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# *Indian Standard*

# SPECIFICATION FOR APPARATUS FOR AGGREGATE IMPACT VALUE

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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# *Indian Standard*

# SPECIFICATION FOR APPARATUS FOR AGGREGATE IMPACT VALUE

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# *Indian Standard*

# SPECIFICATION FOR APPARATUS FOR AGGREGATE IMPACT VALUE

## 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 20 December 1979, 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 already published a series of standards on methods of testing cement and concrete. It has been recognized that reliable and intercomparable test results could be obtained only with standard testing equipment capable of giving the desired level of accuracy. The Sectional Committee has therefore proposed to bring out a series of specifications covering the requirements of equipment used for testing cement and concrete, to encourage their development and manufacture in the country.

**0.3** This standard specifies the requirements for the apparatus used for determining the aggregate impact value of coarse aggregate. The aggregate impact value gives a relative measure of the resistance of an aggregate to sudden shock or impact, which in some aggregates differs from its resistance to a slow compressive load. The method of determining aggregate impact value has been covered in IS : 2386 ( Part IV )-1963*.

**0.4** In the formulation of this standard, due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country.

**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.

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*Methods of test for aggregates for concrete: Part IV Mechanical properties.

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

## 1. SCOPE

**1.1** This standard covers the requirements of apparatus for determining the impact value of coarse aggregates.

## 2. APPARATUS

**2.1** The apparatus shall consist of an impact testing machine and other accessories ( *see* **3** and **4** ).

## 3. IMPACT TESTING MACHINE

**3.1** The general form and salient dimensions of machine shall be as described in Fig. 1 and **3.2** to **3.2.2**.

NOTE — A stroke counter of suitable design may be provided to automatically record the number of blows.

**3.2** The total mass of the machine shall be between 45 to 60 kg. The machine shall have a cast iron base weighing between 20 to 30 kg with a plane lower surface of not less than 300 mm diameter, and supported on a plane concrete block of 600 × 600 × 450 mm size. The machine shall be prevented from rocking by securing it firmly and evenly to the foundation. Three 10 mm diameter holes shall be provided in the base plate for this purpose. Alternatively the machine may be supported on a plane metal plate cast into the foundation.

**3.2.1** *Steel Cup* — A cylindrical mild steel cup of the following internal dimensions shall be provided at the centre of the base of the machine in a manner such that it can be easily and rigidly fastened to and removed from the base:

| | |
|---|---|
| Diameter | $100 \begin{smallmatrix} +0{\cdot}25 \\ -0 \end{smallmatrix}$ mm |
| Depth | $50 \pm 0{\cdot}25$ mm |
| Thickness | $7 \pm 1$ mm |

A chamfer of 2 to 3 mm shall be provided at the inner lip of the steel cup. The inner surface of the cup shall be case hardened and shall have a hardness of not less than 650 VH or equivalent.

**3.2.2** *Steel Hammer* — A steel tup or hammer, the lower end of which shall be cylindrical in shape with 2 to 3 mm chamfer at the lower edge. The hammer shall slide freely between the vertical steel guides so arranged that cylindrical lower end of the hammer is above and concentric with steel cup. Arrangement shall be provided for lifting the hammer and allowing it to fall freely between the vertical guides for a height of $380 \pm 5$ mm on the test sample in the cup. It shall be possible to adjust height of fall within 5 mm. Arrangement shall also be provided for locking the hammer while fastening or removing the cup.

The release mechanism for hammer shall be quick release type giving reproducible height of drop between successive drops within ± 0·5 mm. The mass of the hammer and other dimensions shall be as below:

| | |
|---|---|
| Mass of hammer | 13·75 ± 0·25 kg |
| Diameter of cylindrical lower end of hammer | $98 \begin{smallmatrix} +0 \\ -1 \end{smallmatrix}$ mm |
| Length of the cylindrical lower end | 50 ± 1 mm |
| Diameter of shank of hammer | 75 ± 1 mm |

The lower surface of the hammer shall be case hardened and shall have a hardness not less than 650 VH or equivalent.

## 4. ACCESSORIES

**4.1 Cylindrical Measures** — A cylindrical steel measure tared to the nearest gram, of sufficient rigidity to retain its form under rough usage, and of the following dimensions:

| | |
|---|---|
| Diameter | 75 ± 1 mm |
| Depth | 50 ± 1 mm |
| Shell thickness, *Min* | 5 mm |

**4.2 Tamping Rod** — A straight steel tamping rod of 10 mm diameter, 230 mm long and rounded at one end.

## 5. MARKING

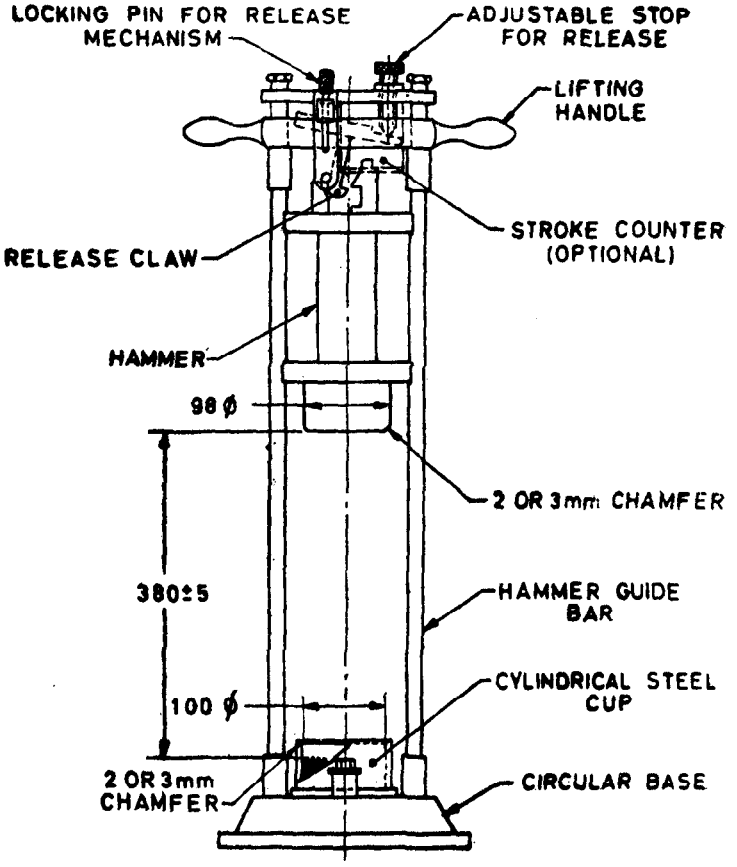
**5.1** The following information shall be clearly and indelibly marked on each component of the apparatus in a way that it does not interfere with the performance of the apparatus:

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

b) Date of manufacture.

**5.1.1** 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 AGGREGATE IMPACT TEST MACHINE

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