भारतीय मानक ब्यूरो
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय, भारत सरकार)
BUREAU OF INDIAN STANDARDS
मानक भवन, 9, बहादुर शाह ज़फर मार्ग, नई दिल्ली – 110002
Manak Bhawan, 9, Bahadur Shah Zafar Marg, New Delhi – 110002
Phones: 23230131 / 2323375 / 23239402

व्यापक परिचालन मसौदा

हमारा संदर्भ : सीईडी 02:1/टी-11 **22 जुलाई 2024**

तकनीकी समिति : सीमेंट और कंक्रीट अनुभागीय समिति , सीईडी 02

प्राप्तकर्ता :

1. **सिविल अभियांत्रिकी विभाग परिषद, सीईडीसी के सभी सदस्य**
2. **सीमेंट और कंक्रीट अनुभागीय समिति , सीईडी 02**
3. **सीईडी 02 की उपसमितियों और अन्य कार्यदल के सभी सदस्य**
4. **रुचि रखने वाले अन्य निकाय।**

महोदय/महोदया,

निम्नलिखित मानक का मसौदा संलग्न है:

प्रलेख संख्या	शीर्षक
सीईडी 02(26194)WC	**चिनाई के लिए सीमेंट — विशिष्टि का भारतीय मानक मसौदा** (IS 3466 का तीसरा पुनरीक्षण) (आई सी एस संख्या : 91.100.30)

कृपया इस मसौदे का अवलोकन करें और अपनी सम्मतियाँ यह बताते हुए भेजे कि यह मसौदा प्रकाशित हो तो इन पर अमल करने में आपको व्यवसाय अथवा कारोबार में क्या कठिनाइयां आ सकती हैं।

सम्मतियाँ भेजने की अंतिम तिथि: 20 सितम्बर 2024

सम्मति यदि कोई हो तो कृपया अधोहस्ताक्षरी को ई-मेल द्वारा ced2@bis.gov.in पर या उपरलिखित पते पर, संलग्न फोर्मेट में भेजें। सम्मतियाँ बीआईएस ई-गवर्नेंस पोर्टल, www.manakonline.in के माध्यम से ऑनलाइन भी भेजी जा सकती हैं।

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

यह प्रालेख भारतीय मानक ब्यूरो की वेबसाइट www.bis.gov.in पर भी उपलब्ध हैं।

धन्यवाद।

भवदीय
ह-/
द्वैपायन भद्र
वैज्ञानिक ई एवं प्रमुख
सिविल अभियांत्रिकी विभाग

संलग्न: उपरलिखित

भारतीय मानक ब्यूरो
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय, भारत सरकार)
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Phones: 23230131 / 2323375 / 23239402

WIDE CIRCULATION DRAFT

Our Reference: CED 02:1/T-11 **22 July 2024**

TECHNICAL COMMITTEE: CEMENT AND CONCRETE SECTIONAL COMMITTEE, CED 02

ADDRESSED TO:

1. All Members of Civil Engineering Division Council, CEDC
2. All Members of Cement and Concrete Sectional Committee, CED 02 and its Subcommittees
3. All Members of Subcommittees, Panels and Working Groups under CED 02
4. All others interested.

Dear Sir/Madam,

Please find enclosed the following draft:

Doc No.	Title
CED 02(26194)WC	**Draft Indian Standard Masonry cement — Specification** (Third Revision of IS 3466) ICS 91.100.30

Kindly examine the attached draft 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: 20 September 2024

Comments if any, may please be made in the enclosed format and emailed at ced2@bis.gov.in or sent at the above address. Additionally, comments may be sent online through the BIS e-governance portal, www.manakonline.in.

In case no comments are received or comments received are of editorial nature, kindly permit us to presume your approval for the above document as finalized. However, in case comments, 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,
Sd/-
Dwaipayan Bhadra
Scientist 'E' & Head
Civil Engineering Department

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 e-mail to **ced2@bis.gov.in** shall be appreciated.]

Doc. No.: CED 02(____)WC

BIS Letter Ref: CED 02:1/T-11

Title: Draft Indian Standard Masonry Cement — Specification (Third Revision of IS 3466)
ICS No. 91.100.30

Last date of comments: 20 September 2024

Name of the Commentator/ Organization: _____

Sl No.	Clause/ Para/ Table/ Figure No. commented	Type of Comment (General/ Technical/ Editorial)	Comments/ Modified Wordings	Justification of Proposed Change

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

BUREAU OF INDIAN STANDARDS

DRAFT STANDARD FOR COMMENTS ONLY

(Not to be reproduced without the permission of BIS or used as an Indian Standard)

Draft Indian Standard

Masonry Cement — Specification

(*Third Revision of IS 3466*)

Cement and Concrete Sectional Committee, CED 02	**Last Date for Comments: 20 September 2024**

Foreword

(*Formal clauses of the standard to be added later*)

Masonry cement is obtained by intimately grinding a mixture of Portland cement clinker and gypsum with pozzolanic or inert materials, and air entraining plasticizer in suitable proportions, generally to a fineness greater than that of ordinary Portland cement. Masonry cement is chiefly intended for use in masonry mortars for brick, stone and concrete block masonry, and for rendering and plastering work. Because of its property of producing a smooth, plastic, cohesive and strong, yet workable, mortar when mixed with fine aggregates, masonry cement is considered superior to lime mortar, lime-cement mortar or cement mortar. Lime mortars are relatively weaker in strength and slower setting and sometimes bleed under pressure. Ordinary cement mortars, although fast setting and capable of high strength development, are harsh, non-plastic and non-cohesive with the result that they cannot take up the shrinkage and temperature movements in the masonry and are liable to result in comparatively wide cracks passing right through the bricks or building blocks as compared to a number of evenly distributed hair cracks in the joints which occur when weaker mortars containing lime are used. Properly proportioned and gauged lime-cement mortars can be made to possess the desired properties of a good masonry mortar but the preparation of lime-cement mortars is time consuming and also unslaked lime and magnesia, when present in such mortars, can cause delayed expansion and consequently defects in the masonry and plaster work. In order to avoid the necessity for mixing cement and lime, and in order to minimize the risk of trouble from expansion due to the presence of small quantities of unslaked lime, the use of masonry cement is quite popular in a number of countries abroad and its use should be encouraged in this country also. The use of masonry cement will not only improve the quality of masonry mortars but will also meet the emergent need to increase the production of cement by better utilization of available resources in the country.

Masonry cement is however, not intended for use in structural concrete for flooring and foundation work or for reinforced and prestressed concrete works.

This standard was first published as an emergency standard in 1966 to meet the immediate needs of the building industry and subsequently revised in 1967 and thereafter in 1988 in which requirements regarding air content and water retention had been lowered, retest had been allowed in case of Le-Chatelier and autoclave soundness test, and a clause on false set of cement had been incorporated in addition to some other minor modifications.

This standard pertains to masonry cement and covers the requirements such as its manufacture, physical requirements, staining, packing and marking.

Since the last revision of this standard, a number of amendments were issued from time to time in order to modify various requirements based on experience gained with the use of this specification and the requirements of the users. These amendments have been incorporated in this revision so as to make it more convenient for the users. Further, requirement of testing the cement samples at the earliest but not later than 3 months since the receipt of samples for testing, requirement of marking the 'Best before date' of cement and provision for rejection of cement samples have been included.

Quantity of cement packed in bags and the tolerance requirement for the quantity of cement packed in bags shall be in accordance with the relevant provisions of the *Standards of Weight and Measures (Packaged Commodities) rule,* 2011 and **B-1** (*see* Annex B). Any modification in these rules in respect of tolerance on mass of cement would apply automatically to this standard.

This standard contains **9.3** and **9.4** which call for agreement between purchaser and supplier.

This standard contributes to the United Nations Sustainable Development Goal 9: 'Industry, innovation and infrastructure', particularly its target to develop quality, reliable, sustainable and resilient infrastructure, and also promote inclusive and sustainable industrialization.

The composition of the Committee responsible for the formulation of this standard is given in Annex C.

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 he 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.

BUREAU OF INDIAN STANDARDS

DRAFT STANDARD FOR COMMENTS ONLY

(Not to be reproduced without the permission of BIS or used as an Indian Standard)

Draft Indian Standard

Masonry Cement — Specification

(*Third Revision of IS 3466*)

1 SCOPE

This standard lays down the requirements for masonry cement to be used for all general purpose where mortars for masonry are required.

2 REFERENCES

The standards given in Annex A 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 agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated in Annex A.

3 TERMINOLOGY

For the purpose of this standard, the following definitions shall apply.

3.1 Masonry Cement — Product obtained either by intimately intergrinding a mixture of Portland cement clinker with pozzolanic materials, such as flyash and calcined clay pozzolana; and/or non-pozzolanic (inert) materials, such as limestone, conglomerates, dolomitic limestone, dolomite, granulated slag; and waste materials like carbonated sludge, mine tailings; and gypsum (chemical or natural) and an air-entraining plasticizer, if required, in suitable proportions; or by intimately and uniformly blending ordinary Portland cement and finely ground materials mentioned above, so that the resulting product conforms to the requirements laid down in the standard.

3.2 Portland Cement Clinker — It shall conform to IS 16353.

4 PHYSICAL REQUIREMENTS

4.1 Masonry cement, when tested in accordance with the methods of test specified in IS 4031, shall conform to the physical requirements given in Table 1.

4.1.1 If cement exhibits false set, the ratio of final penetration measured after 5 minutes of completion of mixing period to the initial penetration measured exactly after 20 seconds of completion of mixing period, expressed as percent, shall be less than 50. In the event of cement exhibiting false set, the initial and final setting time of cement when tested by

the method described in IS 4031 after breaking the false set, shall conform to the requirements given in Table 1.

4.1.2 In the event of cements failing to comply with any one or both the requirements of soundness specified in Table 1, further tests in respect of each failure shall be made as described in IS 4031 from another portion of the same sample after aeration. The aeration shall be done by spreading out the sample to a depth of 75 mm at a relative humidity of 50 percent to 80 percent for a total period of 7 days. The expansion of cements so aerated shall not be more than 5 mm and 0.6 percent, when tested by Le-Chatelier method and autoclave test respectively.

5 STAINING

This requirement shall apply only when a purchaser specifically states that cement shall be non-staining to limestone. Non-staining cement shall contain not more than 0.03 percent of water soluble alkali when determined in accordance with the method given in IS 4032.

NOTE — The amount and nature of the staining material in limestones seems to vary with the stone. The alkali in any cement may, therefore, induce markedly different staining on different stones, even though it may have come apparently from the same source. The amount of water soluble alkali permitted by the specification should not cause stain unless stone high in staining material is used, or unless insufficient means have been used to prevent infiltration of water into the masonry.

6 STORAGE

The cement shall be stored in such a manner as to permit easy access for proper inspection and identification, and in a suitable weathertight building to protect the cement from dampness and to minimize warehouse deterioration (*see also* IS 4082).

7 MANUFACTURER'S CERTIFICATE

The manufacturer shall satisfy himself that the cement conforms to the requirements of this standard, and if requested, shall furnish a certificate to this effect to the purchaser or his representative, within ten days of testing of the cement (except for 25 days compressive strength test results, which shall be furnished after completion of the test).

Table 1 Physical Requirements

(*Clauses* 4.1, 4.1.1 *and* 4.1.2)

Sl No.	**Characteristics**	**Requirement**
(1)	(2)	(3)
i)	Fineness: Residue on 45 micron IS Sieve, *Max,* percent (by wet sieving)	15
ii)	Setting Time:	
	a) Initial, min, *Min*	90
	b) Final, min, *Max*	1440
iii)	Soundness:	
	a) By Le-Chatelier method, mm, *Max*	10
	b) By Autoclave test method, percent, *Max*	1
iv)	Compressive Strength: Average compressive strength of not less than 3 mortar cubes of 50 mm size, composed of 1 part masonry cement and 3 parts standard sand* by volume, MPa, *Min*	
	7 days	2.5
	28 days	5
v)	Air content: Air content of mortar composed of 1 part masonry cement and 3 parts standard sand by volume, percent, *Min*	6
vi)	Water Retention : Flow after suction of mortar composed of 1 part masonry cement and 3 parts standard sand by volume, percent of original flow, *Min*	60

*Standard sand shall conform to IS 650 ‘Specification for standard sand for testing of cement (*first revision*)’.

8 BASIS OF PURCHASE

The purchaser shall specify whether nonstaining masonry cement as specified in **5** is desired. When this is not specified, the requirements for ordinary masonry cement shall govern.

9 PACKING

9.1 The cement shall be packed in any of the following bags:

a) Multi-wall paper sacks conforming to IS 11761,
b) HDPE/PP woven sacks conforming to IS 11652,
c) Jute synthetic union bags conforming to IS 12174, or
d) Any other approved composite bag.

Bags shall be in good condition at the time of inspection.

9.2 The net quantity of cement per bag shall be 50 kg subject to provisions and tolerance given in Annex B.

9.3 The net quantity of cement per bag may also be 25 kg subject to tolerances as given in **9.3.1** and packed in suitable bags as agreed to between the purchaser and the manufacturer.

9.3.1 The number of bags in a sample take for weighment showing a minus error greater than 2 percent of the specified net quantity shall be not more than 5 percent of the bags in the sample. Also the minus error in none of such bags in the sample shall exceed 4 percent of the specified net quantity of cement in the bag. However, the net quantity of cement in a sample shall be equal to or more than 25 kg.

9.4 Supplies of cement in bulk may be made by agreement between the purchaser and the supplier (manufacturer or stockist).

NOTE — A single bag or container containing 1 000 kg or more net quantity of cement shall be considered a bulk supply of cement. Supplies of cement may also be made in intermediate containers for example, drums 200 kg, by agreement between the purchaser and the manufacturer.

10 MARKING

10.1 Each bag or drum of cement shall be legibly and indelibly marked with the following:

a) Manufacturer's name and his registered trade-mark, if any;
b) The words 'MASONRY CEMENT';
c) Net quantity, in kg;
d) The words 'USE NO HOOKS' on the bags;
e) Batch/control unit number in terms of week, month and year of packing;
f) Best before date (that is, 3 months from date of packing);
g) The need for testing of cement more than 3 months old to check conformity before its use;
h) Address of the manufacturer; and
j) The words 'Not for structured concrete, footing and foundation'.

10.2 Similar information shall be provided in the delivery advices accompanying the shipment of packed or bulk cement and on cement drums (*see* **9.4**).

10.3 BIS Certification Marking

10.3.1 The cement may also be marked with the Standard Mark.

10.3.2 The use of the Standard Mark is governed by the provisions of *the Bureau of Indian Standards Act,* 2016 and the Rules and Regulations made thereunder. The details of

conditions under which a license for the use of the Standard Mark may be granted to manufacturers or purchasers may be obtained from the Bureau of Indian Standards.

11 SAMPLING

11.1 A sample or samples for testing may be taken by the purchaser or his representative, or by any person appointed to superintend the work for the purpose of which the cement it required or by the latter's representative.

11.1.1 The samples shall be taken within three weeks of the delivery and all the tests shall be made within four weeks of delivery.

11.1.2 When it is not possible to test the samples within four weeks of delivery, the sample shall be packed and stored in air-tight container till such time as they are tested.

11.2 In addition to the requirements of **11.1**, the methods and procedure of sampling shall be in accordance with IS 3535.

11.3 The manufacturer or the supplier shall afford every facility and shall provide all labour and materials for taking and packing the samples for testing the cement and for subsequent identification of the cement sampled.

12 TESTS

12.1 The sample or samples of cement for test shall be taken as described in **11** and shall be tested in the manner described in the relevant clauses.

12.2 The temperature range within which physical tests may be carried out should, as far as possible, be 27 °C ± 2 °C.

12.3 Any cement which does not comply with any of the tests specified above, or which has not been stored in the manner provided under **6** may be rejected as not complying with this standard.

12.4 Independent Testing

12.4.1 If the purchaser or his representative requires independent tests, the samples shall be taken before or immediately after delivery at the option of the purchaser or his representative, and the tests shall be carried out in accordance with this standard on the written instructions of the purchaser or his representative.

12.4.2 After a representative sample has been drawn, tests on the sample shall be carried out as expeditiously as possible (*see* **11.1.1** and **11.1.2**).

13 REJECTION

13.1 Cement may be rejected, if it does not comply with any of the requirements of this specification.

13.2 Cement remaining in bulk storage at the factory, prior to shipment, for more than six months, or cement in bags, in local storage such as in the hands of a vendor for more than 3 months after completion of tests, shall be retested before use and shall be rejected, if it fails to conform to any of the requirements of this specification.

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
IS 269 : 2015	Ordinary portland cement — Specification (*sixth revision*)
IS 650 : 1991	Standard sand for testing cement — Specification (*second revision*)
IS 3535 : 1986	Methods of sampling hydraulic cement (*first revision*)
IS 4031	Methods of physical tests for hydraulic cement:
Part 1 : 1996	Determination of fineness by dry sieving (*second revision)*
Part 2 : 1999	Determination of fineness by blaine air permeability method (*second revision)*
Part 3 : 1988	Determination of soundness (*first revision*)
Part 4 : 1988	Determination of consistency of standard cement paste (*first revision*)
Part 5 : 1988	Determination of initial and final setting times (*first revision*)
Part 6 : 1988	Determination of compressive strength of hydraulic cement other than masonry cement (*first revision*)
Part 7 : 1988	Determination of compressive strength of masonry cement (*first revision*)
Part 8 : 1988	Determination of transverse and compressive strength of plastic mortar using prism (*first revision*)
Part 9 : 1988	Determination of heat of hydration (*first revision*)
Part 10 : 1988	Determination of drying shrinkage (*first revision*)
Part 11 : 1988	Determination of density (*first revision*)
Part 12 : 1988	Determination of air content of hydraulic cement mortar (*first revision*)
Part 13 : 1988	Measurement of water retentivity of masonry cement (*first revision*)
Part 14 : 1989	Hydraulic cement — determination of false set
Part 15 : 1991	Determination of fineness by wet sieving
IS 4032:1985	Method of chemical analysis of hydraulic cement (*first revision*)

IS 4082	Stacking and storage of construction materials and components at site — Recommendations (*second revision*)
IS 4905 : 2015	Random sampling and randomization procedures (*first revision*)
IS 11652 : 2017	Textiles — High density polyethylene (HDPE)/Polypropylene (PP) woven sacks for packaging of 50 kg cement — Specification (*third revision*)
IS 11761 : 1997	Multi-Wall paper sacks for cement - Specification (*first revision*)
IS 12174 : 1987	Specification for jute synthetic union bags for packing cement
IS 16353 : 2015	Portland cement clinker — Specification

Annex B

(*Foreword and Clause* 9.2)

TOLERANCE REQUIREMENTS FOR THE QUANTITY OF CEMENT PACKED IN BAGS

B-1 The net quantity of cement packed in bags at the plant in a sample shall be equal to or more than 50 kg. The number of bags in a sample shall be as given below:

Batch size	*Sample Size*
100 to 150	20
151 to 280	32
281 to 500	50
501 to 1 200	80
1 201 to 3 200	125
3 201 to over	200

The bags in a sample shall be selected at random (*see* IS 4905).

B-1.1 The number of bags in a sample showing a minus error greater than 2 percent of the specified net quantity (50 kg) shall be not more than 5 percent of the bags in the sample and the minus error in none of such bags in the sample shall exceed 4 percent of the specified net quantity of cement in the bag.

NOTE — The matter given in **B-1** and **B-1.1** are extracts based on the *Standards of weights and measures (Packaged Commodities), rule,* 2011 to which reference shall be made for full details. Any modification made in these Rules and other related Acts and Rules would apply automatically.

B-1.2 In case of a wagon/truck load up to 25 tonnes, the overall tolerance on net quantity of cement shall be 0 to +0.5 percent.

ANNEX C

(Committee composition will be added after finalization)

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