/

ISO Online browsing platform: available at http://www.iso.org/obp

3.1
width
overall width of the film when laid flat

3.2
nominal width
width of the film, as declared by manufacturer or supplier

3.3
nominal thickness
thickness of a film**,** as declared by manufacturer or supplier

3.4
roll length
largest dimension of the film corresponding to the length of the unwinded roll

3.5
nominal length
length of the film roll or sheet as declared by manufacturer or supplier

3.6
longitudinal (machine)direction
MD
direction parallel to the roll length, corresponding to the extrusion direction

3.7
transverse direction
TD
direction to the width (at right angle to the length)

4. Types and use

The silage films in accordance with this standard shall be classified into the following types;

4.1. **Type1-**film or tube suitable for food contact with nominal thickness greater than or equal to 90 µm.

4.2. **Type 2**-film or tube not suitable for food contact with nominal thickness greater than or equal to 100 µm.

4.3. **Type 3**-film or tube used as lining in combination addition to type 1 and type 2 with nominal thickness greater than or equal to 35 µm.

4.4. **Type 4**- film or tube having at least one coextruded layer made from a gas barrier polymer (e.g. EVOH or polyamide) with nominal thickness greater than or equal to 90 µm.

4.5. **Type 5**-film or tube having at least one coextruded layer made from a gas barrier polymer used as lining in combination to type 1 and type 2 with nominal thickness greater than or equal to 35 µm.

5. Materials

Silage films in accordance with this standard shall be manufactured from;

i. Low density polyethylene (PE-LD), linear low-density polyethylene (PE-LLD) and their blends;

ii. Ethylene vinyl acetate copolymers (EVAC) and their blends with the PE-LD and PE-LLD;

iii. Ethylene butyl acrylate copolymers (EBAK) and their blends with the PE-LD and PE-LLD;

iv. Gas barrier polymers, e.g. EVOH or polyamide

6. Requirements

6.1 General requirements

6.1.1 Films shall be visibly free of holes, flaws, slackness, wrinkles, stains, foreign matter or marks which can impair their serviceability as agreed upon by interested parties.

6.1.2 The film and tube shall be furnished in the form of roll or in any other form as agreed between interested parties.

6.2 Specific requirements

6.2.1 Thickness

The thickness tolerance shall be ± 10% within of the nominal value.

6.2.2 Performance characteristics

Films shall meet the requirements of physical properties listed in Table 1.

Table 1: Properties of the film

Properties	Requirements					Test method
	Type 1	Type 2	Type 3	Type 4	Type 5	
Tensile strength at break (MD, TD), MPa, minimum	22	17	20	20	20	ISO 527-3
Tensile strain at break, %, minimum MD TD	 400 500	 300 400	 350 450	 350 450	 350 450	ISO 527-3
Impact resistance, g, minimum	450	200	50	300	50	ISO 7765-1
Oxygen transmission rate, ($cc/m^2/day$), maximum	50			100		ISO 15105-2
Water vapor transmission rate ($cc/m^2/day$), maximum	10					ISO 2528

7 Storage and handling

7.1 The roll shall be carried, not dragged over the ground or any other surface.

7.2 The film shall be stored in a location protected from direct exposure to sunlight and temperature source and rain.

7.3 The duration of storage by the end user shall be contractually limited to less than three months.

7.4 Handling should be performed horizontally.

8 Marking and labelling

The film shall be legibly and indelibly marked with the following information;

a) Manufacturer's name, address and /or trademark;

b) Use of the film: "SILAGE FILM"

c) Type of the film, i.e. Type 1,2,3,4 or 5

d) Nominal thickness of the film;

e) Year and month of manufacture

f) Recycling symbol.

g) Plastic identification code or name.

9. Sampling

9.1 Lot

In any consignment, all rolls of film of the same grade shall be grouped together to constitute a lot.

9.1.1 Test for determining the conformity of the lot to the requirements of the specification shall be done on each lot separately. The number of rolls of the film to be selected for this purpose shall be in accordance with column 2 of Table 2.

9.1.2 The rolls of films shall be selected at random from the lot.

9.2 Number of Tests and Criteria for Conformity

9.2.1 From each of the roll of the film selected according to 9.1.2 approximately 10 m^2 of the film of full width shall be cut; care being taken to exclude not less than 2 metre lengths of film (or three full turns of the roll) from either end. The test specimens for the various tests shall be cut from different parts of each of the 10 m^2 pieces.

9.2.2 Each of the pieces as obtained in 9.2.1 from a lot shall be examined for general requirements (see 6.1). Any piece which does not meet the requirement of any of the above characteristics shall be considered as defective.

9.2.3 **i**f the number of defective found (see 9.2.2) is less than or equal to the corresponding permissible number of defective given in column 3 of Table 2, the lot shall be tested for the remaining requirements of the specification. If the number of defective found is more than the corresponding permissible number given in column 3 of Table 2, one more lot of samples may be examined.

9.2.4 The lot having been found satisfactory according to 9.2.3 shall be tested for specific requirements (see 6.2). For this purpose, the rolls already tested according to 9.2.2 and found satisfactory shall be used for testing any of these characteristics. Specimen(s) for these tests shall be cut from 10 m^2 piece already taken from each roll/folded film selected (see 9.2.1),

9.2.4.1 The lot shall be deemed to have satisfied these requirements if all the test results for different characteristics given in 9.2.4 are found meeting the relevant requirements of the specification.

9.2.5 The lot shall be declared as conforming to the requirements of the specification, if the requirements for various characteristics as given in 9.2.3 and 9.2.4 are satisfied.

Table 2 Scale of Sampling and Permissible Number of Defective

(Clauses 9.1.1 and 9.2.3)

Lot Size	Number of rolls	Permissible number of Defectives
1	1	0
2 to 15	2	0
16 to 40	3	0
41 to 65	5	0
66 to 110	7	0
111 to 180	10	0
181 to 300	15	0
301 to 500	25	1