

DRAFT UGANDA STANDARD

First Edition
2021-mm-dd

Label material — Specification



Reference number
DUS 2380: 2021

© UNBS 2021

Compliance with this standard does not, of itself confer immunity from legal obligations

A Uganda Standard does not purport to include all necessary provisions of a contract. Users are responsible for its correct application

© UNBS 2021

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilised in any form or by any means, electronic or mechanical, including photocopying and microfilm, without prior written permission from UNBS.

Requests for permission to reproduce this document should be addressed to

The Executive Director
Uganda National Bureau of Standards
P.O. Box 6329
Kampala
Uganda
Tel: +256 417 333 250/1/2
Fax: +256 414 286 123
E-mail: info@unbs.go.ug
Web: www.unbs.go.ug

Contents

Page

Foreword	iv
Introduction.....	v
1 Scope	1
2 Normative references.....	1
3 Terms and definitions	1
4 Construction of a label.....	3
4.1 Label format	3
4.2 Label components.....	4
4.2.1 Facestock	5
4.2.2 Adhesive.....	5
4.2.3 Liner coating	6
4.2.4 Release liner	6
5 Requirements.....	6
5.1 Dimensions	6
5.2 Workmanship.....	6
5.3 Freedom from defects.....	6
5.4 Damage to adjacent papers.....	7
5.5 Odour	7
5.6 Print fastness.....	7
5.7 Color bleeding and water resistance.....	7
5.8 Abrasion resistance of printed Image.....	7
5.9 Suitability for declared storage conditions	7
5.10 Scuff resistance.....	7
6 Packaging.....	7
7 Labelling.....	7
8 Sampling	8
Annex A (Normative) Assessment of color bleeding and water resistance.....	10
Principle.....	10
Annex B (Normative) Assessment of adhesive bond strength	11
B.1 Initial bond strength	11
B.1.1 Procedure.....	11
B.1.2 Test and evaluation	11
B.2 Bond Strength after Accelerated Aging	11
B.2.1 Procedure.....	11
B.2.2 Test and Evaluation.....	11
Annex C (informative) Recommended adhesives for the intended application	12
Annex D (informative) Different identification methods.....	13
Bibliography.....	14

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);
- (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 306, *Paper and paper products*.

Introduction

Using and ordering label material of different kinds is not an easy task as what to use and how to use it depends on so many things, e.g. type of marking, surface, environment, treatment, information, printing technologies, etc.

Each label application is therefore unique and requires its own combination of ink, top coating, facestock and adhesive to serve its purpose. The label is to be seen as a vital and important part (component) of the product and there could be multiple labels on one product to serve different needs.

This document was developed in order to guide the suppliers on basic information to indicate and help the users select the required labels basing on the indicated information.

Label material — Specification

1 Scope

This Draft Uganda Standard specifies requirements, sampling and test methods for labels.

This document applies to adhesive labels (also known as self-adhesive or pressure-sensitive), stickers, tickets and non-adhesive labels.

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.

ASTM D 2860, *Standard Test Method for Adhesion of Pressure-Sensitive Tape to Fiberboard at 90° Angle and Constant Stress*

ASTM D 5264, *Standard Practice for Abrasion Resistance of Printed Materials by the Sutherland Rub Tester*

ISO 11093-4, *Paper and board — Testing of cores — Part 4: Measurement of dimensions*

US ISO 186, *Paper and board — Sampling to determine average quality*

3 Terms and definitions

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

adhesive

substance capable of holding materials together by surface attachment

3.2

adhesive strength

sum total of the forces of attachment between a dry film and a substrate

3.3

facestock

paper that is used for making self-adhesive labels

Note 1 to entry: It is called “facestock” because it is the top or “face” of the laminate from which these labels are produced.

Note 2 to entry: facestock paper may be laminated to a release liner after the latter has been coated first with an ultra-thin layer of silicon and then with an adhesive.

Note 3 to entry: When the ready label is peeled off from the backing paper (=release liner), the adhesive transfers to the label because it is easily separated from the release liner because of the “non-stick” silicon.

**3.4
imprint**

local indentation caused by a foreign matter being pressed into a surface

**3.5
initial stickiness**

refers to the adhesive strength when a label is first applied, and how easy it is to remove straight away

**3.6
ink**

pigmented fluid or viscous substance, which may or may not include colorant, used for writing or printing

**3.7
label**

sign carrier made from flexible material

Note 1 to entry: The purpose of a label is to convey the necessary information (text or graphics) to the user.

Note 2 to entry: Information on other identification methods in relation to labels, such as tag, ticket, tape, mark and marking, are given in Annex D.3.8

**3.8
label stock**

carrier which is commonly coated on one side with adhesive and usually printed on the other side. A label stock can be made of polyester (PET) film, vinyl chloride (PVC) film, synthetic paper (combines paper-like and plastic-like properties), polypropylene (PP) film, polyethylene (PE) film, polystyrene (PS) film and ABS (Acrylonitrile-butadiene-styrene) film

**3.9
mark**

inscription, name, stamp, label, or seal placed on an article to convey information such as ownership, quality, manufacture, or origin

**3.10
application condition (temperature)**

temperature at which the label may be applied to the surface of the product, in order for the label material, in particular the adhesive, to perform to its given specification and correctly adhere to the product

**3.11
permanent adhesive**

adhesive used to create labels that cannot be removed without damaging the label or the surface to which the label is applied

**3.12
pressure-sensitive (adhesive)**

adhesive applied to create a bond between two surfaces by a simple application of pressure

**3.13
removable adhesive**

adhesive used to create labels that can be removed cleanly from a surface. However, certain removable adhesives can become permanent after a period of time or environmental exposure.

**3.14
reapplicable adhesive**

adhesive that allows short-term removability in cases where the label needs to be repositioned or reapplied.

3.15**storage temperature**

recommended temperature (range) at which the label material and/or finished labels should be held before usage, in order to retain their specified properties

3.16**tag**

identification label attached to a container or container-related equipment which, among other things, gives the unique owner's code and serial number and which can be remotely read by electronic sensing devices

3.17**tape**

long narrow strip of a flexible material with adhesive used for sealing, binding, tying, etc.

3.18**thermal-transfer printing**

system employing donor sheets or ribbons coated with wax based inks or coloured dyes that are transferred by heat and pressure produced by thermal print heads to reproduce images onto a coated substrate using thermal wax transfer and thermal dye transfer printing processes/methods

Note 1 to entry: Other ribbon types are available such as resin and wax/resin, etc.

3.19**ticket**

piece of paper, cardboard, etc., showing that the holder is entitled to certain rights, such as travel on a train or bus, entry to a place of public entertainment, etc.

4 Construction of a label**4.1 Label format**

4.1.1 Non-adhesive labels shall be distributed in either pieces, sheets or rolls (See Figure 1).



Figure 1 — Non-adhesive label distributed in roll format

4.1.2 Self-adhesive labels shall be distributed in either sheet, roll or fan-folded format (See Figure 2).

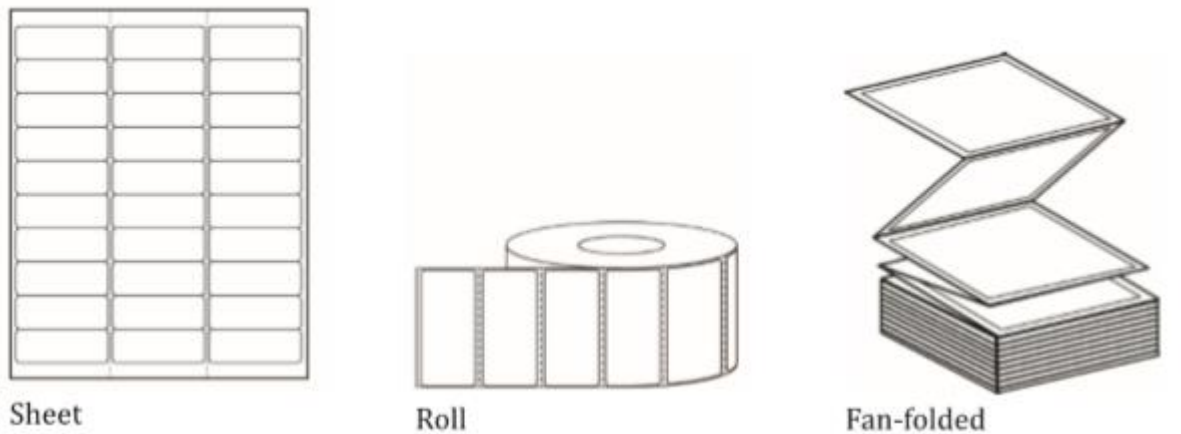


Figure 2 — Labels distributed on sheet, roll or fan-folded

4.2 Label components

A label consists of several components (see Figure 3). The label itself consists of up to two components; the facestock and adhesive depending on its specification and intended application. The facestock can consist of one to four subcomponents.

NOTE The object surface is not part of the actual label but is a label component that may put requirements on the other label components so that the label can be used in its intended application.

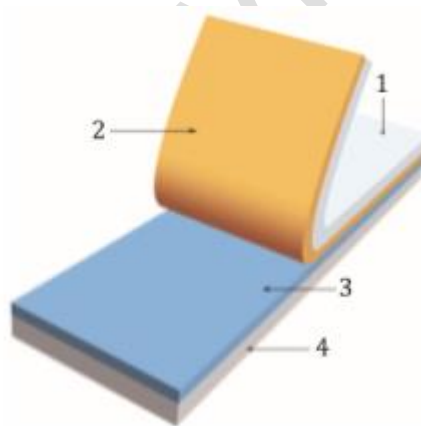


Figure 3 — Components of a label

Where;

1. facestock (film/material)
 - a) protective coating/over lamination;
 - b) ink (if pre-printed);
 - c) top coating;
 - d) substrate (as defined in 4.2.1.4)

2. adhesive
3. liner coating
4. (release) liner

4.2.1 Facestock

The facestock to be used depends on the intended application for instance the label may need to last for the lifetime of an item.

4.2.1.1 Protective coating/over lamination

A physical protective coating/over lamination can be used when there is need to protect applied (imprinted) information/image on a final pre-printed label.

4.2.1.2 Ink (if pre-printed or direct printing)

Depending on the print method, the appropriate type of ink needs to be used, e.g. pre-printing using screen print requires a fluid ink while thermal-transfer printing requires an ink ribbon.

4.2.1.3 Top coating

A physical surface coating can be applied to either promote/increase ink adhesion with conventional and digital print technologies or modify gloss.

4.2.1.4 Substrate

A physical media, e.g. film, paper, polyester, etc., can be coated, printed or laminated in order to be able to provide the needed function.

4.2.2 Adhesive

The type of adhesive to be used is selected depending on the intended application. Adhesives may be permanent, removable or repositionable. Annex C gives a recommendation of the adhesives that best suit an intended application.

4.2.2.1 Initial adhesive bond strength

The adhesive shall demonstrate sufficient initial bond strength for the label to support a test weight of 2 N for 10 minutes when determined in accordance with Annex B.1.

4.2.2.2 Bond strength after accelerated Aging

The adhesive, once set after the initial 7-day dwell time, shall remain permanently affixed to both the facestock and the substrate with no loss of adhesive strength for the life of the object to which it is applied, under conditions of normal use when tested in accordance with Annex B.2.

4.2.2.3 Restricted substances

Adhesives shall not contain restricted chemicals in levels above the maximum concentration limits, as stipulated in regulations. Substances of very high concern (SVHCs) include substances such as formaldehyde, phthalates, flame retardants and biocidal products.

4.2.3 Liner coating

The liner coating (e.g. silicone coating) is part of the release liner and enables the separation of the adhesive label from the release liner when applied to a surface.

4.2.4 Release liner

The liner is used to protect and transport labels and to ease release (removing) labels for use. The liner can be continuous or perforated depending on which application the actual label is to be used, e.g. print and apply using a label applicator or print in desk top printer and tear off the label for manual application.

5 Requirements

5.1 Dimensions

When tested in accordance with ISO 11093-4, the label shall meet the dimensional requirements declared on the label. A typical shape of labels in roll form is showed in Figure 4.

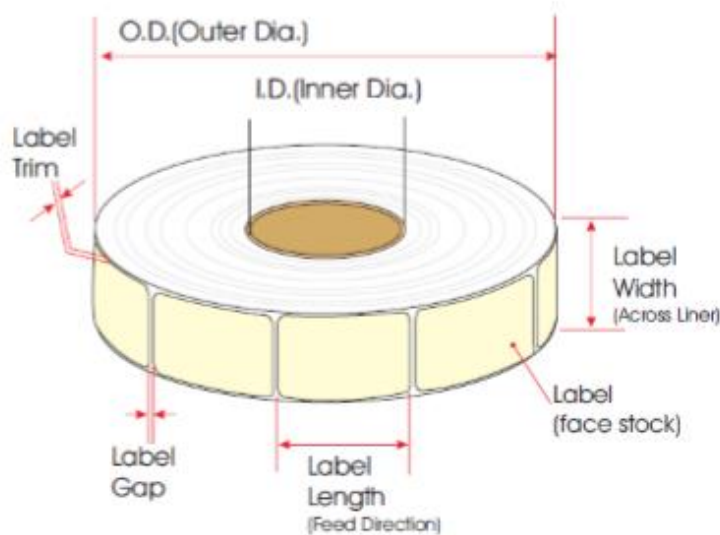


Figure 4 — Typical shape of labels in roll form

5.2 Workmanship

All edges of each individual label and sheet (for self-adhesive labels) shall be uniformly cut and clean, with accurate sizes.

5.3 Freedom from defects

5.3.1 The label shall be free from tears, holes, dust, creases and any other visible defects that may impair the serviceability of the label

5.3.2 The label shall be free of particles or other impurities such as metals, waxes, plasticizers and residual bleach

5.3.3 The self-adhesive label shall not show any sign of curling, lifting, buckling, or puckering, nor any evidence of the adhesive oozing beyond the label edges

5.4 Damage to adjacent papers

5.4.1 The printed image on the label shall not rub off, transfer, or otherwise disfigure the paper placed on the label.

5.4.2 Neither the facestock nor the adhesive (in case of self-adhesive labels) shall cause discoloration, stick to, or otherwise cause damage to adjacent pages.

5.5 Odour

The label shall not emit odours deemed objectionable or hazardous to the work environment.

5.6 Print fastness

When the label is printed on using the manufacturer's recommended printing method, it shall be able to accept and retain a clean and legible image.

5.7 Color bleeding and water resistance

For labels declared to be water resistant, the color shall show no bleeding when soaked in distilled water for 48 hours while held under suitable weight in contact with white bond paper. The label shall be applied to a white bond paper support for this test.

The label shall remain adhered to the paper support during the immersion period.

5.8 Abrasion resistance of printed Image

The printed image on the label shall be able to resist moderate abrasive forces with minimal smudging of the ink when tested in accordance to ASTM D 5264 or its equivalent.

5.9 Suitability for declared storage conditions

The label stock shall be able to remain adhered to its substrate without lifting, curling, flagging, or peeling during long-term exposure in the environment that is declared on the label.

5.10 Scuff resistance

The label shall survive a minimum of 500 cycles on a Sutherland Rub machine using a 4 lb weight without any scuffing or streaking of inks.

6 Packaging

Labels shall be packaged in suitable packages to ensure that they shall not be exposed to moisture, dust, dirt and other hazards during transportation, handling and storage

7 Labelling

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

- a) manufacturer's name, address and/or trademark;

- b) name of the product (such as “Self-adhesive label” or “Multipurpose label” or “Pressure-sensitive label” or “Sticker” or “Non-adhesive label”);
- c) type of the material (such as “Paper”, “Film”, “Plastic”, “metal”);
- d) if self-adhesive, chemical composition of the adhesive (such as “Acrylic adhesive”);
- e) in case of non-adhesive labels, the recommended adhesive (where needed) to be used;
- f) dimensions of the label (such as width, height, radius, thickness and gap between the labels)
- g) how the material is provided, i.e. sheet, roll or fan-folded format
- h) number of sheets (if label is in sheet form);
- i) number of labels per roll or fan-folded stack or tube or pack or sheet;
- j) care instructions during storage;
- k) surfaces on which the label can be applied, such as plastic, metal, glass, wood, aluminium;
- l) suitable printing method (such as “suitable for inkjet printers”);
- m) if self-adhesive, type of adhesive (i.e. “Permanent” or “Removable” or “Re-applicable”);
- n) storage (of the labels before application) and application conditions i.e. temperature and humidity;
- o) country of origin; and
- p) month and year of manufacture

8 Sampling

Sampling shall be done in accordance with US ISO 186

Public Review Draft

Annex A
(Normative)

Assessment of color bleeding and water resistance

Principle

The color shall show no bleeding when soaked in distilled water for 48 hours while held under suitable weight (1 N) in contact with white bond paper. The label shall be applied to a white bond paper support for this test and shall remain adhered to the paper support during the immersion period.

Annex B (Normative)

Assessment of adhesive bond strength

B.1 Initial bond strength

B.1.1 Procedure

This procedure is a 90 degree peel test, modified from ASTM D 2860. A set of three labels, size 1" x 2.5" is applied to each of two test panels over a mylar window that permits only a one inch square area of the adhesive side of the label to be in contact with the substrate, as illustrated in ASTM D 2860, procedure B. The labels are set in place by applying firm pressure with the edge of a 3M plastic applicator, to the labels in four downward strokes. The test samples are then allowed to cure for 7 days in an environmental chamber conditioned to 23°C and 50% RH.

B.1.2 Test and evaluation

At the end of this dwell time a 200 gram weight is suspended from the free end of the label and timed for 10 minutes. At the end of this test period, labels shall not have peeled away from the substrate by more than 10 millimeters.

B.2 Bond Strength after Accelerated Aging

B.2.1 Procedure

This procedure is a 90 degree peel test, modified from ASTM D 2860. Test Panels for this test will be the same as that used to test initial bond strength. A set of three labels is applied to each of the two test panels in the same manner as described in section B.1.1. The labels are then subjected to accelerated aging at 80°C and 50% RH for 28 days. At the end of the aging period the test samples are placed in an environmental chamber conditioned to 23°C and 50% RH for 24 hours.

B.2.2 Test and Evaluation

At the end of the conditioning period the peel test is performed as in section B.1.2. At the end of this test period, labels shall not have peeled away from the substrate by more than 10 millimeters.

Annex C (informative)

Recommended adhesives for the intended application

Table C.1 — Recommended adhesives for the intended application

Type of adhesive	Initial stickiness	Final stickiness	Standard materials	Key features	Typical applications
Peel	Low	Low	Paper, Polypropylene & Vinyl	Used for situations in which labels need to be removed, and has good long-term removability	Gift-labels, Food
Ultra removable	Low	Very Low	Paper	Suitable for applications in which the removal of the label is critical.	Window labels
Re-applicable	Low	Low	Paper	Used for situations in which labels need to be removed and repositioned, and has good removability	Sticky notes and decorative purposes
Freezer	Medium	High	Paper	Remains adhered even with exposure to freezing temperatures. Lower initial stickiness enables repositioning of the label	Bottles of wine, Food, Garments
Permanent	High	High	Paper, Polypropylene, Vinyl, Polyester, Polyethylene	This adhesive helps to ensure that labels remain adhered in a range of environments.	Garments, Freezer, Wine bottles, syringes
Sustainable	High	High	Paper and film	Biodegradable adhesives are available with several paper materials, providing a more eco-friendly labelling solution	Garments, Freezer

Annex D (informative)

Different identification methods

Almost everything has the capability of being marked, by someone marking it, to provide information relevant at time of usage, location, etc., to serve a given purpose.

But depending on its application, different terms could be used for the purpose of providing the information. Figure B.1 is an illustration of different types of identification methods.



Figure D.1 — Example of different types of identification methods

Bibliography

ISO/TS 18614:2016, *Packaging — Label material — Required information for ordering and specifying self-adhesive labels*

Public Review Draft

Certification marking

Products that conform to Uganda standards may be marked with Uganda National Bureau of Standards (UNBS) Certification Mark shown in the figure below.

The use of the UNBS Certification Mark is governed by the Standards Act, and the Regulations made thereunder. This mark can be used only by those licensed under the certification mark scheme operated by the Uganda National Bureau of Standards and in conjunction with the relevant Uganda Standard. The presence of this mark on a product or in relation to a product is an assurance that the goods comply with the requirements of that standard under a system of supervision, control and testing in accordance with the certification mark scheme of the Uganda National Bureau of Standards. UNBS marked products are continually checked by UNBS for conformity to that standard.

Further particulars of the terms and conditions of licensing may be obtained from the Director, Uganda National Bureau of Standards.



Public Review Draft

ICS 55.040

Price based on nn pages