

स्टेंसिल पेपर — विशिष्टि
(तीसरा पुनरीक्षण)

Stencil Paper — Specification
(Third Revision)

ICS 87.080

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FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Printing Inks, Stationery and Allied Products Sectional Committee had been approved by the Chemical Division Council.

This standard was first published in 1969 and subsequently revised in 1981 and 1993. In the first revision, the mass of coated stencil paper was reduced to 48 g/m² keeping in view of its adequacy for the required performance. In the second revision, the requirement for mass of coated stencil paper was reduced from 48 g/m² to 40 g/m². Also, the requirement for backing sheet was modified.

In this revision, reference clause and packing and marking clause have been updated. Also, Amendment No. 1 has been incorporated. Now, the standard has been updated based on the technological advancements that may have taken place since the last publication of the standard.

The composition of the Committee responsible for formulation of this standard is given in [Annex F](#).

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard
STENCIL PAPER — SPECIFICATION
(Third Revision)

1 SCOPE

This standard prescribes requirements and methods of sampling and test for wax less stencil papers used on duplicating machines.

2 REFERENCES

The standards given below contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards:

<i>IS No.</i>	<i>Title</i>
IS 170 : 2020	Acetone — Specification (<i>fifth revision</i>)
IS 1060 (Part 1) : 2022	Methods of sampling and test for paper and allied products: Part 1 Test methods for general purpose
IS 1070 : 2023	Reagent grade water — Specification (<i>fourth revision</i>)
IS 4395 : 1987	Glossary of terms relating to inks and allied industries (<i>first revision</i>)
IS 4905 : 2015/ ISO 24153 : 2009	Random sampling and randomization procedures (<i>first revision</i>)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 4395 shall apply.

4 REQUIREMENTS**4.1 Description**

4.1.1 The stencil paper when cut on the typewriter or by a stylus by hand, shall be capable of rendering impressions when worked on a duplicating machine with duplicating ink. The impressions shall be of good definition and shall be free from patches, pin-holes, marks, etc when examined visually.

4.1.2 The stencil paper may be free from any pronounced and disagreeable odour.

4.1.3 The stencil paper may permit visibility of guides placed under it.

4.2 Material

The stencil-paper shall be of suitable fibrous tissue coated with non-wax-based film forming material.

4.3 Elongation

The average of the elongation in machine direction and cross direction shall be not more than 6 percent when tested by the method prescribed in IS 1060 (Part 1).

4.4 Tensile Strength

The average of the tensile strength in machine direction and cross direction shall be not less than 0.35 kg/cm width when tested by the method prescribed in IS 1060 (Part 1).

4.5 Burst Factor

The burst factor shall be not less than 7.5 when tested as prescribed in IS 1060 (Part 1).

4.6 Mass of Coating

The mass of coated stencil paper shall be not less than 40 g/m² and the mass of the soluble coating shall be not less than 28 g/m² when determined by the method prescribed in [Annex A](#).

4.7 Cut-Outs and Filling

The stencil paper shall withstand the cut-outs and filling test as prescribed in [Annex B](#).

4.8 Use with Stylus

The stencil paper shall show clear and uniform cutting with a stylus pen having a round (not sharp) point. It shall not tear or pull the paper at the time of writing with stylus pen using a writing plate with normal uniform pressure and shall not show any feathering.

4.9 Performance

The stencil paper shall be capable of producing not less than 750 clear copies and then, after three days, another 500 copies without distortion, cracks or other failures that impair legibility. The cuts of the stencil shall allow the ink to flow readily to give clear impressions.

4.10 Legibility of Typing

The stencil paper shall be such that the cut stencil can be read easily against a lighted background.

4.11 Moisture Resistance

The stencil paper shall withstand the moisture resistance test prescribed in [Annex C](#).

4.12 Keeping Quality

The stencil paper shall be capable of retaining its serviceability under normal storage conditions for not less than 2 years from the date of manufacture which shall be tested by the accelerated ageing test prescribed in [Annex D](#).

4.13 Backing Sheet

Each sheet of stencil paper shall be properly backed with a backing sheet. The backing sheet shall conform to IS 3302 and shall be tested before collating the stencil paper to the backing sheet. The backing sheet head shall be suitably punched to enable it to be properly fitted to the respective duplicating machine for which the punching has been intended.

4.14 Interleaving Sheet

Each stencil paper shall be interleaved with a grease-proof paper or a sheet of carbon paper (single side or double side) as agreed to between the purchaser and the supplier. In case of single sided carbon paper, the facing of carbon coated paper shall be as agreed between the purchaser and supplier.

4.15 Sizes

The size of the stencil paper may be as agreed to between the purchaser and the supplier.

4.16 Scale

The limits up to which the cutting earl be done for different sizes of stencil papers including A3 or A4

size, as the case may be, shall be indicated on the stencil.

5 PACKING AND MARKING

5.1 Packing

Stencil sheets shall be securely packed in packets of 25, 50 or 100 as required or as agreed to between the purchaser and the supplier.

5.2 Marking

Each packet shall be marked with the following information:

- a) Name and size of the material;
- b) Number of sheets in the packet and the type of interleaving;
- c) Indication of the source of-manufacture;
- d) Month and year of manufacture; and
- e) Batch number in code or otherwise to enable the lot of manufacture to be traced from records.

5.2.1 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

6 SAMPLING

The method of drawing representative samples of the material, number of tests to be performed and the criteria for conformity of the material to the requirements of this specification shall be as prescribed in [Annex E](#).

ANNEX A

(Clause 4.6)

DETERMINATION OF MASS OF COATING

A-1 TEST PIECE

Condition a stencil paper as prescribed in [A-2.1.1](#) and cut out a test piece measuring 10 cm × 10 cm. Weigh it accurately.

A-2 DECOATING

A-2.1 Take a suitable quantity of acetone (see IS 170) in a beaker and immerse the test piece into the solvent until the tissue is clean. During this operation, hold the test piece with forceps and agitate through the solvent. Repeat the operation with a fresh quantity of solvent. After the coating has been completely removed, dry the decoated stencil paper, condition it (see [A-2.1.1](#)) and weigh accurately.

A-2.1.1 Conditioning

Suspend the test piece in conditioning chamber in which relative humidity of (65 ± 2) percent and temperature of (27 ± 2) °C is maintained (temperature should not vary by more than ± 1 °C in a given series of tests) in such a way that conditioning atmosphere has free access to all its surfaces. The test piece shall be deemed to have reached equilibrium when the results of two

consecutive weighing at an interval of one hour do not differ by more than 0.5 percent of the total mass.

A-3 CALCULATIONS

A-3.1 Mass of coated stencil paper $\text{g/m}^2 = \frac{M_1}{A}$

where

M_1 = mass, in g, of test piece as determined in [A-1.1](#); and

A = area, in m^2 , of the test piece.

A-3.2 Mass of coating on the stencil paper, g/m^2

$$= \frac{M_1 - M_2}{A}$$

where

M_1 = mass, in g, of the test piece before decoating;

M_2 = mass, in g, of the test piece after decoating; and

A = area in m^2 of the test piece.

NOTE — Paper scale calibrated to give direct reading in g/m may be used for weighing the test piece.

ANNEX B

(Clause 4.7)

TEST FOR CUT-OUTS AND FILLING

B-1 PROCEDURE

Type five sets of lines each having e, 0 and 8 on the stencil paper with a suitable type-writer properly spaced so as to cover the whole stencil. The stencil

paper shall be considered satisfactory if the impressions are clear and distinct without any evidence of cut-outs and tendency of filling up of the letters before as well as after the test is made on a duplicating machine.

ANNEX C

(Clause 4.11)

TEST FOR RESISTANCE TO MOISTURE

C-1 PROCEDURE

Cut a test piece of size 10 cm × 10 cm of stencil paper with backing sheet. Put a drop of distilled water (see IS 1070) on the backing sheet (in between the stencil and backing sheet) and place it between two glass plates (10 cm × 10 cm × 0.6 cm). Put a

weight of 1 kg on the upper glass plate and allow to stand for 5 min. Separate the stencil from the backing sheet with a steady pull. The stencil shall be considered to have satisfied the requirement of the test if it separates from the backing sheet without any indication of sticking or disintegration.

ANNEX D

(Clause 4.12)

ACCELERATED AGEING TEST

D-1 PROCEDURE

Cut a 3 cm × 10 cm strip of stencil paper along with the backing sheet, and keep it between two pieces of flat glass plates (3 cm × 10 cm × 0.6 cm) and put a weight of 1 kg on the upper glass plate. Keep the whole assembly for three hours inside a hot oven in

which the temperature is maintained at (10 ± 5) °C. At the end of three hours the stencil paper shall show no tendency to stick to backing sheet nor any evidence of brittleness. There shall be no appreciable change in the colour of the stencil paper when compared with the original unheated portion of the sample.

ANNEX E

(Clause 6)

SAMPLING OF STENCIL PAPER

E-1 GENERAL PRECAUTIONS

E-1.1 Stencil sheets shall be taken out in a covered place.

E-1.2 They shall be protected from abnormal exposure to heat and light and shall not be allowed to come in contact with any fluid.

E-1.3 Samples shall be handled as little as possible and contact with sweated hands shall be avoided.

E-1.4 Tests for strength characteristics shall not be carried out with portions bearing water marks, creases or any visible imperfections.

E-2 SCALE OF SAMPLING

E-2.1 Lot

All the packets in a single consignment containing stencil papers of the same size, type and from the same batch of manufacture shall constitute a lot.

E-2.1.1 Samples shall be tested from each lot separately for ascertaining conformity of the lot to the requirements of this specification.

E-2.2 The number of packets to be selected from a lot for sampling shall depend upon the size of the lot and shall be in accordance with col (1) and col (2) of [Table 1](#).

E-2.3 These packets shall be selected at random from the lot. In order to ensure randomness of selection, reference may be made to IS 4905. In case this standard is not readily available, the following procedure may be adopted.

Starting from any packet in the lot, count them in one order as 1, 2, 3,....., up to r and so on

where r is the integral part of N/n (N being the number of packets in the lot and n the number of packets to be selected). Every r^{th} packet thus counted shall be withdrawn till the required number of packets is obtained.

E-2.4 From each of the packets selected according to [E-2.3](#) four stencil sheets shall be selected at random so as to give the total number of sheets in accordance with col (3) of [Table 1](#).

E-3 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

E-3.1 Visual and Dimensional Characteristics

E-3.1.1 All the packets selected from a lot according to [E-2.3](#) shall be opened and examined for proper provisions of backing sheets and interleaving sheets. All the stencil papers shall be examined for odour (*see* [4.1.2](#)), transparency (*see* [4.1.3](#)), and quality of backing sheet (*see* [4.13](#)) and for sizes (*see* [4.15](#)). Any sheet failing in respect of one or more characteristics shall be termed defective.

E-3.1.2 In respect of these characteristics a lot shall be considered to satisfy the requirements of the specification if the number of defective sheets found under [E-3.1.1](#) is not more than the corresponding permissible number of defective sheets given in col (4) of [Table 1](#).

E-3.2 Strength, Quality of Cutting, Legibility and Use with Stylus

E-3.2.1 The lot which has been found satisfactory under [E-3.1](#) shall then be tested for tensile strength, cut-out and filling, use with stylus, legibility and bursting strength.

E-3.2.2 The number of tests to be conducted for each of these characteristics depends on the lot size and shall be as given in col (5) of [Table 1](#). For this purpose, sufficient number of sheets shall be withdrawn from the sample selected under [E-2.4](#) and these sheets shall be subjected to tests for elongation, tensile strength, bursting factor, cut-outs and filling, use with stylus and legibility.

E-3.2.3 A lot shall be declared as conforming to the requirements of the characteristics mentioned above, if for each of the characteristics, all the tests individually satisfy the corresponding requirements.

E-3.3 Performance, Mass of Coating and Moisture Resistance

E-3.3.1 A lot which has been found satisfactory under [E-3.1](#) and [E-3.2](#) shall then be tested for performance, mass of coating and moisture

resistance. For this purpose, one test shall be conducted for each of the characteristics. If the lot size is 300 and below, and two tests in other cases. A sub-sample of stencil sheets required for these tests shall be taken from among those selected under [E-3.1](#).

E-3.3.2 A lot shall be deemed to have satisfied the requirements for these characteristics if for each of the characteristics all the test results individually satisfy the corresponding requirements.

E-3.4 A lot which has satisfied all the criteria given in [E-3.1](#), [E-3.2](#) and [E-3.3](#) shall then be tested for keeping quality. For this purpose, one packet shall be chosen from the sample selected under [E-2.3](#). The lot shall be declared as conforming to the requirements for keeping quality if the packets passes the corresponding test.

Table 1 Number of Packets and Sheets to be Selected -and Permissible Number of Defectives

(Clauses [E-2.2](#), [E-2.3](#), [E-2.4](#), [E-3.1.2](#) and [E-3.2.2](#))

SI No.	No of Packets in the Lot	For Examining Odour Transparency, Backing Sheets and Sizes			No of Tests for Elongation Tensile Strength, Bursting Strength, Cut-out and Filling Use with Stylus and Legibility
		No. of Packets to be Selected	Total No. of Sheets to be Selected	Permissible No. of Defective sheets	
	N	n			
(1)	(2)	(3)	(4)	(5)	(6)
i)	Up to 25	3	12	1	1
ii)	26 to 100	5	20	2	2
iii)	101 to 150	8	32	3	3
iv)	151 to 300	13	52	5	5
v)	301 and above	20	80	7	8

ANNEX F

(Foreword)

COMMITTEE COMPOSITION

Printing Inks, Stationery and Allied Products Sectional Committee, CHD 14

<i>Organization</i>	<i>Representative(s)</i>
Government Printing West Bengal, Kolkata	SHRI SUBIR KUMAR MANDAL (<i>Chairperson</i>)
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All India Printing Ink Mfgs Association Ltd, Mumbai	SHRI SHIVRAM ANGNE SHRI R. SRIDHARAN (<i>Alternate</i>)
All India Print-Tech Professionals Forum, Kolkata	SHRI PARTHA PRATIM SANYAL
Consumer Voice, New Delhi	SHRI MAU KHAN DR RAJIV JHA (<i>Alternate</i>)
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Shriram Institute for Industrial Research, Delhi	DR MANMOHAN KUMAR DR VINAY TYAGI (<i>Alternate</i>)

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