

53-GP-98
June 1967
CANCELLATION
May 1970

Standard

for

Ink, Duplicating, Lithographic Process: Black

Standard 53-GP-98 is hereby cancelled and is superseded by
CGSB Standard 21-GP-6, Ink, Printing, Offset Duplicator, Black,
dated May 1970.



NADA

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

STANDARD

FOR

INK, DUPLICATING, LITHOGRAPHIC PROCESS: Black

53-GP-98

16 JUNE 1967

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THIS STANDARD APPLIES TO BLACK OFFSET DUPLICATING MACHINE INK FOR LINE AND HALFTONE WORK.

DEPARTMENT OF DEFENCE PRODUCTION, OTTAWA, CANADA

COMMITTEE ON STAMP PADS AND MISCELLANEOUS INKS

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CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Standard
for

INK, DUPLICATING, LITHOGRAPHIC PROCESS: Black

1. DEFINITION

This standard applies to black offset duplicating machine ink for line and halftone work.

2. APPLICABLE PUBLICATIONS

2.1 The following publications are applicable to this standard:

2.1.1 Canadian Government Specifications Board

4-GP-2 Canadian Standard Textile Test Methods

53-GP-66 Ribbons: Typewriter, Offset, Cotton

53-GP-87 Plate: Lithographic Printing, Paper (Offset Duplicating Master)

53-GP-91 Blankets: Rubber, Offset.

2.1.2 National Printing Ink Research Institute Standard Test Methods.

2.2 Reference to the above publications, or to test standards therein, is to the issues in effect on the date of invitation to tender, unless otherwise specified.

3. CLASSIFICATION

3.1 Ink shall be available in the following classes, as specified by the purchaser:

Class 1 - Fast Drying.

Class 2 - Slow Drying.

4. GENERAL REQUIREMENTS

4.1 The ink shall be homogeneous and ready for use. It shall be suitable for line or halftone reproduction on bond, offset and similar papers using offset duplicators with speeds up to 9,000 impressions per hour.

4.2 Ink in a freshly opened container shall show no evidence of livering or undue skinning, and shall be readily workable.

5. DETAIL REQUIREMENTS

The ink shall comply with the following detail requirements:

		<u>REQUIREMENTS</u>	<u>METHOD</u>
5.1	Specific Gravity, 73°/73°F	1.00 - 1.20	Par 7.2.1
5.2	Fineness of Grind		Par 7.2.2
	5.2.1 4-Scratch Value	9.0 max.	
	5.2.2 10-Scratch Value	8.0 max.	
5.3	Skinning Time, hr.	20 min.	Par 7.2.3
5.4	Tack		Par 7.2.4
	5.4.1 At 942 fpm	33 max.	
	5.4.2 At 628 fpm	27 max.	
	5.4.3 At 314 fpm	20 max.	
5.5	Flying Tendency, specks per sq. cm.	50 max.	Par 7.2.4
5.6	<u>Light Fastness</u> - There shall be no visible change after 20 hours exposure.		
			Par 7.2.5
5.7	<u>Bleeding in Water</u> - There shall be not more than slight bleeding.		
			Par 7.2.6
5.8	<u>Emulsification</u> - The ink shall not show excessive tendency to form ink-in-water emulsion.		
			Par 7.2.6
5.9	<u>Performance (Duplicator Run)</u>		
5.9.1	<u>Quality of Reproduction</u> - Copies shall be sharp, unmottled and of satisfactory color strength. There shall be no evidence of tinting or scumming.		
5.9.2	<u>Strike-Through</u> - The ink or oily constituents shall not strike through the paper.		
5.9.3	<u>Chalking</u> - The ink shall not chalk on drying.		
5.9.4	<u>Set-Off</u> - The ink shall not show more than slight set-off.		
5.9.5	<u>Flow Properties</u> - The ink shall feed and distribute properly to the plate.		
			Par 7.2.7
5.10	<u>Drying Time</u> - Maximum drying times shall be as specified in Table 1.		
			Par 7.2.8

TABLE 1

	<u>Class 1</u> (max.)	<u>Class 2</u> (max.)
On Bond Paper -		
Dry-to-touch (min.)	2	5
Dry-hard (min.)	40	180
On Offset White Paper -		
Dry-to-touch (min.)	15	15
Dry-hard (min.)	180	300

6. PREPARATION FOR DELIVERY

6.1 Packaging - Ink shall be packaged in metal or plastic containers in a manner that will prevent breakage or spillage.

6.2 Packing - Ink packaged as specified in 6.1 shall be packed in containers of the type commonly used for such purposes in order to ensure acceptance by common carrier and safe delivery at destination.

6.3 Marking - Unless otherwise specified, packages shall be marked or labelled with the following information:

Canadian Government Supply Service Stock No. (when applicable)
Ink, Duplicating, Lithographic Process: Black
Name of Supplier
Date of Manufacture
Order or Contract Number.

7. INSPECTION

7.1 Sampling - Sampling shall be carried out at the discretion of the inspection authority.

7.2 Test Methods

7.2.1 Specific Gravity 73°/73°F - The specific gravity of the inks shall be determined by NPIRI (National Printing Ink Research Institute) Method D-2 except that vacuum shall be applied where necessary to assist in removal of entrapped air, and the test temperature shall be $73 \pm 0.5^\circ\text{F}$.

7.2.2 Fineness of Grind - Fineness of grind shall be determined with a Grindmeter by the procedure described in NPIRI Method D1.

7.2.3 Skinning Time - Excess ink shall be worked into a plastic ring 2-1/8 inches in inside diameter and 1/4 inch in depth, placed on a glass plate. The surface shall be levelled flush with the ring and the assembly exposed to atmospheric conditions at $73.4 \pm 1.8^\circ\text{F}$ and $50 \pm 2\%$ R.H. The time in hours required for a skin to form and completely cover the surface of the ink shall be taken as the skinning time.

- 7.2.4 Tack and Flying Tendency - Tack and flying tendency shall be determined with the LTF Inkometer, Model B-45, by procedures suggested in the Inkometer instruction manual. Apply the ink on the upper roller with the metering device and distribute on the rollers by turning the motor coupling by hand for 5 seconds. Simultaneously start a timer and the Inkometer at medium speed (628 fpm). At the 1-minute mark of this ink-distributing period, stop and shift to high speed (942 fpm), completing this operation within 10 seconds, and record the Tack at the 1-1/2 minute mark. Within 10 seconds, shift the machine to medium speed and record the Tack at the 2-minute mark. Within 10 seconds shift to low speed (314 fpm) and record the Tack at the 2-1/2 minute mark. Apply corrections to the readings at high and medium speeds. After the first 10 seconds of the initial ink distribution period at medium speed, insert a sheet of white paper 3 inches below the brass roller of the Inkometer and leave for 50 seconds. Under 10X magnification, determine the number of ink specks per square centimeter of paper in at least three areas where the specks appear most numerous, by visual inspection. Average the values and record as the Flying Tendency.
- 7.2.5 Light Fastness - Expose samples of duplicator-run copies from the performance test in an Atlas FadeOmeter operated in accordance with CGSB Standard 4-GP-2, Method 18.1 (Accelerated). Time of exposure is 20 hours.
- 7.2.6 Bleeding in Water and Emulsification - Measure 1.3 ml. of ink into a small mortar with an ink pipette. Add an equal volume of fountain solution consisting of 0.2% gum arabic in water acidified to pH 4.0 - 4.3 with phosphoric acid. Work the mixture with a pestle for 5 minutes. Filter the remaining solution through a 55 mm. filter paper, held on a fritted glass filtering funnel, into a test tube, applying light vacuum. Examine the filtrate for indication of pronounced bleeding. Examine the filter paper for evidence of excessive ink-in-water emulsification.
- 7.2.7 Performance - The performance test shall be carried out on a Multilith 1250 Offset Duplicator at a speed of 7,000 copies per hour; 1,000 copies of typed material shall be run on No. 7 bond paper from a paper plate, followed by 3,000 copies of line and 133-line screen halftone work on No. 7 bond paper from an aluminum plate, followed by 2,000 copies on offset white paper from the same aluminum plate. The last 4,000 copies shall be stacked in a single pile and examined for set-off.
- The paper plate, offset typewriter ribbon and offset rubber blanket shall meet the requirements of CGSB Standards 53-GP-87, 53-GP-66 and 53-GP-91 respectively. Aluminum plates shall be equivalent to Addressograph-Multigraph 6-6051 presensitized, ball-grained aluminum prepared in accordance with the manufacturer's recommended procedure. The fountain solution shall be equivalent to Addressograph-Multigraph Multilith Repelex. Standard ambient conditions shall be $73.4 \pm 1.8^{\circ}\text{F}$ and $50 \pm 2\%$ R. H.
- Ink flow properties and drying times shall be noted during the run and copies shall be examined for quality of reproduction, strike-through, chalking, color strength, tinting and scumming.
- 7.2.8 Drying Time - Copies shall be considered dry-to-touch when a light touch does not transfer ink from paper to finger. Copies shall be considered dry-hard when firm pressure with the finger does not transfer ink from paper to finger.

8. NOTES

8.1 Intended Use - Ink covered by this standard is intended for use in offset duplicating machines.

8.2 Ordering Data - Procurement documents should specify the Class of ink required.

8.3 The publications referenced in 2.1.1 may be obtained from the CGSB Secretary.

8.4 The publication referenced in 2.1.2 may be obtained from the National Printing Ink Research Institute, Lehigh University, Bethlehem, Penn., U.S.A.

Correspondence regarding this standard should be addressed to the Canadian Government Specifications Board, c/o Department of Defence Production, Ottawa 4, Canada.