Foreword

This Bangladesh Standard was adopted by the Bangladesh Standards and Testing Institution on …….. after the draft finalized by the Paper, Pulp, board and Stationery Products Sectional Committee had been approved by the Chemical Divisional Committee.

Now a days, the increase of the production of Plain Copier paper, both in the local market and the overseas markets. Keeping in view, the committee has decided to prepare a standard. While preparing the standard due consideration has been given to the views of the consumers, producers, importers and other interested stakeholders.

The myth that any ordinary paper of indeterminate quality can be handled successfully by plain paper copier, made the paper and its products (excluding packaging materials) is addressed by the sectional committee to decide to formulate a specification for plain copier paper, commonly known as photocopier paper.

A wrongly formulated paper can cause never ending customer dissatisfaction and service engineer frustration. Plain paper copiers can tolerate only certain grades of paper.

In the preparation of this standard, assistance have been derived from the following publications:

IS 14490:2018 Plain Copier paper - Specification; Bureau of Indian Standards.

For the purpose of deciding, whether a particular requirement of the standard is complied with, the final value observed or calculated expressing the result of test or analysis, shall be rounded off in accordance with BDS 103.

Bangladesh Standard

Specification for Plain/Photo Copier Paper

1.0 Scope

1.1 This standard prescribes requirements and methods of sampling and tests for plain/photo copier paper (cut size paper in A4, A3, A5, FS, B4, B5, Legal sizes) within the specified grammage (GSM).

2.0 Normative References

The following standards are necessary adjuncts to this standard. For undated reference the latest edition may be used.

BDS 103	Rules for rounding off numerical values.
BDS 832	Method for conditioning of paper and board samples.
BDS ISO 186	Paper and board – Sampling to determine average quality.
BDS ISO 216	Writing paper and certain classes of printed matter – Trimmed sizes – A and B series, and indication of machine direction.
BDS ISO 287	Paper and board – Determination of moisture content of a lot – Ovendrying method.
BDS ISO 534	Paper and board – Determination of thickness, density and specific volume.
BDS ISO 535	Paper and board – Determination of water absorptiveness - Cobb method.
BDS ISO 536	Paper and board – Determination of grammage.
BDS ISO 1924	Paper and board – Determination of tensile properties –
Part 2:	Constant rate of elongation method (20 mm/min).
BDS ISO 2144	Paper, board and pulps – Determination of residue (ash) on ignition at 900 °C.
BDS ISO 2470	Paper, board and pulp – Measurement of diffuse blue reflectance factor –
Part 1:	Indoor day light conditions (ISO brightness).
BDS ISO 2471	Paper and board – Determination of opacity (paper backing) – Diffuse reflectance method.
BDS ISO 2493	Paper and board – Determination of resistance to bending –
Part 2:	Taber-type tester.
BDS ISO 4046	Paper, board, pulps and related terms - Vocabulary
Part 1:	Alphabetical index
Part 2:	Pulping terminology.
Part 3:	Paper making terminology.
Part 4:	Paper and board grades and converted products.
Part 5:	Properties of pulp, paper and board.
BDS ISO 8791	Paper and board – Determination of roughness/smoothness (air leak methods)
Part 2:	Bendtsen method.

3.0 Terminology

For the purpose of this standard, the definitions of terms given in BDS ISO 4046 Part 1-5 shall apply.

4.0 Material - The reel/sheets intended for manufacturing of plain/photo copier paper (cut size) shall conform to requirements of this standard.

5.0 Requirements

5.1 General

The plain/photo copier paper shall devoid of pinholes when seen through the naked eye (see note 1). The surface shall be well calendered, quite smooth and free from fluff or loose fibers. Surface sizing is desirable for avoiding fluff.

NOTES -

1. Eye unaided by any instrument (other than spectacles for eyesight problem) that changes the apparent size or distance of an object.
2. Chemicals sensitive to heat should be avoided for surface sizing as the waxes and some polymers may adhere to photo conductor surface causing defects in photocopy.

The paper shall have good dimensional stability, thermal stability and shall not have any static charge.

5.2 Moisture

Moisture content shall not be more than 7 percent when tested as per BDS ISO 287.

5.3 Grammage (Substance)

The grammage (substance) of plain copier paper shall be either of 65 g per square metre or 70 g per square metre or 75 g per square metre or 80 g per square metre or 100 g per square metre, when tested as per BDS ISO 536. No single test result shall vary by more than ± 4 percent from the nomial grammage. Further the mean value of 10 test results shall not vary from the nominal grammage by more than ± 2 percent.

The paper under test shall be conditioned as per BDS 832 before it is subjected to this test.

5.4 The paper shall also comply with the requirements given in Table 1.

5.5 Size

The paper shall be cut size paper in A4, A3, A5, FS, B4, B5, legal sizes along with the permissible tolerance according to BDS ISO 216.

5.6 Additional Requirements for ECO-Mark

5.6.1 General Requirements

5.6.1.1 The product shall conform to the requirements for quality and performance prescribed under 5.1 to 5.5.

5.6.2 Specific Requirements

5.6.2.1 The material shall be manufactured from pulp containing not less than 60 percent by mass of pulp made from materials other than bamboo, hard woods, soft woods and reed. The dirt count number per m^2 shall be maximum 100.

5.6.2.2 The material shall be manufactured from pulp made from 100 percent waste paper. The dirt count number per m^2 shall be maximum 150.

Table 1 Requirements for Plain/ Photo Copier Paper

(Clause 5.5)

Sl. No. (1)	Characteristics (2)	Requirements (3)	Method of test Ref. to (4)
i.	ISO brightness, percent, Min.	85	BDS ISO 2470
ii.	Opacity, Percent, Min.		BDS ISO 2471
	For 65 g per square metre	80	
	For 70 g per square metre	80	
	For 75 g per square metre	85	
	For 80 g per square metre	85	
	For 100 g per square metre	90	
iii.	One Minute Cobb Test, both sides, g/m^2, Max.	40	BDS ISO 535
iv.	Surface Strength, Dennison (Wax Pick)	No pick on 12A	Annex A
v.	Smoothness for both sides (Bendsten), mL/min, Max.	1000	BDS ISO 8791 Part 2
vi.	Tear index,$mN.m^2/g$. Min		BDS ISO 2144
	a) Machine direction (MD)	4.5	
	b) Cross direction (CD)	5.5	
vii.	Tensile index, N.m/g. Min		BDS ISO 1924 Part 2
	a) Machine direction (MD)	40	
	b) Cross direction (CD)	20	
viii.	Dirt count No. per m^2, Max.	30	ISO 5350-2 ISO 5350-4
ix.	Thickness, µm, Min.		BDS ISO 534
	For 65 g per square metre	80	
	For 70 g per square metre	87	
	For 75 g per square metre	94	
	For 80 g per square metre	100	
	For 100 g per square metre	125	

6.0 Packing and Marking

6.1 Packing

Each ream containing 500/250 sheets of paper shall be wrapped by means of paper of minimum 80 GSM duly laminated to prevent moisture absorption and shall be strong enough to avoid any external impact during transit. It shall then be either packed in shrink building or 3/5 ply corrugated cartons to ensure that the paper is not damaged due to handling and transportation or shall be packed as agreed to between the purchaser and the supplier. The maximum weight per cartoon should not be more than 40 kg.

For packing 100/50 sheets of paper poly pouch may also be used and label shall be marked as per 6.2.

For ECO-Mark, the product shall be packed in such packages which shall be recyclable/reused or biodegradable.

6.2 Marking

The package shall be marked with the following particulars:

a) Description, size and gsm of the paper;

b) Quantity;

c) Mass of 500/250 sheets including wrapping paper, in kg/ream. Chargeable weight should be read as net weight excluding the weight of packing;

d) Lot number and month and year of manufacture; and

e) Name of manufacturer

6.2.1 For ECO-Mark, following additional information may also be marked on the container/ package: **'The criteria for which the product has been labeled with ECO-Mark'**.

6.2.2 The containers shall also be marked with the BSTI Certification Mark.

NOTE - The use of the BSTI Certification Mark is governed by the provisions of the Bangladesh Standards and Testing Institution Act, 2018 and the Rules and Regulations made thereunder. Details of conditions under which a licence for the use of BSTI Certification Mark may be granted to manufacturers or processors, may be obtained from the Bangladesh Standards and Testing Institution.

7.0 Sampling and Criteria for conformity

7.1 The plain/photo copier paper shall be sampled in accordance with BDS ISO 186.

7.2 Tests - From each of the ream, selected from the lot (see 7.1), one sheet shall be taken out at random from each ream subject to total minimum 10 sheets, if selected reams are less than 10. These sheets shall constitute the sample. The sheets selected shall first be tested for general requirements given in 5.1 and 5.6. One test piece shall be cut from each sheet selected for each of the characteristics mentioned in 5.2 and 5.4 and Table 1 and tested. A sheet not meeting the requirements for any one or more characteristics shall be considered as defective.

7.3 Criteria for Conformity - A lot shall be declared as conforming to all the requirements of this standard if the number of defective sheets found does not exceed the acceptance number. The acceptance number shall depend upon the size of the sample and shall be zero if the size is less than 13. The acceptance number shall be one if it is greater than or equal to 13.

Annex A

(Table 1, Sl. No. iv)

Determination of Surface Strength, Dennison (Wax Pick)

A-1 General

A-1.1 Waxes - The Dennison standard paper testing waxes are available in a series with graded adhesive powers. The complete series consists of 18 waxes from 2A to 26A, the adhesive strength increasing with the number. Equivalent waxes may be used if available.

A-2 Procedure

A-2.1 Place the test specimen on a smooth surface, such as a hardwood block or a table. The surface should not be a good conductor of heat, and it should not be artificially cooled before the test. The sample sheet should be separated from the block or table by 8 to 10 sheets of paper.

A-2.2 Select a wax stick and be certain that the end is clean and flat. Heat the end over an alcohol or low gas flame, rotating slowly until several drops of melted wax have fallen. Take care that the wax does not catch fire.

A-2.3 Quickly place the melted wax end on the surface of the specimen, with firm, but not undue, pressure and withdraw the fingers immediately. Allow 15 minutes for the wax to cool.

A-2.4 Place a wooden block with a hole over the wax stick, with the stick protruding through the hole in the block. Press the block down firmly with one hand and with the other pull the wax stick from the sheet with a quick jerk at right angles to the paper surface.

A-2.5 Examine the end surfaces of the wax stick and the specimen.

A-2.6 Record as wax pick number, the highest numbered wax which does not disturb the surface of the board.