DEAS 1071:2021

ICS 59.080.30

# DRAFT EAST AFRICAN STANDARD

## Duvet — Specification



## EAST AFRICAN COMMUNITY



First Edition 2021

## Copyright notice

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# Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 061, *Textiles, textile products and accessories*.

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

# Duvets — Specification

## 1 Scope

This Draft East African Standard specifies requirements, sampling and test methods for duvets

NOTE Duvets are also known as quilts or comforters

## 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.

ISO 105-B01, *Textiles — Tests for colour fastness — Part B01: Colour fastness to light: Daylight*

ISO 105-B02, *Colour fastness to artificial light: Xenon arc fading lamp test*

ISO 105-C10,*Colour fastness to washing with soap or soap and soda*

ISO 105-D01,*Colour fastness to dry cleaning using perchloroethylene solvent*

ISO 105-E04, *Tests for colour fastness -- Part E04: Colour fastness to perspiration*

ISO 105-X12, *Colour fastness to rubbing*

ISO 1833 (all parts), *Textiles — Quantitative chemical analysis*

ISO 3175-1, *Textiles — Professional care, drycleaning and wetcleaning of fabrics and garments — Part 1: Assessment of performance after cleaning and finishing*

ISO 3758, *Care labelling code using symbols*

ISO 3759, *Textiles — Preparation, marking and measuring of fabric specimens and garments in tests for determination of dimensional change*

ISO 5077, *Textiles — Determination of dimensional change in washing and drying*

ISO 6330, *Domestic washing and drying procedures for textile testing*

ISO 9237, *Textiles — Determination of the permeability of fabrics to air*

ISO 12945-2, *Determination of fabric propensity to surface fuzzing and to pilling -- Part 2: Modified Martindale method*

ISO 13934-1, *Determination of maximum force and elongation at maximum force using the strip method*

ISO 13938-2, *Pneumatic method for determination of bursting strength and bursting distension*

ISO 14362-1, *Textiles — Methods for determination of certain aromatic amines derived from azo colorants — Part 1: Detection of the use of certain azo colorants accessible with and without extracting the fibres*



 

ISO 14362-3, *Textiles — Methods for determination of certain aromatic amines derived from azo colorants — Part 3: Detection of the use of certain azo colorants, which may release 4-aminoazobenzene*

ISO 16373-1, *Textiles — Dyestuffs — Part 1: General principles of testing coloured textiles for dyestuff identification*

ISO 16373-2, *Textiles — Dyestuffs — Part 2: General method for the determination of extractable dyestuffs including allergenic and carcinogenic dyestuffs (method using pyridine-water)*

ISO 16373-3, *Textiles — Dyestuffs — Part 3: Method for determination of certain carcinogenic dyestuffs (method using triethylamine/methanol)*

ISO 22198*, Textiles — Fabrics — Determination of width and length*

ISO 24153, *Random sampling and randomization procedures*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions shall apply.

**3.1**
**duvet**
bed covering assembly, consisting of insulating filler secured between two layers of fabric designed to reduce heat loss

**3.2**
**warmth-to-mass ratio**
measure of the efficiency of the duvet which equals to the ratio of the thermal resistance of the duvet (in togs) to its mass per unit area

**3.3**
**tog value**
unit equal to ten times the thermal insulance

NOTE Tog is also known as thermal resistance of a duvet

## 4 Requirements

### 4.1 General requirements

**4.1.1** Duvets shall be:

a) free from defects as described in ISO 8498 and ISO 8499;

b) made such that all seams are neatly stitched and securely backstitched; and

c) made such that all ends of sewing have been trimmed and loose threads removed.

**4.1.2** The ends and side edges shall be secured together by seaming, binding, or overlocking



 

## 4.2 Specific requirements

### 4.2.1 Fibre composition of the casing fabric and filling

The fibre composition and proportion of the duvet shall be as declared and tested in accordance with any relevant part of ISO 1833.Where the fabric is a blend of two or more fibres, the fibre composition and proportion shall be as declared subject to a tolerance of ± 5%.

### 4.2.2 Dimensions

The mean width and mean length of the duvet shall not vary more than ± 4 % from the dimensions declared on the label when measured in accordance with ISO 22198.

### 4.2.3 Seams and stitching

All seams of the casing shall be sewn with not less than 32 stitches per 10 cm for duvets, unless one of the following occurs.

a) If the edges of the casing are bound in this case, they shall be sewn with not less than 20 stitches Per 10 cm

b) If the edges of the casing are overlocked in this case they shall be sewn with not less than 50 stitches per 10 cm

### 4.2.4 Warmth-to-mass ratio

When determined in accordance with Annex C the warmth-to-mass ratio of a duvet shall be at least 100

### 4.2.5 Mass per unit area

The mass per unit area shall be within ± 5 % of the declared value when measured in accordance with Annex B.

### 4.2.6 Thermal insulance

When determined in accordance with annex A, the thermal insulance of a duvet shall be within – 0.5 togs or + 3 togs of the declared value.

### 4.2.7 Permeability of casing fabrics

The casing fabric shall be capable of satisfactorily retaining the filling and allowing a sufficient level of moisture vapour transmission.

### 4.2.8 Physical properties of casing fabrics

Duvets shall conform to the physical requirements specified in Table 1 when tested in accordance with the test methods specified therein.

**Table 1 — Physical requirements for casing fabric for duvets only**

| S/N | Parameter | Requirement | | Test method |
|---|---|---|---|---|
| | | Woven Duvet | Knitted Duvet | |



 

| | | | | | |
|---|---|---|---|---|---|
| i | Breaking strength, N, min | Warp | 350 | N/A | ISO 13934-1 |
| | | Weft | 200 | N/A | |
| ii | Bursting Strength, kpa, min. | | N/A | 155 | ISO 13938-2 |
| iii | Pilling, min. | | 4 | 4 | ISO 12945-2 |
| iv | Dimensional changes after 5 washes, %. | | ± 3 | ± 5 | ISO 6330 (Procedure 4N)<br>ISO 5077 and ISO 3759 |
| v | Dimensional changes after 5 dry cleaning cycles, % | | ± 3 | ± 5 | ISO 3175-1 |
| vi | Air permeability, mL/(cm$^2$•s) | Woven casing made from spun staple yarns | 25 – 30 | - | ISO 9237 |
| | | Casing made from other woven fabrics | 15 -20 | - | |

### 4.2.9 Colourfastness properties of casing fabrics

Duvets shall conform to the colourfastness requirements specified in Table 2 when tested in accordance with the test methods specified therein.

**Table 2 — Colourfastness requirements for casing fabric of duvets**

| S/N | Parameter | | Requirement | | Test Method |
|---|---|---|---|---|---|
| | | | Woven Duvet | Knitted Duvet | |
| i | Colourfastness to washing, min. | Colour change | 4 | 4 | ISO 105-C10 |
| | | staining | | | |
| ii | Colourfastness to dry cleaning, min. | Colour change | 4 | 4 | ISO 105-D01 |
| | | staining | | | |
| iii | Colourfastness to rubbing, min. | Dry | 4 | 4 | ISO 105-X12 |
| | | Wet | 3-4 | 3-4 | |
| iv | Colourfastness to light, min. | | 4 | 4 | ISO 105-B02<br>ISO 105-B01 |
| v | Colourfastness to perspiration (Acid), min. | Colour change | 4 | 4 | ISO 105-E04 |
| | | staining | | | |
| vi | Colourfastness to perspiration (Alkali), min. | Colour change | 4 | 4 | ISO 105-E04 |
| | | staining | | | |

#### 4.2.10 Restricted colourants

When tested in accordance with ISO 14362-1, ISO 14362-3, ISO 16373-2 and ISO 16373-3, duvets shall be free from restricted colorants listed

Colorants in duvets shall be identified and classified in accordance with ISO 16373-1.

## 5 Packaging

Duvets shall be wrapped individually in an acceptable wrapper and then packed in a suitable bulk container

## 6 Labelling

a) The following information shall appear in either English, Kiswahili, or French or in combination in legible and indelible marking on a label securely attached to an edge of, or on top (near one of the corners) of each duvet.manufacturer's name or trademark

b) the length and width of the duvets in centimeters

c) fibre composition of the casing fabric and of the filling shall be declared

d) care instructions according to ISO 3758

e) the tog value

f) mass per unit area, in $g/m^2$

g) country of origin or manufacture

## 7 Sampling

Sampling shall be done in accordance with ISO 24153



 

# Annex A
(normative)

# Method for determination of thermal insulance

## A.1 Apparatus

**A.1.1** **Electric blanket**, of size at least 600 mm × 450 mm, that has electricity supplies that is controlled by a variable transformer or that has a set-point controller.

**A.1.2** **Polyurethane foam mattress**, of a nominal thickness 25 mm and of a length and width greater than the corresponding dimensions of the duvet under test

**A.1.3** **Aluminum sheet**, of thickness 1.5 mm and of other dimensions equal to those of the electrically heated blanket

**A.1.4** **Two pieces of a polyester-and-cotton shirting**, each of length and width slightly greater than the corresponding Dimensions of the duvet under test

**A.1.5** **At least six thermocouples**

**A.1.6** **At least six small low-temperature heat flow meters**

**A.1.7** **Adhesive tape**

**A.1.8** **Suitable slow-speed fan**, capable of creating a horizontal breeze of velocity not exceeding 0.3 m/s over the entire upper surface of the duvet

## A.2 Procedure

**A.2.1** Determine, to the nearest 1 g, the mass of the duvet under test and record the mass in kilograms.

**A.2.2** Place the mattress on a table and place the electric blanket in the center of the mattress.

**A.2.3** Cover the electric blanket with the aluminums sheet, and then cover the latter with one of the pieces of fabric.

**A.2.4** Within an area of size 450 mm × 350 mm and within the boundaries of the electric blanket, tape the heat flow meters and the thermocouples to the upper surface of the piece of fabric in random configuration.

**A.2.5** Gently place the duvet over the entire assembly and ensure that no heat flow meter is closer than 300 mm to an edge or end of the duvet, and cover with the other piece of fabric.

**A.2.6** Place the fan in such a position that it creates a horizontal breeze of velocity not exceeding 0.3 m/s over the entire upper surface of the duvet.

**A.2.7** Suspend two more thermocouples 300 mm above the assembly and in the air stream created by the fan

**A.2.8** Switch on the electric blanket and so adjust the power supply that the temperature under the duvet is maintained at 33 °C ± 5 °C.



 

**A.2.9** Record the temperature indicated by each thermocouple and the rate of heat flow indicated by each heat flow meter disc. Calculate the mean ambient temperature (as indicated by the suspended thermocouples), the mean temperature under the duvet, and the rate of heat flow.

**A.2.10** Calculate the thermal insulance, using the following formula:

$M = (t1 - t2) / ø$

Where;

M is the thermal insulance, in metre-squared kelvin per watt;

t1 is the mean temperature under the duvet, in degrees Celsius;

t2 is the mean ambient (room) temperature, in degrees Celsius; and

ø is the mean rate of heat flow, in watts per square metre.

**A.2.11** Select two additional test areas by moving the duvet plus the upper piece of fabric, ensuring that the test areas do not overlap, and on each of these areas repeat the procedures given in A.2.9 and A.2.10

**A.2.12** From the results on the three test areas, calculate the mean thermal insulance of the duvet plus the cover fabric.

**A.2.13** Remove the duvet and repeat the procedures given in A.2.9 and A.2.10 with the upper piece of fabric as the only means for covering the assembly.

**A.2.14** Calculate the mean thermal insulance of the upper piece of fabric.

**A.2.15** Calculate the total mean thermal insulance of the duvet by subtracting the value obtained in A.2.14 from the value obtained in A.2.12.

**A.2.16** Calculate the tog value by multiplying the thermal insulance (A.2.15) by 10.

**A.2.17** Check for compliance with 4.6



 

# Annex B
(normative)

## Determination of mass per unit area

**B.1** Condition duvet in accordance with ISO 139**B.2** Determine the mass of the conditioned duvet to the nearest gram.

**B.3** Calculate the mass per square metre:

from

$$mass\ per\ square\ metre = 104 \times \frac{m}{(b \times l)}$$

Where;

*m* is the mass of the conditioned duvet ;(in g)

*l* is the length of the duvet (in, cm) determined in accordance with ISO 22198

*b* is the width of the duvet (in, cm) determined in accordance with ISO 22198Express the results in g/m$^2$.

# Annex C
(normative)

# Determination of warmth-to-mass ratio

## C.1 Procedure

**C.1.1** Determine, to the nearest centimeter, the length and width (see 4.2) of the duvet

**C.1.2** Calculate the mean length and the mean width of the duvet in meters.

**C.1.3** Calculate the warmth-to-mass ratio, Q, in meters to the fourth kelvin per watt per kilogram, as follows:

$$Q = {}^{(M \times l \times b)}/_{m} \times 10$$

Where;

M is the mean thermal insulance (see A.2.15), in metre-squared kelvin per watt;

L is the mean length (C.1.1), in metres;

b is the mean width (C.1.2), in metres; and

m is the mass of the duvet (see A.2.1), in kilograms.

# Bibliography

FDKS 2668: 2016, Duvet, Quilts and Accessory products — Specification