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Series 9

Série 9

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April 2020

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## **GCS**

Paper and paper products

### **9.1-93**

Bond Paper (ICS 85.080)

### **9.29-93**

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Papier et produits de papier

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Papier bond (ICS 85.080)

### **9.29-93**

Papier lithographique opaque d'édition (ICS 85.080)



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**GCS 9.1-93**

Converted to GCS in 2014

## Bond Paper

Withdrawn

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## Bond Paper

ICS 85.080

Prepared by the  
Canadian General Standards Board 

Published September 1993 by the  
**Canadian General Standards Board**  
Ottawa, Canada K1A 1G6

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*Acknowledgment is made for the translation of this standard by the Translation Bureau of Public Works and Government Services Canada.*

**Preface**

This document has been converted to a Government of Canada (GC) Standard in April 2014. Its previous designation was CAN/CGSB-9.1-93. The original content has not been modified.

Withdrawn

CANADIAN GENERAL STANDARDS BOARD

**BOND PAPER**

**1. SCOPE**

- 1.1 This standard applies to durable bond papers for use in printing, typewriting and pen and ink writing. A standard for permanence of paper is in the course of preparation.
- 1.2 For more detailed information on intended uses, see par. 8.2.
- 1.3 The testing and evaluation of a product against this standard may require the use of materials and/or equipment that could be hazardous. This document does not purport to address all the safety aspects associated with its use. Anyone using this standard has the responsibility to consult the appropriate authorities and to establish appropriate health and safety practices in conjunction with any existing applicable regulatory requirements prior to its use.

**2. APPLICABLE PUBLICATIONS**

- 2.1 The following publications are applicable to this standard:
  - 2.1.1 Canadian General Standards Board (CGSB)  
CAN/CGSB-9.0 — Methods of Testing Pulp and Paper:
    - No. 5 — Brightness of Pulp, Paper and Paperboard
    - No. 6 — Opacity of Paper
    - No. 7 — Grammage of Paper and Paperboard53-GP-67 — Eraser.
  - 2.1.2 Technical Section, Canadian Pulp and Paper Association (CPPA)  
Standard Testing Methods
    - D.1 — Machine Direction of Paper and Paperboard
    - D.4 — Thickness and Density of Paper and Paperboard
    - D.9 — Internal Tearing Resistance of Paper, Paperboard and Pulp Handsheets Determined with the Appita-Elmendorf Instrument
    - D.11 — Wax Test for Surface Strength of Paper
    - D.14 — Air Resistance of Paper (Gurley Method)
    - D.17P — Folding Endurance of Paper (M.I.T. Method)
    - D.28P — Stiffness of Paper and Paperboard (Taber Method)
    - G.25P — pH of Paper and Paperboard (Extract and Surface).
- 2.2 Reference to the above publications is to the latest issues, unless otherwise specified by the authority applying this standard. The sources of these publications are shown in the Notes section.

**3. CLASSIFICATION**

- 3.1 Paper shall be supplied in the following grades as specified (par. 8.1):
  - No. 1 Bond — 100% Rag/cotton content bond paper
  - No. 2 Bond — 50% Rag/cotton content bond paper



No. 4 Bond — 25% Rag/cotton content bond paper

No. 5 Bond — 0% Rag/cotton content bond paper

No. 7 Bond — 0% Rag/cotton content bond paper

No. 8 Bond — 0% Rag/cotton content bond paper.

#### 4. GENERAL REQUIREMENTS

- 4.1 **Curl** — The paper shall lie flat or shall have no more than a slight curl that can be overcome under normal commercial operating conditions.
- 4.2 **Surface Condition** — The paper shall be free from blemishes, dust, lint and other particles that will adversely affect its conversion or end use.
- 4.3 **Formation** — The formation of the paper shall be close and even.
- 4.4 **Watermark** — Unless otherwise specified (par. 8.1), a watermark may be present.
- 4.5 **Trim** — The paper shall be trimmed with clean, smooth edges and shall be evenly jogged. If a specific trimming method is required, it shall be as specified (par. 8.1). Successive sheets within any rotary (precision) trimmed stack of paper shall not vary more than 0.3 cm in their relative jogged position.
- 4.6 **Stock** — The paper stock shall normally be free from more than trace amounts (less than 1%) of unbleached or mechanical pulps. Nos. 1, 2 and 4 bond shall have a rag/cotton content, but no limitation is imposed on the amount of deinked or non-deinked bleached secondary (recycled) fibre, nor on the amount of high-yield pulps, present in the stock of Nos. 2, 4, 5, 7 and 8 bond. Fluorescent (optical) brighteners may be present.
- 4.7 **Moisture Content** — This paper may be used either in air-conditioned pressrooms or in pressrooms lacking relative humidity and temperature controls. Unless otherwise specified (par. 8.1), the paper at time of delivery shall be in equilibrium with a relative humidity of  $40 \pm 5\%$  at a temperature of  $23 \pm 0.5^\circ\text{C}$  for use in air-conditioned pressrooms. If specified “for use in non-air-conditioned pressrooms” (par. 8.1) the paper at the time of delivery shall be in suitable equilibrium with seasonally prevailing relative humidity and temperature conditions.

#### 5. DETAILED REQUIREMENTS

- 5.1 **Physical Dimensions** — The paper shall be furnished in the sheet sizes specified (par. 8.1). The paper shall not be undersize and not more than 0.2 cm or oversize in either direction, except for sheet sizes up to and including 21.5 x 35.5 cm, and for sheet sizes 43 x 56 cm and 43 x 71 cm. Sheet sizes up to 21.5 x 35.5 cm shall not be undersize by more than 0.1 cm or oversize by more than 0.1 cm in each direction. Sheet sizes 43 x 56 cm and 43 x 71 cm shall not be oversize by more than 0.3 cm with a tolerance of  $\pm 0.1$  cm in each direction. Successive sheets within a package shall not differ from one another by more than 0.04 cm. Sheets shall be square on all four sides within a tolerance of 0.1 cm in each 76 cm, as determined on a squaring table. The edge bow in individual sheets shall not be more than 0.1 cm in each 76 cm, as determined by turning a sheet over, butting an edge against the corresponding edge of the sheet below, measuring the gap between them and taking one-half of this measurement.
- 5.2 **Grammage** — The paper shall be supplied in the grammages specified (par. 8.1) as listed in Table 1. Actual grammages shall conform to the specified grammages within a tolerance of  $\pm 5\%$ , when determined in accordance with CAN/CGSB-9.0 No. 7.
- 5.3 **Thickness** — The paper shall conform to the average thickness listed in Table 1 for the corresponding grammages with a tolerance of  $\pm 8 \mu\text{m}$ . The difference in average thickness between sheets shall not exceed  $8 \mu\text{m}$ . Individual sheets shall be uniform in thickness. The difference between the highest and lowest thickness across each sheet shall not exceed  $8 \mu\text{m}$ .
- 5.4 **Grain Direction** — When determined in accordance with Technical Section, CPPA standard D.1, grain direction shall be as specified (par. 8.1).
- 5.5 **Colour** — The paper shall be white or coloured as specified (par. 8.1). The colour and brightness of the paper shall match the supplied reference sample visually in accordance with commercial colour matching practice.

5.6 **Writing and Ruling Quality** — The paper shall exhibit good writing quality when determined as specified in par. 7.2.1. Good writing quality is defined as the production of clean characters with no feathering or blotting of ink visible to the unaided eye. The paper shall accept machine ruling without feathering or blotting.

#### 5.7 **Erasing Quality**

5.7.1 **Nos. 5, 7 and 8 Bond** — The paper shall retain good writing quality, as defined in par. 5.6, and good texture and surface, without ink spreading, after one erasure with an eraser according to CGSB standard 53-GP-67, Type 2.

5.7.2 **Nos. 1, 2 and 4 Bond** — Erasing quality shall be such that writing shall be relatively permanent and shall not be easily erased when tested in accordance with par. 5.7.1.

5.8 **pH** — The pH value of the cold extract of the paper shall not be less than 4.8 when determined in accordance with Technical Section, CPPA standard G.25P.

5.9 **Physical and Optical Properties** — Physical and optical properties shall be in accordance with the requirements of Table 1.

### 6. **PREPARATION FOR DELIVERY**

6.1 **Packaging** — Unit packages shall be wrapped in accordance with normal commercial practice. The number of sheets in each package shall be as specified (par. 8.1).

6.2 **Packing** — Unless otherwise specified (par. 8.1), packing for shipment shall be in moisture resistant enclosures.

6.3 **Marking** — Containers as described in par. 6.1 and 6.2 shall be marked or labelled with the following information:

Size of sheets

Grade of paper

Grammage

Colour

Number of sheets

Net mass

Lot number

Grain direction.

6.4 **Pile Height Variation** — The pile height variation from one corner to the next shall not exceed 2.5 cm when measured from the centre of the pile.

### 7. **INSPECTION**

7.1 **Sampling** — The sampling shall be left to the discretion of the inspection authority, unless a specific sampling plan is specified (par. 8.1).

#### 7.2 **Testing**

7.2.1 **Writing Quality** — Use blue-black writing ink and a steel nib to determine writing quality of the paper. Write approximately ten groups of five letters each on a sheet of paper and examine.

### 8. **NOTES**

8.1 **Options** — The following options must be specified in the application of this standard:

a. Grade of paper (par. 3.1)

b. If a watermark is not required (par. 4.4)

c. If a specific trimming method is required (par. 4.5)

d. Moisture content, if other than as specified (par. 4.7)

- e. Moisture content, if for use in non-air-conditioned pressrooms (par. 4.7)
- f. Size of sheets (par. 5.1)
- g. Grammage (par. 5.2)
- h. Grain direction (par. 5.4)
- i. Colour (par. 5.5)
- j. Number of sheets in each package (par. 6.1)
- k. If other than moisture resistant packaging is required (par. 6.2)
- l. Sampling, if a specific sampling plan is required (par. 7.1).

## 8.2 **Intended Uses**

- 8.2.1 This paper is not suitable for use with optical character recognition systems.
- 8.2.2 **No. 1 Bond** — Paper of this grade is suitable for highest quality letterpress, offset printing and die stamping. It may also be used for pen and ink writing and typewriting. Characters are not readily erasable.
- 8.2.3 **No. 2 Bond** — Paper of this grade is suitable for high quality letterpress, offset printing and die stamping. It may also be used for pen and ink writing and typewriting. Characters are not readily erasable.
- 8.2.4 **No. 4 Bond** — Paper of this grade is suitable for high quality letterpress and offset printing on both sides. It may also be used for pen and ink writing and typewriting. Characters are not readily erasable.
- 8.2.5 **No. 5 Bond** — Paper of this grade is suitable for letterpress printing and offset duplicator use. It is also suitable for machine ruling, pen and ink writing and typewriting. Quality is slightly higher than No. 7 Bond.
- 8.2.6 **No. 7 Bond** — Paper of this grade is suitable for letterpress printing and offset duplicator use. It is also suitable for machine ruling, pen and ink writing and typewriting. It has good erasability, with the principal difference to the user from the No. 8 Bond being the shade.
- 8.2.7 **No. 8 Bond** — Paper of this grade is suitable for letterpress printing and offset duplicator use. It is also suitable for machine ruling, pen and ink writing, and typewriting. It has good erasability. Quality is usually very slightly below No. 7 Bond.

## 8.3 **Sources of Referenced Publications**

- 8.3.1 The publications referred to in par. 2.1.1 may be obtained from the Canadian General Standards Board, Sales Unit, Ottawa, Canada K1A 1G6. Telephone 1-800-665-CGSB. Fax (613) 941-8705.
- 8.3.2 The publications referred to in par. 2.1.2 and par. 5.7.1 may be obtained from the Canadian Pulp and Paper Association, Publications Section, Sun Life Building, 19th Floor, 1155 Metcalfe Street, Montreal, Quebec H3B 4T6. Telephone (514) 866-6621. Fax (514) 866-3035.

**TABLE 1**  
**Physical and Optical Properties of Bond Paper**

Property	Grade													Test Method			
	2	5	7	8	1	2	4	5	7	8	1	2	4		5	7	8
Grammage, g/m <sup>2</sup>	60	60	60	60	75	75	75	75	75	75	75	90	90	90	90	90	CAN/CGSB-9.0 No. 7
Thickness, average, $\mu$ m	90	90	90	90	105	105	105	105	105	105	105	130	130	130	130	130	CPPA D.4
Brightness, each side, %, min.	81	81	81	79	81	81	81	81	81	81	81	81	81	81	81	79	CAN/CGSB-9.0 No. 5
Opacity, %, min.	81	81	81	81	87	87	87	87	87	87	87	89	89	89	89	89	CAN/CGSB-9.0 No. 6
Internal tearing strength, 1 sheet, each direction, mN, min.	390	360	350	340	550	550	500	500	500	500	500	550	550	550	550	550	CPPA D.9
Folding endurance (M.I.T.), double folds, 1 kg tension, each direction, unaged, min.	200	30	30	30	250	130	75	30	30	30	30	150	100	50	30	30	CPPA D.17P
Air resistance (Gurley), s/100 mL air, min.	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	CPPA D.14
Stiffness (Taber), mN·cm, min.	—	—	—	—	10	15	20	22	22	22	22	—	25	35	—	—	CPPA D.28P
Pick resistance (wax strength number), each side, min.	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	CPPA D.11