भारतीय मानक मसौदा

नालीदार फाइबरबोर्ड्स — परीक्षण पद्धतियाँ

भाग 4 पृथक्करण के बाद घटक पत्रों के भार का निर्धारण

(पहला पुनरीक्षण)

Draft Indian Standard

Corrugated Fibreboards — Methods of Test

Part 4 Determination of Substance of the Components Papers after Separation

(First Revision)

ICS 55.040; 85.060

Paper Based Packaging Materials Sectional Committee, CHD 16	Last date of comments: 20th January, 2025

FOREWORD

(*formal clauses to be added later*)

The increasing use of corrugated fibreboard for transport containers has given an impetus to this industry for expansion. The growing demand for this product has brought to the fore the need for evaluating the various physical characteristics of the corrugated board.

The physical characteristics of the corrugates fibreboard largely depends on the substance of the component papers. Various claims are made by the manufacturers of corrugated fibreboard with respect to the component papers used in the manufacture. A need was therefore felt to standardize the method for determination of substance of component papers of corrugates fibreboard. This standard specifies a test procedure for determining the substance of the individual papers from which corrugated fibreboard has been made.

The committee responsible for formulating this standard decided to publish this standard as part of IS 7063 series. The other parts of IS 7063 series on 'Corrugated Fibreboards — Methods of Test' are:

Part 1 Determination of single sheet thickness

Part 2 Determination of edgewise crush resistance (Unwaxed edge method)

Part 3 Water resistance of the glue bond by immersion

This standard was first published in 1976. During formulation of this standard, considerable assistance was drawn from ISO 3039 : 1975 ‘Corrugated fibreboard — Determination of the grammage of the component papers after separation’, issued by the International organization for Standardization.

With the experience gained, the committee has decided to update the procedure for testing.

In this revision, the following modifications have been incorporated:

a) The references clause is being updated;
b) The terminology clause is being updated;
c) Referred standards for the test methods have been updated, as the IS 1060 (Part 1) has been revised and the test methods have been split in various parts and sections covering the different tests;
d) The procedure is being slightly modified advising drying of sample pieces to be done after separation; and
e) The procedure for recut of fluting medium is being elaborated.

In reporting the result of a test or analysis made in accordance with this standard, is to be rounded off, it shall be done in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)’.

Draft Indian Standard

CORRUGATED FIBREBOARDS — METHODS OF TEST

PART 4 DETERMINATION OF SUBSTANCE OF THE COMPONENTS PAPERS AFTER SEPARATION

(First Revision)

1 SCOPE

1.1 This standard (Part 4) specifies the apparatus and the test procedure for determining the substance of the individual papers from which corrugated fibreboard has been made.

1.2 This method is applicable to all types of corrugated fibreboard.

2 REFERENCES

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

IS No.	*Title*
IS 1060	Methods of sampling and test for paper and allied products:
(Part 1) : 2022	Test methods for general purpose (*first revision*)
(Part 4/ Sec 1) : 2014/ ISO 187 : 1990	Methods of test for paper, board and pulp, Section 1 Standard atmosphere for conditioning and testing and procedure for monitoring the atmosphere and conditioning of samples (*under revision*)
(Part 5/ Sec 5) : 2021/ ISO 536 : 2019	Methods of test for paper and board, Section 5 Determination of grammage (*first revision*)

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 1060 (Part 5/Sec 5) shall apply.

4 PRINCIPLE

Test specimens of corrugated fibreboard are treated so that the individual components can be separated. The component papers are then dried and conditioned, and subsequently used for the determination of their substance in accordance with IS 1060 (Part 1).

5 APPARATUS

5.1 Tank — of suitable size for immersion of the corrugated fiberboard test pieces and to contain hot or cold water.

5.2 Drier — similar to the type used for drying photographic prints.

5.3 Cutter — cutting instrument having a circularly guided knife to cut test pieces with an area of 100 cm^2 (diameter 113.0 mm ± 0.5 mm) should preferably be used

5.4 Balance — with sensitivity of 0.01 g or better over the entire measuring range. This will make it possible to determine the substance of the papers from test pieces of 100 cm^2 area to a precision of 1 g.

6 SAMPLING AND PREPARATION OF TEST PIECES

6.1 Sampling

Representative samples for the determination of substance of the component papers shall be drawn as described in IS 1060 (Part 1).

6.1.1 Individual specimens of sufficient size to provide the test pieces shall be cut from the samples drawn. The surfaces of the corrugated fibreboard shall be free from any damage that may affect the test results. The specimens should preferably be taken from non-printed and non-coated fibreboard.

6.2 Preparation of Test Pieces

Cut test pieces each of not less than 100 cm^2 area using a cutting device as described in **5.3**. The cut edges shall be clean and perpendicular to the faces of corrugated fibreboard.

7 CONDITIONING

7.1 Test specimens shall be conditioned as prescribed in IS 1060 (Part 4/Sec 1).

8 PROCEDURE

8.1 Separation of Component Papers

Immerse the test pieces in water long enough to cause the component sheets of papers to separate spontaneously or with an extremely light pull. Care shall be taken in separating the papers that no fibres are removed from a surface and adhere to the adjoining one. To accelerate the process and to separate corrugated fibreboard whose glue bond is more or less moisture resistant, hot water may be used.

8.2 Removal of Adhesive

Adhesive showing on the surface of the paper which has not been absorbed by the paper may be removed while wet by lightly scraping the surface.

8.3 Fluting Medium

After cleaning flatten the flute paper by stretching the paper while it is in moist form and recut it to give an area of 100 cm^2

8.4 Drying of the Separated Papers

Dry the individual papers at a temperature not exceeding 105 °C and condition them in accordance with IS 1060 (Part 4/Sec1).

8.5 Determination of Substance

Unless otherwise agreed between the interested parties, the substance of the component papers of five test pieces of corrugated fibreboard shall be determined in accordance with IS 1060 (Part 5/Sec 5)

8.5.1 Each component paper of each test piece shall be weighed individually to the nearest 0.01 g. The weighing shall be carried out in the conditioning atmosphere (*see* **8.4**).

9 TEST RESULTS

9.1 For each determination, calculate and express the substance in grams per square metre (gsm) to the nearest whole number (weighing to 0.01 g). Calculate the mean of the results.

9.1.1 For each paper composing the corrugated fibreboard the arithmetic mean of the results given by each test piece constitutes the substance of the lot.

10 TEST REPORT

10.1 Test report shall include the following particulars:

a) Date and place of testing;

b) Description and identification of the corrugated fibreboard tested;

c) Description and identification of the individual papers;

d) Number of test pieces;

e) Results of the individual tests in grams per square metre (gsm) represented from outer to inner layer;

f) Arithmetic mean of the individual tests;

g) Details of any deviation from this Indian Standard; and

h) Any other information which may be useful for the interpretation of the test results.