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विशिष्टि

(IS 1551 का तीसरा पुनरीक्षण)

Draft Indian Standard
Carbon Papers - Typewriters — Specification
(Third Revision of IS 1551)

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ICS 87.080

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

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FOREWORD

(Formal clauses will be added later)

This standard was first published in 1959. It was revised based on the formulation of specification for base paper for carbon paper, IS 3413 'Base paper for carbon paper'. In the light of the experience gained through its use and subsequent revision of IS 3413 in 1977, certain amendments were issued to the revised IS 1551. The previous revision was taken up to incorporate all the amendments issued. In the original standard the base paper containing not less than 40 percent cotton, flax or hemp was specified for all grades of carbon paper. In the first revision base paper containing 100 percent cotton, flax or hemp were specified for light weight carbon paper and base paper of not less than 40 percent cotton, flax or hemp were specified for other grades of carbon paper. An additional grade, namely, heavy weight was also included.

In this third revision, the standard has been revised based on the technological advancements that have taken place since the last publication of the Standard. Also, reference clause and packing & marking clause have been updated.

This standard does not cover back coated carbon paper which is covered in a separate Standard, IS 8075.

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.

Draft Indian Standard
CARBON PAPERS - TYPEWRITERS — SPECIFICATION
(Third Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for carbon papers, black, blue, green, purple and red, for use with typewriter.

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 edition indicated was 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 1848 (Part 1): 2018	Writing and printing papers — Specification: Part 1 Account book, azure lead, bond, cream laid and cream wove/printing white/printing coloured/printing offset, printing maplitho, printing white super calendered and typewriting types (<i>fifth revision</i>)
IS 3413 : 2004	Base paper for carbon paper — Specification (<i>second revision</i>)
IS 4174 : 1977	Specification for typewriter ribbons, cotton (<i>first 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 GRADES

There shall be four grades of carbon papers, namely:

- Grade 1 — Light weight;
- Grade 2 — Medium weight;
- Grade 3 — Standard weight;
- Grade 4 — Heavy weight.

5 REQUIREMENTS**5.1 Description**

The carbon paper shall be free from plemishes, like wrinkles, waves, tears and cuts, and as far as possible, free from pin holes, creases, crimped corners or side, etc. It shall be manufactured by coating tissue paper on one side with a transferable carbon ink coating necessary to give the required copying qualities. The coating shall be smooth, uniform and free from smudginess. It shall have no tendency to offset or stain on normal handling when left in contact with copying sheets or separate as lakes when in use.

5.2 Base paper

The base paper used in the manufacture of the material shall conform to Type 1 of IS 3413 in case of Grade 1, and in case of Grades 2, 3 and 4 shall conform to Type 1 or Type 2.

5.3 Size

The size of the carbon paper shall be as agreed to between the purchaser and the supplier. The tolerance allowed on the size shall be ± 1.5 mm on each side.

5.4 Carbon Work

The carbon work shall be well-defined and clear. Light shall not have any appreciable effect on the typed carbon work. There shall be a gradual, not abrupt, loss of distinctness of the carbon copies when repeatedly typed at the same place. Coating of carbon paper shall not affect in any way the white paper, sheets used.

5.5 Resistance of Curling

The carbon paper shall comply with the test for resistance to curling as prescribed in Annex A.

5.6 The material shall also comply with the requirements given in Table 1 when tested by the methods prescribed in the annexes, as indicated in col (7) of the table.

6 KEEPING QUALITY

The material shall continue to satisfy all the requirements prescribed under **5** and shall also remain free from fungal growth for a period of at least two years from the date of packing.

7 PACKING AND MARKING**7.1 Packing**

Unless otherwise agreed to between the purchaser and the supplier, 25 or 100 sheets of carbon paper shall be suitably packed in a packet which may be either a folder or card board box. When more than 25 sheets are packed in a packet, a demarcation sheet of distinctive colour shall be included after every 25 sheets.

7.1.1 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.

7.2 Marking

Each packet, namely, folder or cardboard box shall be marked with the following information:

- a) Name and the colour of the materials;
- b) Grade and size;
- c) Indication of the source of manufacture;
- d) Batch number in code or otherwise to enable the lot of manufacture to be traced back from records; and
- e) Month and year of packing.

8 SAMPLING

Representative samples of the material shall be drawn and adjudged as prescribed in Annex D.

Table 1 Requirements for Carbon Papers for Typewriter

(Clause 5.6)

SI No.	Characteristic	Requirements For				Method of Test (Ref to Annex)
		Grade 1	Grade 2	Grade 3	Grade 4	
(1)	(2)	(3)	(4)	(5)	(6)	(7)

i)	Substance of base paper g/m ²	11.5 ± 1.0	15.5 ± 1.0	20.5 ± 1.5	27.0 ± 1.5	B
ii)	Coating, g/m ²	10.0 ± 1.0	11.0 ± 1.0	12.0 + 1.5 - 1.0	14.0 + 1.5 - 1.0	B
iii)	Durability (minimum number of impression at the same sport)	8	9	10	12	C
iv)	Manifolding (minimum number of copies	8	6	5	4	C

ANNEX A*(Clause 5.5)***TEST FOR CURLING****A-1 PROCEDURE**

A-1.1 Place two sheets of carbon paper on a wire screen, carbon coated side down, in a conditioning room in which relative humidity of (65 ± 2) percent and temperature of (27 ± 1) °C are maintained. After the sheets have been conditioned for one hour, remove the sheets from the screen and place on a flat glass surface, carbon coated side-up. After one minute measure the portions of the two narrow sides of each sheet which are in direct contact with the flat surface.

A-1.2 The material shall be considered satisfactory if not less than 80 percent of the sum of the total lengths of the narrow sides are in contact with the flat surface.

ANNEX B*(Table 1, Item (i) and (ii))***DETERMINATION OF SUBSTANCE OF BASE PAPER AND MASS OF COATING****B-1 TEST PIECE**

Condition a sheet of carbon paper as prescribed in **B-2.1.1** and cut out a test piece measuring 10 cm × 10 cm. Weigh it accurately.

B-2 DECOATING

B-2.1 Take a suitable quantity of carbon tetrachloride or a mixture of equal volumes of carbon tetrachloride and acetone in a beaker. Bring the contents to boil on a water bath and immerse the test piece into the boiling 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, if necessary. After the coating has been removed, dry the coated paper, condition it (*see B-2.1.1*) and weigh accurately.

B-2.1.1 Conditioning

Suspend the test piece in a conditioning chamber in which relative humidity of (65 ± 2) percent and temperature of (27 ± 1) °C are 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 0.4 percent of the total mass.

B-3 CALCULATION

B-3.1 Substance of base paper, $\text{g/m}^2 = \frac{M_1}{A}$

where

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

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

B-3.2 Coating on the paper, $\text{g/m}^2 = \frac{M - M_1}{A}$

where

M = mass, in g, of test piece before decoating;

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

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

ANNEX C

(Table 1, Items (iii) and (iv))

TEST FOR DURABILITY AND MANIFOLDING**C-1 TESTING APPARATUS**

The tests described shall be made on any suitable machine, meant for testing carbon papers and typewriter ribbons, with freshly cleaned pica type A No. 1 platen and a typewriter ribbon (*see* IS 4174) shall be used.

NOTE — Haidas machine manufactured by Haida Engineering Co Ltd, New York (USA) and Prufako manufactured by Karl Krack Honnauer (Germany) are the two suitable machines for this test. In case, either of the two machines are not available, the procedure outlined in C-2 may be followed.

C-2 TEST FOR DURABILITY

Ordinary typing paper of substance 40 g/m^2 [*see* IS 1848 (part 1)] shall be used for making the test. A piece of about $5 \text{ cm} \times 3 \text{ cm}$ of the carbon paper required to be tested shall be stuck to a strip of ordinary typing paper, 40 g/m^2 , of about $10 \text{ cm} \times 4 \text{ cm}$, using pressure sensitive adhesive cellulose tape in such a way that the carbon coated side of the carbon paper shall be upwards. This assembly is then securely stuck to the carriage of the typewriter, using pressure sensitive adhesive cellulose tape, with the carbon coated side towards the carriage. It shall be ensured that this assembly does not shift while typing. Another sheet of typing paper, 40 g/m^2 shall be inserted in the typewriter in the usual way and test started. Type a line consisting of letter g (10 times) in horizontal row. Using double spacing continue typing 11 such lines on the same spot of the carbon paper. The carbon paper shall make not fewer than the required number of carbon copies and these copies shall be clean and legible, and after the test, the carbon paper under test shall not show any holes on the tested portion.

C-3 TEST FOR MANIFOLDING

Ordinary typing paper of substance 40 g/m^2 (*see* IS 1848) shall be used for this test. A convenient size sheet for this test is $9 \text{ cm} \times 20 \text{ cm}$. A first sheet and copy sheets with sheets of carbon paper shall be assembled in the usual way. The assembled sheets shall be inserted in the machine and the entire keyboard, both upper and lower case, shall be written twice over in unrelated order. The last copy sheet shall be examined for legibility. None of the characters shall be illegible.

ANNEX D*(Clause 7.2)***SAMPLING OF CARBON PAPERS FOR TYPEWRITER****D-1 GENERAL PRECAUTIONS**

D-1.1 Sample shall be drawn from original unopened packets.

D-1.2 Sample shall be protected from abnormal exposure to heat and light and shall not be allowed to come in contact with any liquid.

D-1.3 Samples shall be touched as little as possible and contact with sweated hands shall be avoided.

D-1.4 Sample shall not be folded before testing.

D-2 SCALE OF SAMPLING**D-2.1 Lot**

All the packets in a single consignment of the same size, grade, and batch of manufacturer, shall constitute a lot.

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

D-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 (2) and (3) of Table 2.

D-2.3 These packets shall be selected at random from the lot and for this purpose, random sampling procedures as specified in IS 4905 shall be used.

Table 2 Scale of Sampling and Permissible Number of Defectives*(Clause D-2.2, D-2.4, D-3.1, D-3.2)*

SI No.	No. of packets in the lots	No. of packets to be selected	No. of sheets in the sample	Permissible No. of defective sheets
(1)	(2)	(3)	(4)	(5)
i)	up to 15	3	5	0
ii)	16 to 25	6	8	0
iii)	26 to 10	10	13	0
iv)	101 to 300	15	20	1
v)	301 to 500	20	32	2
vi)	501 and above	30	50	3

D-2.4 From each of the packets selected under **D-2.3**, approximately equal number of sheets shall be taken so as to constitute the required sample size given in col (4) of Table 2.

D-3 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

D-3.1 All the sheets selected according to col (3) and (4) of Table 2 shall be examined for requirements given in **5.1** to **5.6**. Any sheet failing to satisfy any one or more of the requirements shall be considered as defective.

D-3.2 A lot shall be declared as conforming to the requirements of this specification if the number of sheets found defective under **D-3.1** is less than or equal to the corresponding permissible number of defective sheets given in col (5) of Table 2.