CORRUGATED BOX MANUFACTURERS' PRACTICAL STANDARDS

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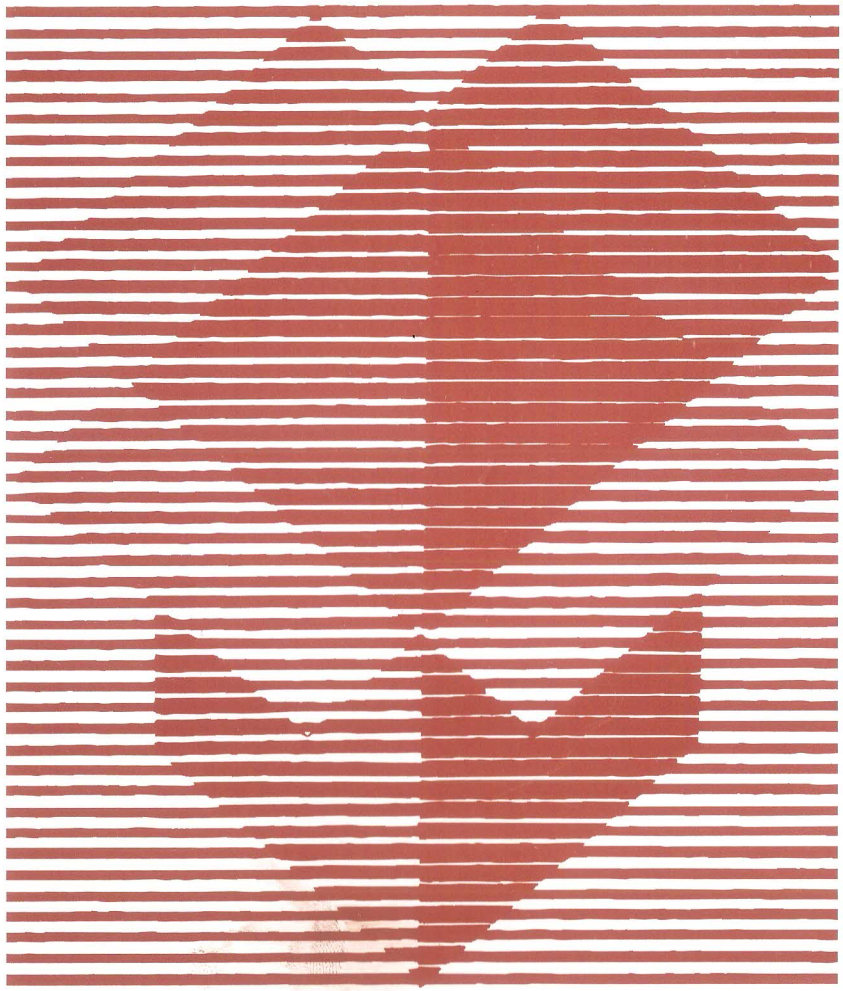
Standard Test Method for Water Absorption (COBB Method)



FEDERATION OF CORRUGATED BOX MANUFACTURERS OF INDIA

FOREWORD

The R & D Committee of FCBM has been actively engaged in publishing Practical Standards and Technical Information Booklets. Over 40 such publications have been brought out, till date.

These booklets have received appreciation from our members, users of corrugated boxes and our vendors of paper, machinery, adhesives, etc.

Such standards help in understanding the technical terms, specifications and test methods. A useful step towards quality assurance of corrugated boxes.

This booklet was first published in 1992. Effort made by the then R&D Committee and the FCBM President Shri AL. Annamalai is gratefully acknowledged.

The fact that some of these booklets have gone into second and third print underlines the importance and popularity of these booklets.

As many of our new members have not received these booklets, we have decided to reprint the books which are out of stock.

We are also making efforts to digitize all the booklets and prepare CD's for those who desire to have soft copies of these publications.

I am sure members will appreciate this new initiative of our R & D Committee and derive benefit from these publications.

Anil Kumar Reddy
President, FCBM

15 November, 2009

FCBM STANDARD

STANDARD TEST METHOD FOR WATER ABSORPTION (COBB METHOD)

1. SCOPE

This test is applicable to paper, paperboards and corrugated fibreboards.

2. DEFINITION

The water absorption ability (Cobb Value) is the quantity of water in grams absorbed by a surface of one square metre of test specimen, on one side only in a specified time, under a specified head of water.

3. PRINCIPLE

This test method measures the amount of water absorbed by a test specimen when free water is applied to its surface. Conditioned test specimen is weighed before and after it has been in contact with water under specified conditions.

4. APPARATUS & MATERIALS

4.1 The apparatus consists of a cylinder of 100 square cm - internal cross section area (Diameter = 112.8 mm), 50 mm height, and a flat base plate. The base plate is covered by a rubber mat and the base of the cylinder is provided with a soft non-absorbent rubber ring with the same internal cross section area. Means are provided to tightly clamp the cylinder to the base plate with the test specimen between the rubber mat and the rubber ring to form an effective seal.

4.2 A precision balance is required to weigh the specimen before and after exposure to water. The balance shall be sensitive to 0.01 gram.

4.3 A stop watch.

4.4 A stainless steel or smooth finished roller of dimension 15cm width, 9cm diameter and 7.5kg weight

4.5 Soft blotting papers.

4.6 Distilled or Demineralised Water.

5. TEST SPECIMENS

Sufficient representative samples of minimum dimension 125 mm x 125 mm should be made available to carry out at least 3 tests. Test specimens must be free from converting machine marks, damage or other wrinkles.

6. CONDITIONING

6.1 Standard Atmospheric Conditions.

A relative humidity of 65 ± 2% and temperature of 27 ± 2°C will be taken as the standard atmospheric condition for the purpose of testing.

6.2 Conditioning

A suitable room or chamber is required for conditioning samples. Specific temperature and Rh, as specified in 6.1 above, should be uniformly maintained throughout the chamber. Samples should preferably be suspended so that the conditioning atmosphere has free access to all its surfaces. The samples will be deemed to be conditioned when the results of two weighings, at an interval of not less than one hour, do not differ by more than 0.25 percent of the total weight.

After the samples are so conditioned, they shall be touched and/or handled as little as possible and tested immediately.

7. PROCEDURE

7.1 Calibrate the precision balance.

7.2 Weigh each test specimen to the nearest 0.01 grams.

7.3 Place a dry rubber mat on the metal plate and lay a weighed test specimen on it. Wipe the metal ring completely dry and place it on the specimen. Clamp the specimen firmly so that water does not leak during the test.

7.4 For paper and paperboards 1 minute test is recommended and for Corrugated Fibreboards 30 minutes test is recommended. However other time periods may be used for specific applications.

7.5.a For Paper and Paperboards

Pour 100 ml. of water having temperature of 27° ± 2°C into the ring as quickly as possible. This will form a water column height of 10 mm. Start the stop watch immediately. After 45 seconds, pour off the water, taking care not to drop any water on the outside portion of the sample. Unclamp and remove the sample quickly. At the end of exactly 60 seconds remove surplus water from the sample by placing a blotting paper on top of the sample. Stainless steel roller is passed once forward and backward.

For tests lasting more than 60 seconds, pour off the water 15 seconds prior to the end of the test time.

7.5.b For Corrugated Fibreboards

Pour 250 ml. of water having temperature of 27° ± 2°C into the ring as quickly as possible. This will form a water column height of 25 mm. Start the stop watch immediately. After 29 minutes and 45 seconds, pour off the water, taking care not to drop any water on the outside portion of the sample. Unclamp and remove the sample quickly.

At the end of exactly 30 minutes, remove surplus water from the sample by placing a blotting paper on top of the sample. Stainless steel roller is passed once forward and backward.

7.6 Weigh the test sample again to the nearest 0.01 grams.

7.7 Subtract the weight at 7.2 from the weight at 7.6 and multiply by 100. This will give the gain in weight (Cobb Value) in grams per square metres.

8. TOLERANCE

Results of the tests made on different samples from the same shipment or results of the tests made on different instruments are expected to agree within ± 10%.

9. REPORT

The water absorption rate (Cobb Value) shall be expressed in grams per square metres.

The report shall include:

9.1 Date of testing.

9.2 Description & identification of material tested.

9.3 Time Period.

9.4 Number of readings taken.

9.5 Arithmetic mean of the readings. Maximum and minimum values.

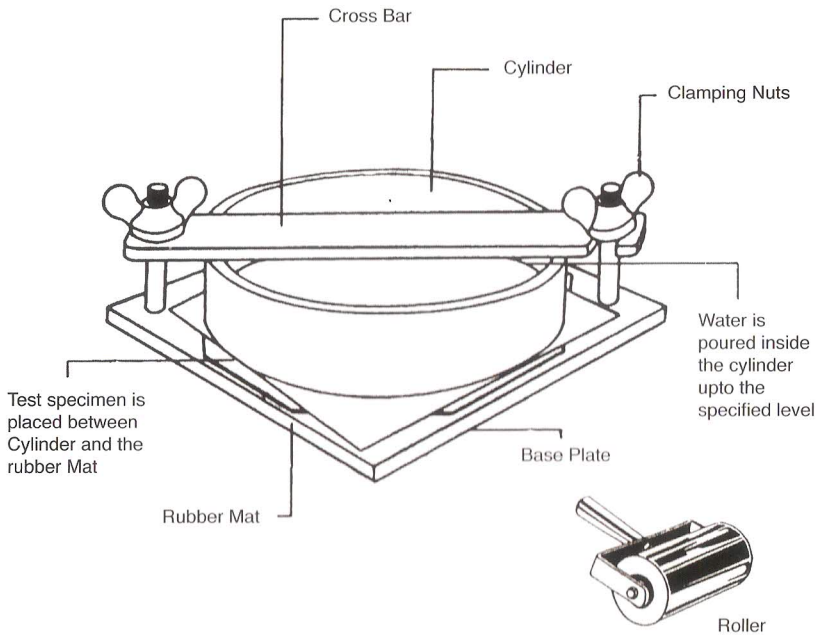
9.6 Details of any deviation from the test method.

10. LIMITATIONS

Operating practices could influence results. If the readings are within 10% of each other, the tests may be considered as accurate.

WATER ABSORPTION APPARATUS

(Schematic Diagram)



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