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Bathroom Slippers — Specification

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Foreword

Uganda National Bureau of Standards (UNBS) is a parastatal under the Ministry of Trade, Industry and Cooperatives established under Cap 327, of the Laws of Uganda, as amended. UNBS is mandated to co-ordinate the elaboration of standards and is

(a) a member of International Organisation for Standardisation (ISO) and

(b) a contact point for the WHO/FAO Codex Alimentarius Commission on Food Standards, and

(c) the National Enquiry Point on TBT Agreement of the World Trade Organisation (WTO).

The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of key stakeholders including government, academia, consumer groups, private sector and other interested parties.

Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

The committee responsible for this document is Technical Committee UNBS/TC 316, *Footwear*

Bathroom Slippers — Specification

1 Scope

This draft Uganda Standard specifies the requirements and methods of test for bathroom slippers.

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.

ISO 48-2*, Rubber, vulcanized or thermoplastic — Determination of hardness — Part 2: Hardness between 10 IRHD and 100 IRHD*

ISO 16177*, Footwear — Resistance to crack initiation and growth — Belt flex method*

ISO 2420*, Leather — Physical and mechanical tests — Determination of apparent density and mass per unit area*

ISO 3377-1*, Leather — Determination of tearing load.*

US ISO 17706*, Footwear — Test methods for uppers — Tensile strength and elongation*

US ISO 20871*, Footwear -Test methods for outsoles -Abrasion resistance*

US ISO 3376*, Leather — Physical and mechanical tests — Determination of tensile strength and percentage extension*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:
— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
bathroom slipper
a type of footwear that can be slipped on and off easily made with straps and worn in the bathroom.

4 General requirements

4.1 The bathroom slipper sole shall be made of a material that is non-slippery such as rubber, TPU in combination with EVA for user comfort in the bathroom

4.2 The surface shall be free from blisters, cavities, collapses or blemishes. The die markings shall be neat and clean and the surface shall have reasonably good finish.

4.3 The length and the standard sizes shall be as in Annex A.

4.4 The minimum sole thickness shall be 15 mm for all the sizes.

4.5 The physical requirements for sole and the strap material shall comply with the values given in Tables 1 and 2 respectively

Table 1 — Physical requirements for sole material

S/N	Parameter	Requirement	Test method
i)	Density g/cm^3	0.2 — 0.5	ISO 2420
ii)	Hardness (IRHD)	30 — 55	ISO 48-2
iii)	Tensile strength (MPa), min.	1.0	US ISO 3376
iv)	Elongation (%), min.	50	US ISO 3376
v)	Tear strength, N, min.	35	ISO 3377-1
vi)	Compression set at constant stress (%), max.	35	Annex B
vii)	Flexing resistance: Flexing endurance (Flexing cycles), min. Cut growth at the end of 35 000 cycles at 500 % (mm), max.	 35 000 3	 ISO 16177
viii)	Abrasion loss (cubic mm), max.	1200	US ISO 20871
ix)	Room temperature shrinkage at 25 ± 2 °C for two weeks (%), max.	1.0	Annex C
x)	Heat shrinkage for 1 h at 100 °C, (%) max.	2.0	Annex D
xi)	Water absorption (%), max.	5	Annex E
xii)	Split tear strength (N), min.	35	Annex F

Table 2 — Physical requirements for the strap

S/N	Parameter	Requirement		Test method
		PVC	Rubber	
i)	Tensile strength (MPa), min.	5	15	US ISO 3376
ii)	Elongation (%), min.	150	250	US ISO 3376
iii)	Breaking strength (N), min.			US ISO 17706
	a) Stem	180	180	
	b) Toe	180	180	
	c) Heel	150	150	
iv)	Pull strength (N), min.			Annex G
	a) Toe end	100	100	
	b) Heel end	100	100	
Note: In number iii), test pieces to be cut in lengthwise direction only.				

5 Packaging

5.1 Each piece shall be packed with its complementary piece

5.2 The pieces shall be of the same size and shape (design).

5.3 The pair shall be packed in a suitable material so as to protect the product from damage during transportation and storage

6 Labelling/marking

6.1 Slippers shall be legibly and indelibly marked with the following:

a) the manufacturer's name, initials or trade-mark; and

b) size

6.2 Each package shall be marked with the following information

a) the manufacturer's name and/or trade-mark and physical address;

b) name of item;

c) color; and

d) country of origin

Annex A
(normative)

Table A.1 — Children's sizes

Size	Minimum length (mm)
3	126.50
4	135.00
5	143.50
6	152.00
7	160.50
8	169.00
9	177.50
10	186.00
11	194.50
12	203.00
13	211.00

Table A.2 — Adult's sizes

Size	Minimum length (mm)
1	220.00
2	220.50
3	237.00
4	245.50
5	254.00
6	262.00
7	271.00
8	279.50
9	288.00
10	296.50

11	305.00
12	313.50
13	322.00

Annex B
(normative)

Method for determination of compression set at constant stress

B.1 Apparatus

Consists of two parallel, flat, rigid plates between which the test piece shall be compressed and the means of which a load of 140 kg ± 1 kg is applied.

B.2 Test piece

The test pieces shall be three discs of diameter 30 mm ± 0.2 mm of any thickness.

B.3 Procedure

B.3.1 Condition the test pieces at 27˚C ± 2˚C and 65% ± 5% relative humidity for 24 h. Conditioning of the sample shall be done in accordance with ISO 554

B.3.2 Measure the initial thickness of each test piece at the center using the gauge with part-spherical contact.

NOTE Take the arithmetic mean of three readings as the initial thickness.

B.3.3 Place the three test pieces on parallel plates of the compression apparatus and subject to a compression load of 140 kg ± 1 kg for 24 h.

B.3.4 Release the load, remove the test pieces and allow to recover.

B.3.5 After 1 h, measure the thickness and note the arithmetic mean as the final thickness.

B.4 Expression of results

Percentage compression set = $[(t_0 - t_1)/t_0] \times 100$

Where

t_0 is initial thickness in mm

t_1 is final thickness in mm

Annex C
(normative)

Method for determination of room temperature shrinkage

C.1 Test piece

Cut from the samples, test pieces of minimum dimensions 125 mm x 5 mm x 15 mm, after splitting all the sides of the sample.

C.2 Conditioning of the test piece

Condition the test piece at 65 % ± 5 % relative humidity and 27˚C ± 2˚C for at least 24 h prior to testing. Conditioning of the sample shall be done in accordance with ISO 554

C.3 Number of tests

Carry out tests on at least three test pieces.

C.4 Procedure

Condition the test piece. Measure the length of the test piece to the nearest 0.1 mm. Keep the test piece suitably in a closed chamber maintained at 27˚C ± 2 ˚C for 2 weeks. Remove the test piece from the chamber and measure its length again.

C.5 Calculation

Calculate the room temperature shrinkage as follows:

Room temperature shrinkage = $[(L_{0}- L)/L_{0}] X 100$

Where

L_0 is the length of the test piece in mm, before heating

L is the length of the test piece in mm, after heating for two weeks

Annex D
(normative)

Method for determination of heat shrinkage

D.1 Test pieces

Cut test pieces of minimum dimensions 150 mm x 25 mm x 15 mm from post-cured sole by means of a knife.

D.2 Conditioning of test piece

Condition the test piece at 27˚C ± 2˚C temperature and 65 % ± 5 % relative humidity at least 24 h prior to testing. Conditioning of the sample shall be done in accordance with ISO 554

D.3 Number of tests

Carry out test on at least three test pieces.

D.4 Procedure

Trace the test piece on a piece of white paper. Measure the length of the test piece to the nearest 0.1 mm. Keep the test piece suitably in an oven (Thermostatically controlled) for 1 h at 100˚C ± 1°C. Take out the piece from the oven and cool to ambient temperature. Keep the test piece at room temperature for a minimum 2 h. Trace it again on the same paper and measure the length of the test piece on paper.

D.5 Calculation

Calculate the shrinkage as follows:

Shrinkage = $[(L_0-L_1)/L_0]$ X 100

Where

L_0 is length of the test piece, in mm, before heating, and

L_1 is length of test piece, in mm, after heating and cooling to room temperature

Annex E
(normative)

Method for the determination of water absorption

E.1 Test pieces

Cut three pieces of 5 mm x 5 mm x 5 mm after shrinking all sides of the sample.

E.2 Conditioning

Condition for 24 h prior to testing at 27˚C ± 2˚C and 65 % ± 5 % relative humidity. Conditioning of the sample shall be done in accordance with ISO 554

E.3 Procedure

E.3.1 After conditioning the test piece, weigh to the nearest 0.5 mg and immerse in distilled water for a period of 24 h at 27˚C ± 2˚C.

E.3.2 Remove from the water, wipe dry the exposed surfaces with blotting paper.

E.3.3 Weigh the test piece again to the nearest 0.5 mg within 2 min of the removal of the test piece from water.

E.4 Expression of results

Calculate the water absorption as follows:

Water absorption percentage = $[(M-M_0)/M_0] \times 100$

Where

M is mass in g, of the test piece after immersion in water, and

M_0 is mass in g, of the test piece before immersion in water

Annex F
(normative)

Method for the determination of split tear

F.1 Apparatus

Tensile testing equipment with a rate traverse of 75 mm per minute

F.2 Conditioning

Condition the samples for 24 h prior to testing at 25˚C ± 2˚C and 65 % ± 5 % relative humidity. Conditioning of the sample shall be done in accordance with ISO 554

F.3 Test pieces.

After conditioning the test piece, cut three test pieces of 25 mm x 100 mm along and across the direction of the bottom material of a bathroom slipper or a sheet. Prepare each test piece by splitting it with a knife or any other suitable method through midway between the top and the bottom surfaces for a distance of 30 mm from one end to form two tongues. See Figure below.

F.4 Procedure

Clamp one tongue of the test piece on the upper jaw, and the other on the lower jaw. Start the machine and set the rate of separation speed at a constant rate of 75mm per minute.

F.5 Results

After the test pieces have separated, note the maximum load and record the arithmetic mean of the three test pieces in Newton (N) as the split tear strength of the sample

Dotted line shows knife cut

a) Test piece before cut (diagram a)

b) Test piece after cut (diagram b)

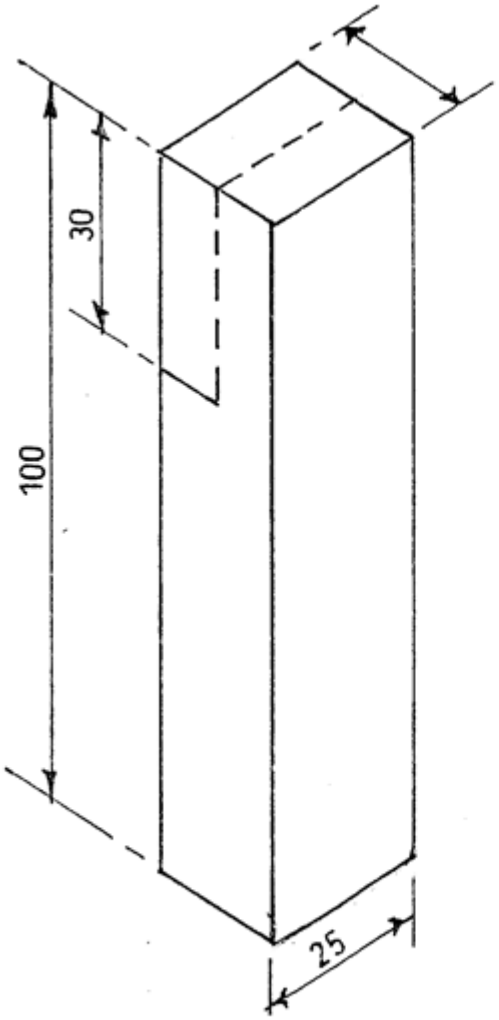

Diagram a

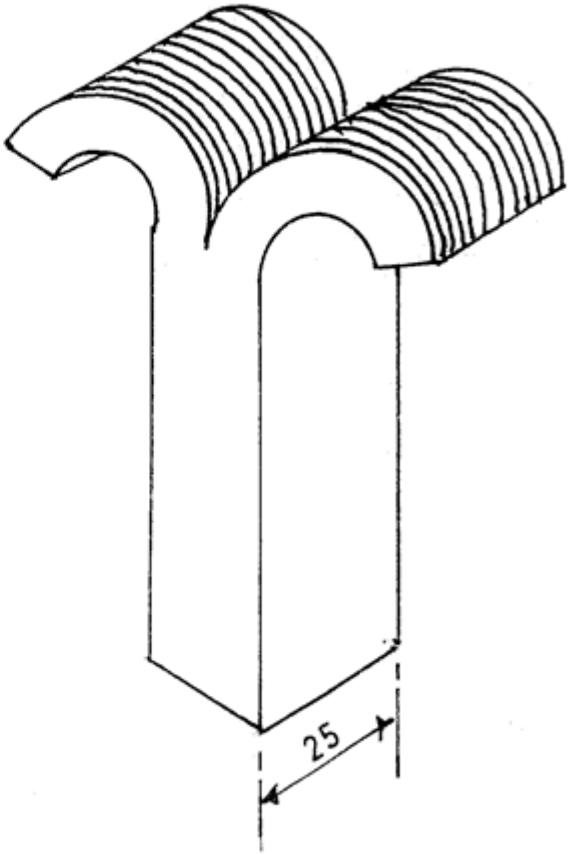

Diagram b

Annex G
(normative)

Method for the determination of strength required to pull the strap from soling hole at the heel and toe end

G.1 Apparatus

Tensile testing machine. Tensile testing equipment with a rate traverse of 75 mm per minute

G.2 Test piece preparation

Cut the test piece as shown in the diagram Figure 1, to have test pieces as shown in Figure 2. For each test, cut three test pieces.

G.3 Procedure

Insert one of the test pieces cut from the bottom material (Figure 1) in the holding device and clamp as shown in Figure 2 in the tensile testing machine. Pull until the button comes off, Record the force in Newton (N). Record an average of three readings

G.4 Expression of results

G.4.1 The force required to pull button through the hole in the sole.

G.4.2 Malformation occurring to sole during procedure.

G.4.3 Malformation occurring to strap during procedure.

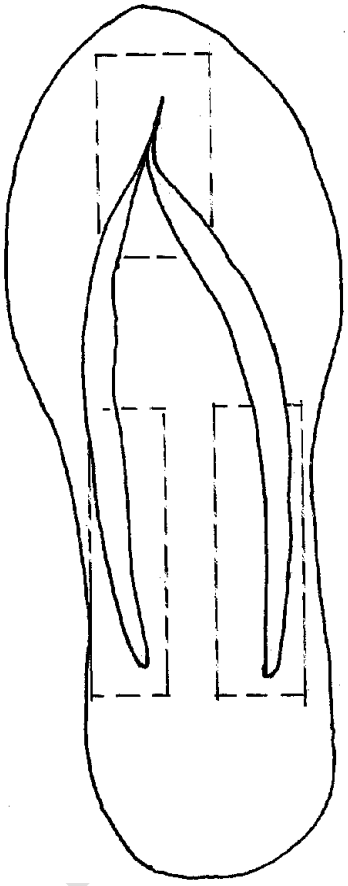

Figure 1

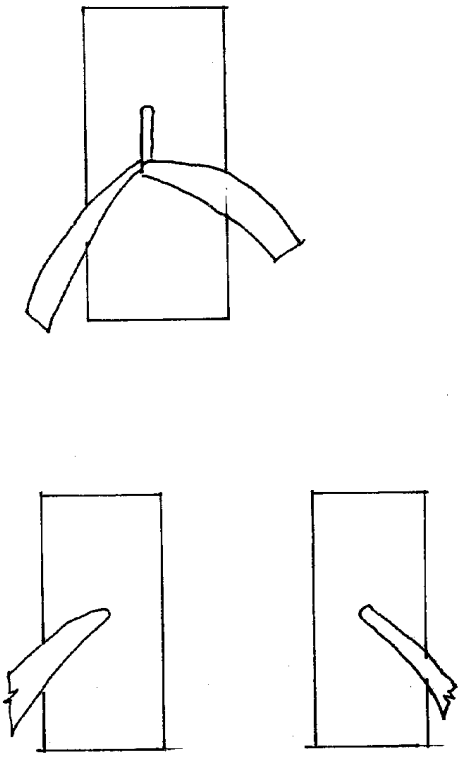

Figure 2

Bibliography

DKS1620:2020, *Bathroom slippers – Specification*

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ICS 61.060

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