



DRAFT TANZANIA STANDARD

GDC 4 (1079) DTZS Lamination Plastic films -Specification

TANZANIA BUREAU OF STANDARDS

EXECUTIVE SUMMARY OF TBS/GDC 4 (1079) DTZS LAMINATION PLASTIC FILMS -SPECIFICATION

This draft Tanzania standard specifies requirements, methods of sampling and testing for plastic films used for lamination purposes.

It is anticipated that this draft Tanzania Standard will be made **COMPULSORY** in 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.

Due to the frequent use of lamination films and their importance in packaging, book covers, brochures, business cards, posters, banners, display graphics, restaurant menus, legal documents and other printed items, prompted the development of this draft standard.

In development of this draft Tanzania standard assistance was drawn from different literatures and ISO standards including the following:

ISO 15988 Plastics - Film and sheeting - Biaxially oriented poly (ethylene terephthalate) (PET) films

ISO 17555 Plastics -Film and sheeting - Biaxially oriented polypropylene (PP) films

ISO 15987 Plastics — Film and sheeting — Biaxially oriented polyamide

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, methods of sampling and testing for plastic films used for lamination purposes.

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 14782 Plastics — Determination of haze for transparent materials

ISO 8296:2003 Plastics — Film and sheeting — determination of wetting tension

ISO 2556:1974 Plastics — Determination of the gas transmission rate of films and thin sheets under atmospheric pressure — manometric 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 film

supported or unsupported thin polymeric material that is laterally continuously connected used for lamination purposes

3.2 haze

percentage of transmitted light, passing through a film, which deviates from the incident light

Note 1 to entry: This phenomenon gives the plastic a cloudy appearance

3.3 wetting tension

tension taken to be equal to the surface tension of the liquid which just exhibits a zero-contact angle with the surface of a polymer film

Note 1 to entry: This is used to give an estimate of the film's surface energy in mN/m

3.4 longitudinal (machine) direction

MD

direction parallel to the roll length, corresponding to the extrusion direction

3.5 transverse direction

TD

direction to the width (at right angle to the length)

4. Requirements

4.1. General Requirements

- 4.1.1** Films shall be visibly free of flaws, slackness, wrinkles, stains, foreign matter or marks which can impair their serviceability as agreed upon by interested parties.
- 4.1.2** The splicing of two films in a roll should preferably be prominently marked to provide a visible indication when the roll is viewed from the end. The method of marking the splice should be agreed upon between the interested parties.
- 4.1.3** The film shall be furnished in the form of roll or in any other form as agreed between interested parties.
- 4.1.4** The material used for manufacturing the film shall be any of the following: Biaxially Oriented Polypropylene (BOPP), Biaxially Oriented Polyethylene Terephthalate (PET), Polyamide (PA) or other polymeric materials or blend that meet the requirements of this standard.
- 4.1.5** The film shall have no splices or air bubbles.
- 4.1.6** The film shall be free from any objectionable odour.

4.2 Thickness

The thickness tolerance shall be $\pm 10\%$ within of the nominal value.

4.3 Specific Requirements

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

Table 1: Properties of the film

Properties	Requirements								Test Method
	BOPP film		BOPET film		PA film (Nylon)		Other polymeric materials*		
	MD	TD	MD	TD	MD	TD	MD	TD	
Tensile strength at break, MPa, minimum	100	100	100	100	150	150	100	100	ISO 527-3
Tensile strain at break, % maximum	270	150	200	200	200	200	200	200	ISO 527-3
Haze, %, maximum	5		8		8		8		ISO 14782
Wetting tension, mN/m, minimum	36		40		40		40		ISO 8296
Coefficient of oxygen Transmission, (cc/m ² /day), maximum.	50								ISO 2556
Coefficient of water vapour Transmission, (g/m ² /day), maximum.	10								ISO 2528
*Polymeric materials apart from Biaxially Oriented Polypropylene (BOPP), Biaxially Oriented Polyethylene Terephthalate (PET) and Polyamide (PA) like Polyester, Polyurethane etc.									

5 Packaging

Packaging and size of unit packaging shall be agreed upon between interested parties taking into account conditions of transportation and storage.

6 Marking on packaging

The following shall be clearly marked on the package:

- name of products or symbol: PET, BOPP or Polyamide (Nylon)film or other polymeric material
- nominal thickness;
- year and month of manufacture;
- name of manufacturer or symbol

7 Sampling

7.1 Lot

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

7.1.1 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.

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

7.2 Number of Tests and Criteria for Conformity

7.2.1 From each of the roll of the film selected according to 7.1.2 approximately 10 m² 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 m² pieces.

7.2.2 Each of the pieces as obtained in 7.2.1 from a lot shall be examined for general requirements (see 4.1). Any piece which does not meet the requirements of any of the above characteristics shall be considered as defective.

7.2.3

7.2.4 if the number of defective found (see 7.2.2) is less than or equal to the corresponding permissible number of defective rolls 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.

7.2.5 The lot having been found satisfactory according to 7.2.3 shall be tested for specific requirements (see 4.3). For this purpose, the rolls already tested according to 7.2.2 and found satisfactory shall be used for testing any of these characteristics. Specimen(s) for these tests shall be cut from 10 m² piece already taken from each roll/folded film selected (see 7.2.1),

7.2.5.1 The lot shall be deemed to have satisfied these requirements if all the test results for different characteristics given in 7.2.4 are found meeting the relevant requirements of the specification.

7.2.6 The lot shall be declared as conforming to the requirements of the specification, if the requirements for various characteristics as given in 7.2.3 and 7.2.4 are satisfied.

Table 2 Scale of Sampling and Permissible Number of Defectives

(Clauses 7.1.1 and 7.2.3)

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