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SPECIFICATION FOR APPARATUS FOR MEASUREMENT OF WATER RETENTIVITY OF MASONRY CEMENT

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Indian Standard

SPECIFICATION FOR APPARATUS FOR MEASUREMENT OF WATER RETENTIVITY OF MASONRY CEMENT

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 23 February 1984, after the draft finalized by the Cement and Concrete Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 The Indian Standards Institution has formulated a series of standards on different types of cement and methods of tests of cement. As it was recognized that reliable or reproducible test results could be obtained only by using standard types of testing equipment which would give the desired level of accuracy, the Sectional Committee proposed to bring out a series of specifications covering the requirements of testing equipment to encourage the development and manufacture of standard testing equipment for cement testing in the country.

0.3 Accordingly, this standard has been prepared to cover requirements of apparatus for measurement of water retentivity of masonry cement. The relevant method of test is covered in IS:4031-1968*.

0.4 In addition to the apparatus described in this standard, the following are also required for conducting the test for measuring water retentivity of masonry cement:

a) Planetary mixer conforming to IS:10890-1984†.

b) Flow table and accessories conforming to IS:5512-1983‡.

c) Tamping bar (*see* **9.3.5** of IS:4031-1968*).

*Methods of physical tests for hydraulic cement.

†Specification for planetary mixer used in tests of cement and pozzolana.

‡Specification for flow table for use in tests of hydraulic cements and pozzolanic materials (*first revision*).

0.5 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:2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers the requirements of apparatus used for measurement of water retentivity of masonry cement.

2. MATERIALS

2.1 The materials of construction of different components of the apparatus shall be as given in Table 1.

TABLE 1 MATERIALS OF CONSTRUCTION OF DIFFERENT COMPONENTS

Sl No.	Component	Material
(1)	(2)	(3)
i)	Perforated dish	Brass (plated) or any other material not attacked by masonry mortar
ii)	Funnel	Brass (plated) or any other material not attacked by masonry mortar
iii)	Flask	Glass
iv)	Filter paper	Of a grade equivalent to Carl Schleicher & Schuell filter paper No. 576 or Whatman No. 50

3. CONSTRUCTION

3.1 Apparatus for the Water Retention Test — The assembly of the apparatus is shown in Fig. 1. The apparatus consists of a water aspirator or other source of vacuum controlled by a mercury column relief and connected by way of a three-way stopcock to a funnel upon which rests a perforated dish. The perforated dish shall be made of metal not attacked

*Rules for rounding off numerical values (*revised*).

by masonry mortar. The metal in the base of the dish shall have a thickness of 1·7 to 1·9 mm and shall conform with the outline shown in Fig. 1. The bore of the stopcock shall have a 4 mm diameter, and the connecting glass tubing shall have a minimum inside diameter of 4 mm. A mercury manometer indicates the vacuum. A synthetic rubber gasket shall be permanently sealed to the top of the funnel and shall be lightly coated with petrolatum or light cup grease during a test to ensure a seal between the funnel and dish. Care shall be taken to ensure that none of the holes in the perforated dish are clogged from the grease used on the rubber gasket. Hardened filter paper of a grade equivalent to Carl Schleicher & Schuell filter paper No. 576 or to Whatman No. 50 filter paper shall be used. It shall be of such diameter that it will lie flat and completely cover the bottom of the dish.

3.2 Straightedge — Steel straightedge should not be less than 200 mm long, and not less than 1·5 mm nor more than 3 mm in thickness.

4. MARKING

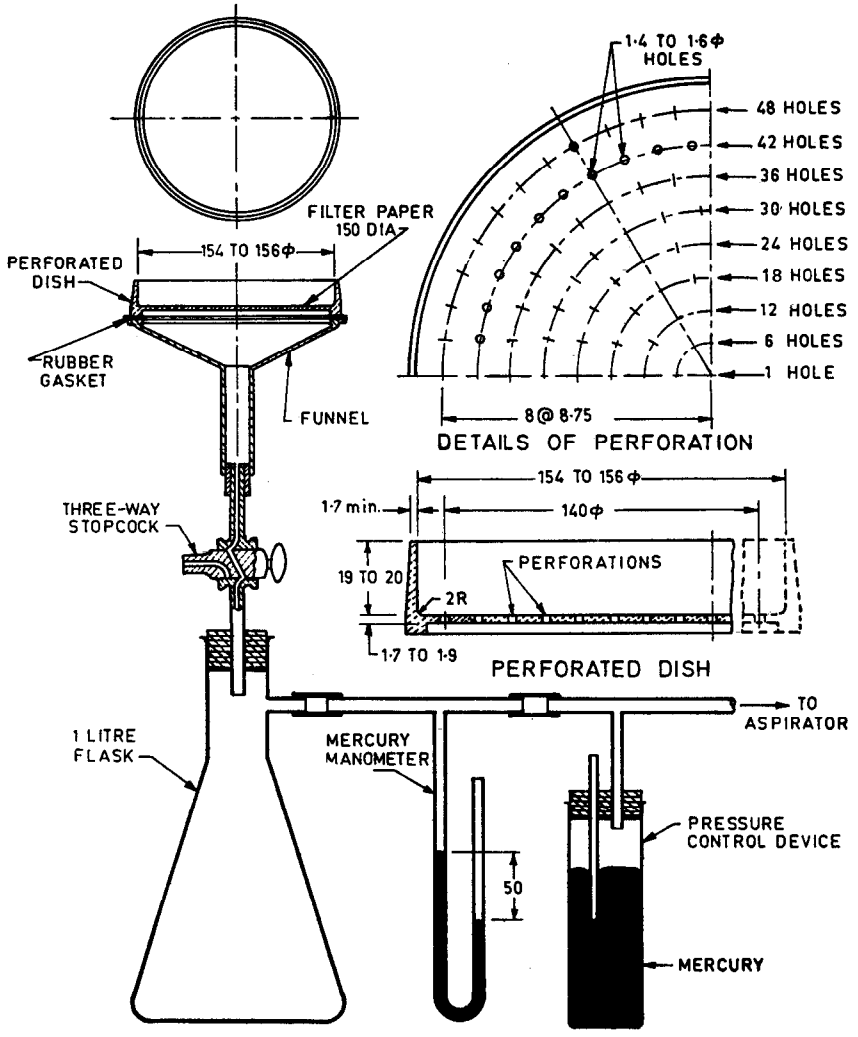
4.1 The following information shall be clearly and indelibly marked on each component of the apparatus as far as practicable in way that it does not interfere with the performance of the apparatus:

a) Name of the manufacturer or his registered trade-mark or both, and

b) Date of manufacture.

4.1.1 The apparatus may also be marked with the ISI Certification Mark:

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.



All dimensions in millimetres.

FIG. 1 APPARATUS ASSEMBLY FOR WATER RETENTION TEST

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INDIAN STANDARDS

ON

INSTRUMENTS FOR TESTING CEMENT AND CONCRETE

IS:

5512-1983 Flow table for use in tests of hydraulic cement and pozzolanic materials (*first revision*)

5513-1976 Vicat apparatus (*first revision*)

5514-1969 Apparatus used in Le-Chatelier's test

5515-1983 Compaction factor apparatus (*first revision*)

5516-1969 Variable flow type air permeability apparatus (Blaine type)

5536-1969 Constant flow type air-permeability apparatus (Lee and Nurse type)

7320-1974 Concrete slump test apparatus

7325-1974 Apparatus for determination constituents of fresh concrete

9376-1979 Apparatus for measuring aggregate crushing value and ten percent fines value

9377-1979 Apparatus for aggregate impact value

9399-1979 Apparatus for flexural testing of concrete

9459-1980 Apparatus for use in measurement of length change of hardened cement paste, mortar and concrete

9799-1981 Pressure meter for determination of air content in freshly mixed concrete

10070-1982 Machine for abrasion testing of coarse aggregate

10078-1982 Jolting apparatus for testing cement

10079-1982 Cylindrical metal measures for use in tests of aggregates and concrete

10080-1982 Vibration machine

10086-1982 Moulds for use in tests of cement and concrete

10510-1983 Vee-bee consistometer