भारतीय मानक ब्यूरो
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय, भारत सरकार)
BUREAU OF INDIAN STANDARDS
(Ministry of Consumer Affairs, Food & Public Distribution, Govt. of India

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प्रारंभिक मसौदा

हमारा संदर्भ : सीईडी 06/टी 45 **10 जून 2025**

तकनीकी समिति : पत्थर विषय समिति, सीईडी - 06

प्राप्तकर्ता :

क) सिविल इंजीनियरी विभाग परिषद्, सीईडीसी के सभी सदस्य
ख) सीईडी 06 के सभी सदस्य
ग) रूचि रखने वाले अन्य निकाय

प्रिय महोदय/महोदया,

निम्नलिखित भारतीय मानक का मसौदा संलग्न हैं:

प्रलेख संख्या	शीर्षक
सीईडी 06 (27715)WC	**इंजीनियर्ड पत्थरों — परीक्षण की बिधियां का भारतीय मानक कार्यकारी मसौदा भाग 1 संपीड़न शक्ति का निर्धारण** ICS 91.100.99, 91.100.15

कृपया इस मानक के मसौदे का अवलोकन करें और अपनी सम्मतियॉ यह बताते हुए भेजे कि यदि यह मानक के रूप में प्रकाशित हो तो इस पर अमल करने में आपके व्यवसाय अथवा कारोबार में क्या कठिनाइयाँ आ सकती हैं।

सम्मतियाँ भेजने की अंतिम तिथि: 09/08/2025

टिप्पणियाँ, यदि कोई हों, बीआईएस ई-गवर्नेंस पोर्टल https://www.services.bis.gov.in/php/BIS_2.0/dgdashboard/draft/darftdetail/63/3/CED के माध्यम से ऑनलाइन भेजी जा सकती हैं।

वैकल्पिक रूप से, टिप्पणियाँ संलग्न प्रारूप में भी दर्ज की जा सकती हैं और ced06@bis.gov.in या divya.s@bis.gov.in पर ईमेल की जा सकती हैं।

आपको अपनी टिप्पणियाँ प्रस्तुत करने के लिए लॉगिन करना पड़ सकता है, कृपया लॉगिन बनाएं।

यदि कोई सम्मति प्राप्त नही होती है अथवा सम्मति में केवल भाषा सम्बन्धी त्रुटि हुई तो उपरोक्त प्रलेख को यथावत अंतिम रूप दिया जाएगा। यदि सम्मित तकनीकी प्रकृति की हुई विषय समिति के अध्यक्ष के परामर्श से अथवा उनकी इच्छा पर आगे की कार्यवाही के लिए विषय समिति को भेजे जाने के बाद प्रलेख को अंतिम रूप दे दिया जाएगा ।

यह प्रलेख भारतीय मानक ब्यूरो की वैबसाइट www.bis.gov.in पर भी उपलब्ध हैं।
धन्यवाद।

भवदीय
ह/-
(**दिव्या एस.**)
सदस्य सचिव सीईडी 06
वैज्ञानिक 'डी'(सिविल इंजीनियरिंग)
ई-मेल: **divya.s@bis.gov.in**

संलग्न: उपरलिखित

भारतीय मानक ब्यूरो
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय, भारत सरकार)
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PRELIMINARY DRAFT

Our Reference: CED 06/T-45 **10 June 2025**
Technical Committee: Stone Sectional Committee, CED 06
Addressed To:

a) All Members of Civil Engineering Division Council, CEDC
b) All Members of CED 06
c) All others interests

Dear Sir/Madam,

Please find enclosed the following document:

Doc No.	*Title*
CED 06 (27715) WC	**Indian Standard on Engineered Stones — Method of Tests Part 1 Determination of Compressive Strength** ICS 91.100.99, 91.100.15

Kindly examine the draft standard and forward your views stating any difficulties which you are likely to experience in your business or profession, if this is finally adopted as National Standard.

Last Date for comments: 09 August 2025

Comments if any, may be sent online through the BIS e-governance portal at https://www.services.bis.gov.in/php/BIS_2.0/dgdashboard/draft/darftdetail/63/3/CED .

Alternatively, comments may also be recorded in the enclosed format and emailed at ced06@bis.gov.in or at divya.s@bis.gov.in.

You may be required to login to submit your comments, kindly create a login.

In case no comments are received or comments received are of editorial nature, you will kindly permit us to presume your approval for the above document as finalized. However, in case of comments of technical in nature are received then it may be finalized either in consultation with the Chairman, Sectional Committee or referred to the Sectional Committee for further necessary action if so desired by the Chairman, Sectional Committee.

The document is also hosted on BIS website www.bis.gov.in.

Thanking you,

Sd/-
(**Divya S.**)
Member Secretary CED 06
Scientist 'D' (Civil Engineering)
E-mail: **divya.s@bis.gov.in**

Encl: As above

FORMAT FOR SENDING COMMENTS ON THE DOCUMENT

[Please use A4 size sheet of paper only and type within fields indicated. Comments on each clause/sub-clause/ table/figure, etc, be stated on a fresh row. Information/comments should include reasons for comments, technical references and suggestions for modified wordings of the clause. **Comments through https://www.services.bis.gov.in/php/BIS_2.0/WCDraft/comment_pdraft.php shall be appreciated**.]

Doc. No.: CED 06(27715)WC **BIS Letter Ref**: CED 06/T-45

Title: Engineered Stones — Method of Tests Part 1 Determination of Compressive Strength

Last date of comments: **09 August 2025**

Name of the Commentator/ Organization: _____

Clause/ Para/ Table/ Figure No. commented	Comments/Modified Wordings	Justification of Proposed Change

NOTE- Kindly insert more rows as necessary for each clause/table, etc

BUREAU OF INDIAN STANDARDS

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Draft Indian Standard

ENGINEERED STONES–METHOD OF TESTS PART 1 DETERMINATION OF COMPRESSIVE STRENGTH

ICS 91.100.99, 91.100.15

Stones Sectional Committee, CED 06 Last date of comments **09 August 2025**

FORWARD

Formal clause will be added later.

Engineered stones are increasingly utilized in construction and decorative applications. To ensure their performance and suitability, it is necessary to ascertain their mechanical properties. This standard has been formulated to provide a standardized method for determining the compressive strength of engineered stones, specifically addressing materials with a thickness not less than 45 mm.

This Part 1 covers the determination of compressive strength. The standard outlines key aspects of the test procedure, including the principle of the test, requirements for sampling and test specimens (including dimensions and tolerances), specimen conditioning (drying to constant mass and cooling), necessary apparatus, the detailed test procedure (including measurement of specimens and application of load at a constant stress rate), and the evaluation and reporting of test results.

In the preparation of this standard, significant assistance has been derived from BS EN 14617-15:2005 ‘Agglomerated stone — Test methods — Part 15: Determination of compressive strength’.

This standard contributes to the United Nations Sustainable Development Goal 11 ‘Sustainable cities and communities’ towards strengthening the efforts to protect and safeguard the world’s cultural and natural heritage.

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 measurement shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (second revision)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Draft Indian Standard

ENGINEERED STONES — METHOD OF TESTS
PART 1 DETERMINATION OF COMPRESSIVE STRENGTH

(*Proposed New Standard*)

1 SCOPE

This standard specifies a method for determining the compressive strength of engineered stones having thickness not less than 45 mm.

2 PRINCIPLES

The specimens, after mechanical preparation of the surfaces are laid and centred on the plate of a testing machine. Load on specimen shall be applied continuously at a constant stress rate of 1 ± 0.5 MPa until failure occurs.

3 SAMPLING

3.1 The sampling is done either from manufacturing unit or from the working site by owner or his consultant/engineer and send to laboratory. In such case testing laboratory is not responsible for the sampling.

3.2 At least six specimens are to be tested.

4 TEST SPECIMENS AND CONDITIONING

4.1 Test specimens shall be cubes with 70 ± 2 mm or 50 ± 2 mm edge or right circular cylinders whose diameter and height are equal to 70 ± 2 mm or 50 ± 2 mm.

4.2 The faces through which the load is to be applied shall be flat to a tolerance of 0.05 mm and shall not depart from perpendicular to the axis of the specimen by more than 0.001 radian or 1 mm in 1000 mm. The sides of the specimen shall be smooth and free of abrupt irregularities and straight to within 0.3 mm over the full length of the specimen. The ends shall be parallel to each other within 0.002 D when D is the sample diameter in case or cylindrical specimen or length in case of cubical specimen.

4.3 To meet the above requirements the specimens shall be finished on either a lathe or surface grinder, with final preparation on a lapping machine if needed.

4.4 Specimens shall be dried at 65 ± 5 °C to constant mass, that is, the difference between two successive weighing carried out 24 ± 2 h apart shall be no greater than 0.1 percent of the mass of the specimen. The sample shall be cooled to 27 ± 2º C, and tested within 24 hours.

5 APPARATUS

5.1 Surface grinder.

5.2 Lapping machine, if final preparation of the specimens is needed.

5.3 Test machine of appropriated force and provided with a system for controlling the strain rate.

5.4 Ventilated oven which can maintain a temperature of 70 ± 1 °C.

5.5 Weighing instrument with an accuracy of 0.1 g.

5.6 Linear measuring device with an accuracy of 0.01 mm.

6 PROCEDURE

6.1 The cross-sectional dimensions of the test specimen (lateral dimension for cubic, diameter for cylindrical test specimens) shall be measured to the nearest 0.1 mm by averaging two measures taken at right angles to each other at about the upper-height and two about the lower-height h of the specimen. The average lateral dimension $\overline{l}$ or the average diameter $\overline{d}$ shall be used for calculating the cross-sectional area. The height of the specimen shall be determined to the nearest 0.1 mm.

6.2 Wipe the bearing surfaces of the testing machine clean and remove any loose grit from the bed faces of the specimen. Align the specimen carefully with the centre of the ball-seated platen, so that a uniform seating is obtained. Do not use any packing material.

6.3 Load on the specimen shall be applied continuously at a constant stress rate of 0.5 to 1.0 MPa/s. The failure load on the specimen shall be measured to the nearest 1kN and recorded.

7 EVALUATION AND REPORT OF TEST RESULTS

The uniaxial compressive strength UCS of each specimen is expressed by the ratio of the failure load of the specimen and its cross-sectional area before testing, by the equation:

$$\text{UCS} = \frac{F}{A}$$

Where,

UCS = uniaxial compressive strength of the test specimen, in MPa,

F = maximum load supported by the test specimen before failure occurs, in N,

A = area of the bearing face of the specimen, in mm^2

7.1 The result shall be expressed in MPa with at least three significant figures.

7.2 The individual and average of the five valid test results shall be taken for purposes of reporting the compressive strength of the sample. The test results shall be considered valid when the individual value has a variation within ± 15 percent of the average test result. Additional samples shall be tested to replace the invalid test result. However, all the results (valid and invalid) shall be reported.

7.3 Failure pattern shall also be recorded.