DRAFT TANZANIA STANDARD

Agro textiles – Bird protection nets for agriculture and horticulture purposes – specification: Part 3 – Extruded bird protection nets

TANZANIA BUREAU OF STANDARDS

Foreword

This Draft Tanzania Standard is being developed by the Specialized Textiles Technical Committee under supervision of the Textile and Leather Divisional Standards Committee and it is in accordance with the procedures of the Bureau.

In the preparation of this standard, assistance has been obtained from the following standard:

IS 18310 (Part 3): 2023 Agro textiles – Bird protection nets for agriculture and horticulture purposes – specification: Part 2 - Extruded bird protection nets

In reporting the result of a test or analysis made in accordance with this standard if the final value, calculated or observed is to be rounded off, it shall be done in accordance with TZS 4 *Rounding off numerical values.*

Agro textiles – Bird protection nets for agriculture and horticulture purposes – specification: Part 3 – Extruded bird protection nets

1. Scope

1.1 This Draft Tanzania Standard specifies, constructional, requirements, test methods for extruded bird protection nets for agriculture and horticulture purposes to restrict the entry of birds.

1.2 The extruded bird protection nets manufactured as per this Draft Tanzania Standard may also be used in domestic or commercial buildings to restrict the entry of birds inside the premises.

2. Normative reference

For the purpose of this Draft Tanzania Standard, the following references shall apply. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies:

TZS 4 *Rounding off numerical values.*

TZS 21/*ISO 7211-6 Textiles — Methods for analysis of woven fabrics construction — Part 6: Determination of the mass of warp and weft per unit area of fabric*

TZS 23/ISO 105-B02 *Textiles - Tests for colour fastness - Part B02: Colour fastness to artificial light: Xenon arc fading lamp test*

ISO 1806 *Fishing nets — Determination of mesh breaking force of netting*

3. Terms and definitions

For the purpose of this standard the following definitions shall apply:

3.1 extruded nets

net structures produced directly from molten polymer through an extrusion process, without weaving or knitting.

3.2 mesh size

dimension of the openings between yarns, threads, or cords in a woven, knitted, or netted fabric.

4. Requirements

4.1 General

4.1.1 HDPE

HDPE shall be UV stabilized by incorporating a suitable UV stabilizer so that the finished extruded bird protection net meets the requirements specified in Table 1.

4.1.2 Fabric

The extruded bird protection nets shall be made in diamond shaped apertures (see Fig. 1).

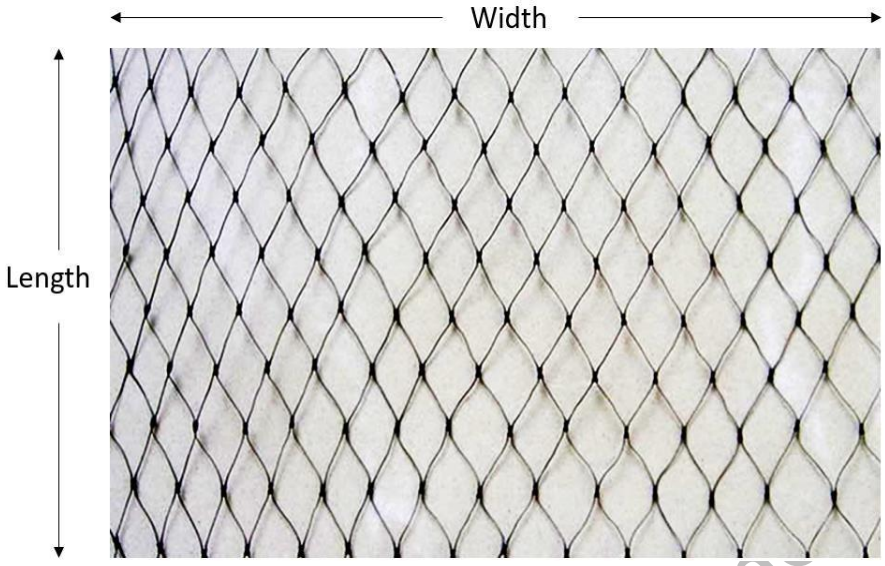

Figure 1: Schematic diagram of extruded bird protection nets with diamond shaped openings

4.1.3 Types

Based on the width, the extruded bird protection nets shall be classified as follows:

a) Type I — having width of 3m;

b) Type II — having width of 6m;

4.1.4 Colour

The colour or a mixture of color of the extruded bird protection net fabric shall be as per the agreement between the buyer and the seller. The color/shade shall be as specified in the contract or order. In case a sample has been agreed upon and sealed, the supply shall be made in conformity with the sample in such respects.

4.2 Specific Requirement

The extruded bird protection nets shall meet the requirements specified in Table 1.

Table 1: Requirement of extruded bird protection nets

S/N	Characteristics	Requirements		Tolerances	Test methods
		Type I	Type II		
1.	Width, m	3	6	+3 percent 0 percent	Annex A
2.	Mass, g/m	26	85	± 5 percent	
3.	Mesh size				
	a) Machine direction, mm	30	25	± 2 mm	
	b) Transverse direction, mm	30	25	± 2 mm	

4.	Thickness at joint, mm	1.5	1.3	± 10 percent	
5.	Filament thickness, mm	0.22	0.23	± 10 percent	Annex A
6.	Length	As declared	As declared	± 10 percent	Annex B
7.	Tensile strength before UV exposure, kN/m, Min,			-	TZS 22
	a) Machine direction	25	25		
	b) Transverse direction	25	25		
8.	Tensile strength after UV exposure of 144 h, kN/m, Min	85 percent of the actual original value		-	Annex B and ISO 1806
	a) Machine direction				
	b) Cross machine direction				

5. Packaging and marking/labelling

5.1 Packaging

5.1.1 The extruded bird protection nets shall be packed in roll form in length of 50m or in bundle form or as agreed to between the buyer and the seller.

5.1.2 Each roll/bundle shall be protected by wrapping it in a suitable material to prevent it from the adverse impact of heat and moisture, oil, grease, dirt, dust and other stains during shipment and storage prior to use.

5.2 **Marking and labelling**

The extruded bird protection net fabric roll/bundle shall be marked or labelled legibly with the following information:

a) Name of the product;
b) Country of origin;
c) Manufacturer’s name and address;
d) Declared length and width of the extruded bird protection net;
e) Mass per square meter and type of the extruded bird protection nets; and
f) Batch number and date of manufacture.

6. Sampling

Sampling shall be done in accordance with ISO 2859-1.

ANNEX A

METHOD OF TEST FOR MASS, MESH SIZE, THICKNESS AT JOINT, FILAMENT THICKNESS AND DIMENSIONS OF NET.

A-1 METHOD OF TEST FOR DETERMINATION OF MASS OF NET

Take a sample of extruded bird protection net by drawing a length of 1.2 m or more and lay it out in a straight line in the form of rope on a flat surface. Clamp the two free ends of the sample with adequate tension so that no slack should be observed in the rope. Place two marks on the rope 1 m apart with the help of suitable measuring scale with an accuracy of 1 mm, then remove the tension and detach the sample from the parent length by cutting cleanly at the two marks. Determine the mass, m, of the test piece and calculate the mass per meter from the result.

A-2 METHOD OF TEST FOR MESH SIZE

Take the sample used in A-1 and lay it out extending it to the specified width as per the types given in 6.1 on a flat surface firmly gripped on all sides using suitable number of clips. Test five adjacent mesh each in machine and transverse direction and determine the average mesh size in machine and transverse direction separately. Mesh size shall be measured from inside to inside with a suitable caliper with an accuracy of 0.02 mm.

A-3 METHOD OF TEST FOR THICKNESS AT JOINT AND FILAMENT THICKNESS

Thickness at joint and filament thickness shall be measured with a suitable flat anvil micrometer with an accuracy of 0.01 mm. Test joint thickness at five points each in machine and transverse direction and take the average of 10 values and report nearest to 0.01 mm. Similarly, test filament thickness at five points each in machine and transverse direction and take the average of 10 values and report nearest to 0.01 mm

A-4 METHOD OF TEST FOR NET DIMENSIONS

Lay each extruded bird protection net flat on a Table. Render it free from bow and warping and measures the width and length nearest to 1 mm.

ANNEX B

UV RESISTANCE TEST

B-1 TEST SPECIMENS

The test specimens for breaking strength shall be cut from the sample as specified in TZS 22.

B-2 TEST CONDITIONS

B-2.1 The test shall be carried out with fluorescent UV-B lamp (313 nanometer or its equivalent).

B-2.2 The duration of the test shall be 144 h (that is 6 days).

B-2.3 The test cycle shall be 8 h at 60 ± 3 °C withUV radiation alternating after 4 h at 50 ± 3° C with condensation.

B-2.4 Irradiation level throughout the test shall be maintained at 0.63 ±0.03 W/m².

B-3 TEST PROCEDURE

B-3.1 Determine the original average breaking strength of bird protection nets specimens separately as per the tests specified in ISO 1806.

B-3.2 Expose the specimens alternately to ultraviolet light alone and to condensation in one respective cycle.

B-3.2.1 The type of fluorescent UV lamp, the timing ofthe UV exposure and the temperature of condensation shall be as specified in **B-2**.

B-3.3 Determine the average breaking strength of the specimens separately after UV exposure as mentioned above.

B-3.4 Determine the percent retention of original strength as follows:

$$\textit{Percent retention of original breaking strength} = \frac{b}{a} \times 100$$

Where:

a = average breaking strength before UV exposure as obtained in **B-3.1**, and
b = average breaking strength after UV exposures obtained in **B-3.3**.

NOTES:

1. The UV source is an array of fluorescent lamps (with lamp emission concentrated in the UV range).

2. Condensation is produced by exposing the test surface to a heated, saturated mixture of air and water vapor, while the reverse side of the test specimen is exposed to the cooling influence of ambient room air.