**Non-woven bags — Specification**

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**Non-woven bags — Specification**

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**Foreword**

This Kenya National Workshop Agreement was prepared by the Joint-Technical Committee on Packaging (TC 053), Blankets, Nonwovens, Threads and Fibres (TC 054) and Plastics (TC 050), under the guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards.

Non-woven polypropylene bags are mainly used as used as shopping bags among other uses.

The bags are made by taking polypropylene polymers and spinning them using heat and air into long fluffy threads, then pressing the threads together between hot rollers to get a flexible but solid fabric with a weave-like texture similar to canvas. The texture leaves the fabric breathable, with a look and feel that is generally pleasant. The color and texture of NWPP can last for years. Screen printing in a few colors is an easy process for graphics.

Among the parameters are specified include; Mass per unit area, breaking strength of the fabric, tensile properties, labelling and, Bursting strength, Color Fastness, Abrasion resistance and Drop test etc.

During the preparation of this standard, reference was made to the following documents:

ASTM – D 1117-01 – Standard guide for evaluating non-woven fabrics.

Acknowledgement is hereby made for the assistance derived from these sources.

**Non-woven bags — Specification**

**1 Scope**

This Kenya National Workshop Agreement specifies requirements and test methods for non-woven bags used for packaging.

**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.

*KS ISO 139, Textiles — Standard atmospheres for conditioning and testing*

*KS ISO 22198, Textile Fabrics-Determination of width and length*

*KS ISO 9073 -2, Textile-non woven Fabrics-Determination of mass per unit length and mass per unit area*

*ISO 13934-1, Textiles -- Tensile properties of fabrics -- Part 1: Determination of maximum force and*

*elongation at maximum force using the strip method*

*KS ISO 177, Plastics — Determination of migration of plasticizers*

*KS 2319, Determination of overall migration of constituents of plastic materials and articles intended to come in contact with food stuffs – Methods of analysis*

*KS ISO 1130, Textile fibres -- Some methods of sampling for testing*

*KS ISO 9073-1, Textiles -- Test methods for nonwovens -- Part 1: Determination of mass per unit area*

*KS ISO 9073-4, Textiles -- Test methods for nonwovens -- Part 4: Determination of tear resistance*

*KS ISO 907-5, Textiles -- Test methods for nonwovens -- Part 5: Determination of resistance to mechanical penetration (ball burst procedure)*

*KS ISO 9073-6, Textiles -- Test methods for nonwovens -- Part 6: Absorption*

*KS ISO 9073-15, Textiles -- Test methods for nonwovens -- Part 15: Determination of air permeability*

*KS ISO 9073-16, Textiles -- Test methods for nonwovens -- Part 16: Determination of resistance to penetration by water (hydrostatic pressure)*

*ISO 9073-17, Textiles -- Test methods for nonwovens -- Part 17: Determination of water penetration (spray impact)*

*ISO 9073-18, Textiles -- Test methods for nonwovens -- Part 18: Determination of breaking strength and elongation of nonwoven materials using the grab tensile test*

*ISO 105-Z06, Textiles -- Tests for colour fastness -- Part Z06: Evaluation of dye and pigment migration.*

*ISO 9092, Nonwovens – Vocabulary*

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

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

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

*KS 2674 Paper and board food contact material —Specification*

*KS 2321 Positive list of constituents of polypropylene and its copolymers in contact with foodstuffs— Pharmaceuticals and drinking water*

*KS 2323* *Polypropylene and its copolymers for its safe use in contact with foodstuffs, pharmaceuticals and drinking water — Specification*

*KS 1667 List of pigments and colorants for use in plastics in contact with food stuffs pharmaceuticals and drinking water*

*KS ISO 12947-2* *Textiles -- Determination of the abrasion resistance of fabrics by the Martindale method -- Part 2: Determination of specimen breakdown*

**3 Terms and definition**

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

**3.1**

**non-woven**

a manufactured sheet, web or batt of directionally or randomly oriented fibres, bonded by friction, and/or cohesion, and/or cohesion and/or adhesion,

NOTE Non-woven excludes paper and products which are woven, knitted, tufted, stitch bonded incorporating binding yarns or filaments, or felted by wet milling.

**4 Requirements**

**4.1 General requirements for non-woven bag**

4.1.1 Fabric

4.1.1.1 The fabric used to make the bag shall be polypropylene of virgin resin.

**4.1.1.2** The fabric constituting the non-woven bags shall be free from restricted colorants listed and when tested in accordance with KS ISO 14362-1 and KS ISO 14362-3, KS ISO 16373-2 and ISO 16373-3. Colorants on textiles shall be identified and classified in accordance with KS ISO 16373-1.

**4.2 Edge sealing**

All raw edges and unfinished edges shall not be exposed.

**4.3 Handles**

When tested in accordance with Annex A the handle withdrawal force shall be 150 Newtons minimum.

**4.4** **Freedom from defects**

**4.4.1** The non-woven bag shall be free from defects such as holes, cuts, tears, floats, crushed selvedges, spots and stains, loose and frayed ends.

**5 Specific requirements**

**5.1 Specific requirements for non-woven polypropylene bags**

**5.1.1** Non-woven bags shall meet the physical requirements as specified in table 1 when tested in accordance to the methods specified therein.

Table 1 — Specific requirements for non-woven bags

|  |  |  |  |
| --- | --- | --- | --- |
| **S/N** | **Characteristic** | **Requirement** | |
|  | Mass per unit area, g/m2, min. | 80 | |
|  | Breaking strength of the fabric (Grab method), N, min. | MD | 220 |
| CD | 140 |
|  | Water penetration resistance (hydrostatic pressure), cm head, min. | 10 | |
|  | Water penetration resistance (spray impact), g, max. | 2.00 | |
|  | Seam Strength (grab method), N. min. | 60 | |
|  | Handle strength, N, min. | 150 | |
|  | Puncture resistance (ball burst method), N, min. | 100 | |
|  | Air permeability, l/cm2·s |  | |
|  | Abrasion resistance, cycles, min. | 10000 | |
|  | Flexural rigidity |  | |
|  | Tear resistance (trapezoid), N, min. | MD | 100 |
| CD | 80 |
|  | Colour fastness to rubbing (crocking), min. | Dry | 4 |
| Wet | 4 |
|  | Colour fastness to washing | Colour change | 4 |
| Staining | 4 |
|  | Fibre composition | Shall contain mixtures of polypropylene fibres and certain other fibres | |

**5.1.3** **Microbiological requirements**

Non-woven bags material shall comply with microbiological limits given in Table 2 when tested in accordance to the methods specified therein.

**Table 2 — Microbiological requirements for non-woven bags**

|  |  |  |  |
| --- | --- | --- | --- |
| **S/N** | **Characteristic** | **Limit** | **Test method** |
|  | Total plate count, cfu/g, max. | 300 | ISO 8784-1 |
|  | *Pseudomonas aeruginosa*, cfu/g | Not detected in 1 g of the product |
|  | *Staphylococcus aureus*, cfu/g |
|  | *Candida albicans*, cfu/g |

**5.2 Dimension and capacity**

When tested in accordance with ISO 22198, the nominal dimensions of the bags shall be as declared subject to a tolerance of ± 2 cm and capacity as stated.

**5.3 Overall migration**

When tested in accordance with KS 2319, thenon-woven bag shall also comply with the overall migration limits. 60 mg/kg (max.) of the foodstuff; and for liquid foodstuffs or of simulants, the limit shall be 60 mg/l (max.).

**5.4 Pigments, colorants and heavy metals**

When tested in accordance with KS 1667, the non-woven bag shall comply with the list and limits of the pigments, colorants and heavy metals specified therein.

**5.6 Dimensional stability**

The dimensional change after five washings of the fabric constituting the non-woven pp bag shall not be greater than 3 % when tested in accordance with KS ISO 3759, KS ISO 6630 and KS ISO 5077.

**6 Drop test**

**6.1 Butt dropping**

When tested in accordance with ISO 7965-2 at a height of 1.20 m on the bottom and the top of the bag, after each drop, there shall be no rupture or loss of contents.

**6.2 Flat dropping**

When tested in accordance with ISO 7965-2 at a height of 1.60 m twice on one flat face and twice on the opposite flat face, there shall be no rupture or loss of contents.

**7 Packaging and labelling**

**7.1 Packaging**

**7.1.1** Non-woven bags shall be packed in suitable materials that prevents it from damage, contamination during normal handling, storage and transportation.

**7.1.2** The bags shall be packaged in agreed quantities between the buyer and seller

**7.2 Labelling**

The non-woven disposable bag shall be legibly and indelibly marked with the following information on the label:

1. Manufacturer’s name, address and /or registered trade mark;
2. Description of goods – “Non-woven Bag”;
3. Capacity of the bag in g;
4. Dimensions of the bag;
5. Batch number or code;
6. Instruction for correct use;
7. Instruction for storage and disposal; and
8. The declaration of country of manufacture and origin.

**7.3 Bulk package**

The bulk package shall be legibly and indelibly marked with the following information:

1. Manufacturer’s name, address and /or registered trade mark;
2. Description of goods, “Disposable Non-woven Bags”;
3. Capacity of the bag;
4. The quantities of the bags;
5. Batch number or code;
6. Instruction for storage and disposal of bulk packaging material; and
7. The declaration of country of manufacture and origin.

**8 Criteria for acceptance**

Each non-woven bag shall comply with the requirements of this National Workshop Agreement.

**Annex A**

(normative)

**Determination of withdrawal force of handle**

**A.1** Visually examine the way the handles are fixed onto the body of the non-woven bag and trace the handle-ends and note their positions.

**A.2** From the bag mouth, cut two specimens each with a handle, leaving a clearance on either side of at least 5 cm from the handle-ends and the point at which the handle-loop emerges from the bag mouth and sacking length of at least 20 cm from the bag mouth.

**A.3** Reduce the sacking width lline to about the span length (or about 16 cm) so that the resulting specimen is T-shaped (*see* Figure 2).

**A.4** With the handle hooked by the upper jaw and the sacking below the hemming line gripped by the lower jaw of a strength tester using a constant rate of traverse of 20 cm per minute, determine the handle withdrawal force in accordance with KS 119.

**A.5** Repeat the procedure for 5 specimens. The handle withdrawal force for each bag is the average of the tow readings.



Sacking

Key

A – Mid-point of the span, L

H – Height of the handle loop

L – Span of the handle

**Figure A.1 — Handle dimensions**