

# UGANDA STANDARD

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## Bond paper — Specification

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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: 256 414 505 995  
Fax: 256 414 286 123  
E-mail: [unbs@infocom.co.ug](mailto:unbs@infocom.co.ug)  
Web: [www.unbs.go.ug](http://www.unbs.go.ug)

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## **Foreword**

Uganda National Bureau of Standards (UNBS) is a parastatal under the Ministry of Tourism, Trade and Industry established under Cap 327, of the Laws of Uganda. 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/SPS Agreements 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 representatives of consumers, traders, academicians, manufacturers, government and other stakeholders.

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.

### **Committee membership**

The following organisations were represented on the Technical Committee for Chemicals and environment standards, UNBS/TC 5 in the development of this standard:

- Graphic Systems (U) Ltd
- Kendo Mills
- Kengroup
- Picfare Industries Ltd.
- Riley Packaging (U) Ltd
- Transpaper
- Uganda National Bureau of Standards
- Uganda Printers Association

# Bond paper — Specification

## 1 Scope

This specification covers four classes (based on grammage) of general purpose bond paper suitable for printing, typewriting and for pen and ink writing and that are supplied in sheets or reels.

## 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.

US ISO 187, *Paper and board — Conditioning of samples*

US ISO 536, *Paper and board — Determination of grammage*

US ISO 1974, *Paper — Determination of tearing resistance (Elmendorf method)*

US ISO 2470, *Paper, board and pulps — Measurement of diffuse blue reflectance factor (ISO brightness)*

US ISO 2471, *Determination of opacity (paper backing) — Diffuse reflectance method*

US ISO 2758, *Paper— Determination of bursting strength*

## 3 Requirements

### 3.1 Class

The paper shall be one of the following classes (with the specified nominal grammage) as specified by the purchaser:

- i) Class 1 46 g/m<sup>2</sup>;
- ii) Class 2 60 g/m<sup>2</sup>;
- iii) Class 3 70 g/m<sup>2</sup>; and
- iv) Class 4 80 g/m<sup>2</sup>.

### 3.2 Material

#### 3.2.1 General

The paper shall be reasonably free from paper dust, small fibre bundles, holes, wood splinters, specks and other defects that may impair its serviceability.

The colour of the paper shall be as follows, and in the case of Class 1 and Class 2, as specified by the purchaser:

- i) Class 1 - white or tinted paper;
- ii) Class 2 - white or tinted paper;
- iii) Class 3 - white paper; and
- iv) Class 4 - white paper.

**3.2.2 Physical properties**

The physical properties of the paper shall comply with the relevant requirements given in Table 1.

In addition, the sizing of the paper shall be such that, each side of the paper will accept all common writing media (applied in the normal manner) without undue signs of feathering or spread.

**Table 1 — Physical requirements**

Property	Requirement				Test Method subsection
	Class 1	Class 2	Class 3	Class 4	
Fibre composition	100 % chemically processed.				5.4
Grammage, g/m <sup>2</sup>					
Nominal	50	60	70	80	5.5
Actual, min.	45	55	65	75	
Bursting strength, kpa, min.	100	125	140	150	5.6
Tearing resistance (ND), mN, min.	250	350	410	440	5.7
Brightness (of white paper), %, min.	80	80	80	80	5.8
Roughness, m ℓ/min, max.					
Topside	250	300	300	250	5.9
Wire side	-	400	400	300	
Opacity, %, min.	65	73	78	82	5.10

**3.3 Dimensions**

**3.3.1 Sheets**

Sheets shall be of one of the preferred nominal sizes identified by a size designation given in Table 2, or by one of the other size designations specified by the purchaser.

The actual width and length of a sheet, determined in accordance with 5.3, shall conform to the appropriate values given in Table 2 or as laid down in the relevant specification.

The sheets shall be so cut that the machine direction (MD) of the paper, relevant to the size designation, is

parallel to the dimension specified by the purchaser.

**Table 2 — Dimensions of sheets of preferred size designation**

Size designation	Width, mm	Length, mm
RAO	860 ± 4	1 220 ± 5
RAI	610 ± 4	860 ± 4
A3	297 ± 2	420 ± 2
A4	210 ± 2	297 ± 2
AS	148 ± 1.5	210 ± 2

### 3.3.2 Reels

A reel shall not contain more than one splice, and when a splice is present its position shall be clearly indicated on each side of the reel. The nominal width of a reel shall be one of the widths given in Table 3, as specified by the purchaser, and the dimensions of a reel, when measured in accordance with 5.1, shall conform to the values given in Columns 2, 3 and 4.

**Table 3 — Dimensions of reels**

Nominal width, mm	Actual width, mm	Diameter, max, mm	Internal diameter of core, mm
215	215 ± 50	800-1200	76 ± 1/15-13
320	320 ± 50		
410	410 ± 50		
430	430 ± 50		
460	460 ± 50		
880	880 ± 50		

## 4 Packing and marking

### 4.1 Packing

#### 4.1.1 Sheets

Sheets shall, unless otherwise specified by the purchaser, be packed flat and wrapped in reams in accordance with commercial practice. Only sheets of the same class, colour and dimensions shall be packed together.

#### 4.1.2 Reels

Paper supplied in reels shall be tightly wound on cores without wrinkling or distortion

## **4.2 Marking**

### **4.2.1 Sheets**

The following information shall appear in clear and indelible marking on the wrapping of each ream:

- a) the manufacturer's/distributor's name, physical address and /or trade mark;
- b) the commodity name, " bond paper";
- c) the class of paper;
- d) the colour of paper;
- e) the size designation and, when relevant the machine direction of the sheets;
- f) the number of sheets in the wrapping;
- g) when relevant, the purchaser's order number or catalogue number; and
- h) any additional marking required by the purchaser.

### **4.2.2 Reels**

The following information shall appear in clear and indelible marking on one side of each reel:

- a) the information specified in 4.2.1(a) – (d), (g) and (h);
- b) the nominal width of the reel; and
- c) the net mass of the paper.

NOTE The attention of the manufacturer is drawn to the relevant provision of the Weights and Measures Act.

## **5 Inspection and methods of test**

### **5.1 Inspection**

After checking for compliance with the requirements of Clause 4, visually examine each unit in the sample for compliance with the relevant requirements of 3.2.1 and 3.3.2.

In the case of reels, measure, to the nearest 1 mm, the actual width and diameter of each reel and the internal diameter of the core

### **5.2 Conditioning**

Condition all test specimens and test pieces in accordance with US ISO 187, using the conditioning atmosphere designated as 23/50.

### **5.3 Dimensions of sheets**

Accurately measure, to the nearest 1 mm, the width and length of each sheet in the test sample.



#### **5.4 Fibre composition**

Use TAPPI T401 to determine the presence of mechanical wood fibre in the paper.

#### **5.5 Grammage**

Determine the grammage in accordance with US ISO 536, but use test pieces of size at least 0.01 m<sup>2</sup>.

#### **5.6 Bursting strength**

Determine the bursting strength in accordance with US ISO 2758.

#### **5.7 Tearing resistance**

Determine the tearing resistance in the machine direction (MD) of the paper in accordance with US ISO 1974, using the single tear tester.

#### **5.8 Brightness (white paper)**

Take as brightness of white paper and diffuse blue reflectance factor (ISO brightness), determined in accordance with US ISO 2470.

#### **5.9 Roughness**

Determine the roughness of the top side and, when relevant, the wire side of the paper, using the Bendtsen-type instrument.

#### **5.10 Opacity**

Determine opacity in accordance with US ISO 2471.

**Annex A**  
(normative)

**Notes to purchasers**

The following requirements shall be specified in tender invitations and in each order or contract:

- a) the class of paper (see 3.1);
- b) the colour of the paper (see 3.2.1);
- c) whether the paper is to be supplied in sheets or reels (see 3.3);
- d) the size of the sheets, width of the reels and the dimension of a sheet that is parallel to the machine direction of the paper (see 3.3.1);
- e) the packing of sheets or reels (see 4.1); and
- f) additional marking on reams or reels (see 4.2)

## Certification marking

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