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

**व्यापक परिचालन मसौदा**

**हमारा संदर्भः सीईडी 04/टी-56** **04 दिसंबर 2024**

**तकनीकी समिति**: इमारती चूना और जिप्सम उत्पाद विषय समिति, सीईडी 04

**प्राप्तकर्ता** :

क) सिविल इंजीनियरी विभाग परिषद्, सीईडीसी के सभी सदस्य
ख) सीईडी 04 के सभी सदस्य
ग) रूचि रखने वाले अन्य निकाय

प्रिय महोदय/महोदया,

निम्नलिखित भारतीय मानक का मसौदा संलग्न हैं:

| प्रलेख संख्या | शीर्षक |
|---|---|
| **सीईडी 04 (27019)WC** | **बिल्डिंग लाइम्स के लिए परीक्षण के तरीके भाग 11 हाइड्रेटेड लाइम के सेटिंग समय का निर्धारण का भारतीय मानक मसौदा** [IS 6932 (भाग 11) का *पहला पुनरीक्षण*] ICS 91.100.10 |

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 : **04 जनवरी 2025**

सम्मति यदि कोई हो तो कृपया अधोहस्ताक्षरी को उपरिलिखित पते पर संलग्न फोर्मेट में भेजें या manoj@bis.gov.in पर ईमेल कर दें ।

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,

**( द्वैपायन भद्र )**
**प्रमुख (सिविल इंजीनियरी)**

संलग्नक : उपरिलिखित

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

**DRAFT IN WIDE CIRCULATION**

**Our Ref: CED 04/T-56** **04 December 2024**

**TECHNICAL COMMITTEE:** Building Limes and Gypsum Products Sectional Committee CED 04

**ADDRESSED TO:**

a) All Members of Civil Engineering Division Council, CEDC
b) All Members of CED 04
c) All others interests.

Dear Sir/Madam,

Please find enclosed the following document:

| Doc No. | Title |
|---|---|
| **CED 04 (27019)WC** | **Draft Indian Standard**<br>**Methods of Tests for Building Limes**<br>**Part 11 Determination of Setting Time of hydrated Lime**<br>[ *First Revision* of IS 6932 (Part 11) ] ICS 91.100.10 |

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: **04 January 2025**

Comments if any, may please be made in the attached format and mailed to the undersigned at the above address or preferably through e-mail to manoj@bis.gov.in.

In case no comments are received or comment received are of editorial nature, you may 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,

Yours faithfully,

( **Dwaipayan Bhadra** )
**Head (Civil Engineering)**

Encl: As above

**FORMAT FOR SENDING COMMENTS ON BIS DOCUMENTS**

(Please use A-4 size sheet of paper only and type within fields indicated. Comments on each clause/sub-clause/table/fig etc. be started on a fresh box. Information in column 3 should include reasons for the comments and suggestions for modified working of the clauses when the existing text is found not acceptable. Adherence to this format facilitates Secretariat's work) {Please e-mail your comments to manoj@bis.gov.in

**Doc. No.:** **CED 04 (27019)WC**

**Title:** **Draft Indian Standard Methods of Tests for Building Limes**
**Part 11 Determination of Setting Time of Hydrated Lime**
[ *First Revision* of IS 6932 (Part 11) ] ICS 91.100.10

LAST DATE OF COMMENT: **04/01/2025**

*NAME OF THE COMMENTATOR/ORGANIZATION*: _____

| Sl. No. | Clause/Para/Table/ Figure No. Commented | Comments/Modified Wordings | Justification of the Proposed Change |
|---|---|---|---|
| | | | |

**BUREAU OF INDIAN STANDARDS**

**DRAFT FOR COMMENTS ONLY**



*Draft Indian Standard*

# METHODS OF TESTS FOR BUILDING LIMES PART 11 DETERMINATION OF SETTING TIME OF HYDRATED LIME

[ *First Revision* of IS 6932 (Part 11) ]
ICS 91.100.10

| | |
|---|---|
| Building Lime and Gypsum Products Sectional Committee, CED 04 | Last date of Comments: **04 January 2025** |

FOREWORD

(*Formal clauses will be added later*)

The role of building limes in construction has been recognized and valued for centuries, from the ancient structures to modern structures. The use of lime as building materials is not only a testament to its versatility and durability but also to its sustainability and environmental benefits. As we continue to seek eco-friendly alternatives in construction, the relevance of lime-based products has become increasingly significant.

Building lime is used in construction for a variety of purposes such as lime washing, lime mortar, lime Plastering, lime Concrete, Rendering and Pointing, soil Stabilization, Restoration of Historic Buildings, Waterproofing and Decoration. Each of these forms of lime serves specific purposes in construction, from creating strong, durable mortar joints to providing breathable, flexible finishes that protect and preserve structures.

A number of Indian Standards on lime building materials covering specifications, code of practices, etc. have been prepared with a view to assisting the lime industry in its development. In line with that, methods of test for building lime, IS 6932 was prepared in eleven parts in the year 1973. In this revision it was decided to review and update the various existing test methods of building lime, taking into consideration the latest international practices and developments in this field and the current practices in the country. In this revision all the amendments are incorporated and reference of all Indian standards has been updated. Ambiguity in the procedure or reporting has been also removed.

This standard (Part 11) covers, the methods of test for Standard methods of tests for building limes for Determination of setting time of hydrated lime. The others standards in the series are:

Part 1 Determination of insoluble residue in dilute acid and alkali, loss on ignition, insoluble residue in hydrochloric acid, silicon dioxide, ferric and aluminium oxide, calcium oxide and magnesium oxide
Part 2 Determination of carbon dioxide content
Part 3 Determination of residue on slaking of quicklime
Part 4 Determination of fineness of hydrated lime
Part 5 Determination of unhydrated oxide
Part 6 Determination of volume yield of quicklime

Part 7 Determination of compressive and transverse strengths
Part 8 Determination of workability
Part 9 Determination of soundness
Part 10 Determination of popping and pitting of hydrated lime

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 : 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*

# METHODS OF TESTS FOR BUILDING LIMES PART 11 DETERMINATION OF SETTING TIME OF HYDRATED LIME

*( First Revision )*

## 1 SCOPE

This standard (Part 11) covers the method of test for determination of setting time of hydrated lime.

## 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 revision and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standard indicated below:

| *IS No.* | *Title* |
|---|---|
| IS 460 (Part 1) : 2020 | Test sieves — Specification: Part 1 Wire cloth test sieves (*fourth revision*) |
| IS 1070 : 2023 | Reagent grade water – Specification (*fourth revision*) |
| IS 5513 : 1996 | Vicat apparatus — Specification (*second revision*) |
| IS 6932 (Part 8) : 1973 | Method of test for building limes: Part 8 Determination of workability |

## 3 APPARATUS

**3.1** The Vicat apparatus conforming to IS 5513 shall be used.

### 3.2 Stop Watch

**3.3 Balance –** Analytical balance with a least count of 0.01 g.

### 3.4 Trowel or Spatula

### 3.5 Non-Porous Plate

## 4 Preparation of Test Sample

### 4.1 General

**4.1.1** Sampling shall be carried out as quickly as possible so that the material does not deteriorate. The total time occupied in mixing and preparation of the sample for the test should not exceed two hours. The samples shall be placed immediately in clean, dry, airtight containers. When testing is not to be carried out at once, the samples shall be kept in the airtight containers. Tools such as Shovel, auger, metal or plastic containers shall be of material free from rust and shall be alkali resistant.

**4.1.2** If the sample contains lumps, crush the lime using a mortar and pestle or mechanical grinder to achieve a fine powder. Sieving is used to achieve a uniform particle size for accurate test results. Pass the dried and pulverized lime through a 2.36 mm sieve [*see* IS 460 (Part 1)]. This is a standard procedure for many tests, although specific tests may require different sieve sizes (for example, 300-

micron sieve). Use a precision balance to weigh the required quantity of lime for each pat. The amount of lime needed will vary depending on the test being conducted. Typically, chemical tests may require 0.5 g to 5.0 g of sieved lime and physical test require 100 g to 5 000 g. Use distilled (*see* IS 1070) or deionized water to avoid contamination. Follow the specific water-to-lime ratio as required by the test method. The mixing can be done manually using a spatula or mechanically using a mixer. Ensure that the mixture is homogeneous and free of lumps. For some tests, a paste-like consistency may be required.

**4.2** The sample shall be in the form of putty and shall be prepared in accordance with IS 6932 (Part 8).

**4.3** Fill the vicat mould with this paste, the mould resting upon a non-porous plate. After completely filling the mould, smooth off the surface of the paste, making it level with the top of the mould. The mould shall be slightly shaken to expel the entrapped air.

**4.4** Clean appliances shall be used for gauging and the temperature of lime, water and that of the test room at the time when above operations are performed shall be 27 °C ± 2 °C and in an atmosphere of at least 90 percent relative humidity and away from draughts.

## 5 PROCEDURE

### 5.1 Determination of Initial Setting Time

Place the test block prepared in accordance with **4.2** and **4.3** under the rod bearing the needle$(C)$ of diameter 1.13 mm $\pm$ 0.05 mm. For detail of the needle $(C)$, refer IS 5513. Lower the needle gently in contact with the surface of the test block and quickly release, allowing it to penetrate into the test block. In the beginning, the needle will completely pierce the test block. Repeat this procedure until the needle, when brought in contact with the test block and released as described above, fails to pierce the block by 5 mm $\pm$ 0.5 mm measured from the bottom of the mould. The period elapsing between the time when water is added to the lime and the time at which the needle fails to pierce the test block by 5 mm $\pm$ 0.5 mm shall be the initial setting time.

### 5.2 Determination of Final Setting Time

Replace the needle $(C)$ of the vicat apparatus by the needle with an annular attachment $(F)$. For detail of the annular attachment $(F)$, refer IS 5513. The lime shall be considered as finally set when, upon applying the needle gently to the surface of test block, the needle makes an impression on the surface of test block while the attachment fails to do so shall be the final setting time. In the event of a scum forming on the surface of the test block, use the underside of the block for the determination.