First edition

# DRAFT TANZANIA STANDARDS

## Textiles – Requirements for clothing made of limited flame spread materials and material assemblies affording protection against heat and flame – Specification



TANZANIA BUREAU OF STANDARDS

## FOREWORD

Limited flame spread materials and material assemblies are used in clothing in order to reduce the possibility of their burning and thereby itself constituting a fire hazard. These include clothing such as ladies' wear made of synthetic fibres and children wear of all kinds and also other protective clothing where protection against heat and fire mainly due to accidental contact with small igniting flames is required in circumstances where there is no significant heat and fire hazard.

Protective clothing may consist of several, separate dress materials or garments, or it may be a single dress material or garment with one or more layers. Normally it is sufficient for the outer material to have limited flame spread properties, and material assemblies from multi-layer clothing are tested by applying the flame to the outer surface. Optional alternative testing and marking requirements are given for material assemblies from dress materials or garments where there is a risk that inner layers might be exposed to flame contact.

The limited flame spread properties of the textile materials and material assemblies are measured both before and after an appropriate cleansing or water soaking procedure and the procedure employed is indicated by a durability index.

In the preparation for reviewing this Draft Tanzania Standard, reference was made to the following:

IS 15742:2007 Textiles — Requirements for clothing made of limited flame spread materials and material assemblies affording protection against heat and flame — Specification

## 1. SCOPE

1.1 This Draft Tanzania Standard specifies the performance requirements for the limited flame spread properties of textile materials and material assemblies used in protective clothing affording protection against heat and flame.

1.2 This Draft Tanzania Standard is applicable to clothing such as ladies' wear made of synthetic fibres and children wear of all kinds. Other protective clothing where protection against heat and fire mainly due to accidental contact with small igniting flames is required in circumstances where there is no significant heat and fire hazard.

## 2. NORMATIVE REFERENCES

The following referenced documents are indispensable for the application 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:

TZS 22: *Textiles – Woven fabrics – Determination of breaking load and extension*

TZS 24: *Method for determination of colour fastness of textile materials to washing (test 4)*

TZS 40: *Method for determination of colour fastness of textiles material to day light*

TZS 44: *Textiles – Woven or knitted fabrics – Determination of length and width*

TZS 137: *Textiles – Determination of dimensional changes of woven and knitted fabrics and garments: Machine method*

TZS 138: *Method for determination of colour fastness of textiles material to rubbing*

TZS 280: *Method for determination of colour fastness of textile material to perspiration*

ISO 15025:2016 – *Protective clothing – Protection against flame – Method of test for limited flame spread*

ISO 9151:2016 – *Protective clothing against heat and flame – Determination of heat transmission on exposure to flame*

ISO 6330:2000 Textiles - *Domestic washing and drying procedures for textile testing*

## 3. TERMS AND DEFINITIONS

For the purpose of this Draft Tanzania Standard, the following terms and definitions shall apply:

### 3.1 Limited Flame Spread Index

number indicating that the material or material assembly achieved one of the levels given in 7.

### 3.2 Durability Index

letter X or R indicating that the material or material assembly was subjected to a cleansing procedure specified in 6 before being tested for limited flame spread.

### 3.3 Textile Material

single fabric or other product, for example one layer of a woven, knitted, or coated fabric or a multi-layered fabric or other product combined prior to the garment manufacturing process, for example a laminated or quilted fabric. A material test specimen is taken from a single layer or a garment.

**3.4 Textile Material Assembly**

two or more separate layers of the same or different materials. A material assembly test specimen represents or is taken from the various layers in a single garment or in a series of garments in a clothing system, assembled in equal size and in the order of use.

## 4. PERFORMANCE REQUIREMENTS

**4.1** Textile Materials

All textile materials as described in 1.2 shall have a limited flame spread level 1. 2 or 3 when tested in accordance with ISO 15025:2016. Materials giving Index 1 shall only be used as part of a material assembly complying with Index 2 or Index 3 (see 4.2) and shall be supplied with a statement that they shall not be used next to the skin.

4.2 Textile Material Assemblies

Assemblies All textile material assemblies described in 1.2 shall have a limited flame spread Index of 2 or 3 when tested in accordance with ISO 9151:2016 with the flame applied to the outer face.

**4.2** Durability

All textile materials and material assemblies, shall meet these requirements both before and after the appropriate cleansing procedure X or R in accordance with 6. The limited flame spread index quoted shall be the lowest value determined either before or after cleansing.

## 5. SAMPLING

**5.1** Lot

The quantity of same kind of textile material or material assembly delivered to a buyer against one dispatch note shall constitute a lot.

**5.2** Textile Material

A representative sample of sufficient size to provide the required two sets of six specimens shall be drawn randomly from the lot as per relevant Tanzania Standard on material specification or as agreed to between the buyer and the seller.

**5.3** Textile Material Assemblies

Assemblies Sufficient quantity of each material in the assembly or sufficient number of garments of the same type shall be taken so as to provide the required two sets of six specimens.

NOTES

1 This standard is designed to assess the performance of the textile material or material assembly used in the clothing or the garment and not the garment construction. Specimens taken from the clothing or the garments should be typical of their construction, but should not include seams, closure systems, or specific garment design features.

2 Additional sets of specimens as needed if material assemblies are to be tested on both the outer and the inner faces.

**5.4** Test Specimen Size

The specimen size shall be 200+ 1 mm by 160 + 1 mm. An alternative 80 mm wide specimen may only be used on materials and material assemblies which do not bum to the side edges of the narrower specimen.

## 6. PROCEDURES FOR DURABILITY TO CLEANSING OR WETTING

6.1 The textile materials or material assemblies shall be tested both before and after a cleansing procedure, in accordance with 6.2.

6.2 The sample shall be submitted to at least five wash cycles of the cleansing procedure given in the care label. If no cleansing procedure is prescribed, the material shall be submitted to twelve wash cycles of one of the - standard cleansing procedures prescribed in 6.2.1 as appropriate to the fabric.

6.2.1 Standard wash procedure according to procedure No. 6A (40 ± 3°C) and flat dried in accordance with procedure C of ISO 6330:2000. Textile materials and material assemblies tested after this procedure shall be 'marked with the letter X.

NOTE

It is possible to modify the washing procedure by carrying out wash cycles using a washing temperature conforming to manufacturer's maintenance instructions. In such cases the durability index shall be in the form: number of wash cycles, letter X, wash temperature in °C.

## 7. CLASSIFICATION

7.1 Requirements for Limited Flame Spread Index 1

The textile material or material assembly shall meet the following requirements:

a) No specimen shall permit any part of the lowest boundary of any flame or hole to reach the upper or either vertical edge.

b) No specimen shall give flaming debris.

c) Any afterglow shall not spread from the carbonized area to the undamaged area after the cessation of flaming.

7.2 Requirements for Limited Flame Spread Index 2

The textile material and material assembly shall meet the following requirements:

a) No specimen shall permit any part of the lowest boundary of any flame to reach the upper or either vertical edge.

b) No specimen shall give flaming, debris.

c) Any afterglow shall not spread from the carbonized area to the undamaged area after the cessation of flaming.

d) No specimen shall have hole formation.

7.3 Requirements for Limited Flame Spread Index 3

The textile material and material assembly shall meet the following requirements:

a) No specimen shall permit any part of the lowest boundary of any flame to reach the upper or either vertical edge.

b) No specimen shall give flaming debris.

c) Any afterglow shall not spread from the carbonized area to the undamaged area after the cessation of flaming.

d) No specimen shall give hole formation.

e) The mean after flame time of any set of six specimens shall not exceed 2 seconds.

## 8. MANUFACTURER'S INFORMATION

**8.1** Single Layer Textile Materials

All single layer textile materials in accordance with this standard shall be supplied with the following information:

a) Manufacturer's name, trade-mark or other identifying mark;

b) Material's limited flame spread index and the durability index or the letter R or X, for example 3/X indicates material meets flammability Index 3 after 12 washes at 40°C; 2/5X60 indicates meets flammability Index 2 after 5 washes at 60°C;

c) Instructions for the care and cleansing of the material, in agreement with the durability index quoted above, and with particular emphasis on any special precautions to be taken, and

d) If the material is classified in as Index 1, a statement 'Use only over Index 2 or 3 material and do not use next to the skin'.

**8.2** Textile Material Assemblies

All textile material assemblies in accordance with this standard shall be supplied with the information in 8.1 but with the statement required under 8.l(b) modified to: 'Textile material assembly Index: Outer face tested', as appropriate. Optionally, if the requirements of 4.3. Ll are satisfied the statement shall be: 'Textile material assembly Index: -Outer face tested and index: Inner face tested'.

8.2.1 The presence of any Index 1 textile material in the assembly shall be indicated.

NOTE

The flammability indices given in this standard may be used by material manufacturers to indicate the flame spread behaviour of their materials. They may also be used by protective clothing manufacturers to indicate the flame spread behaviour of the material or material assembly used in protective clothing. The use of marking on a garment openly indicates the limited flame spread properties of the textile material or material assembly used in its construction.