भारतीय मानक ब्यूरो
(उपभोक्ता मामले, खाद्य एवं सार्वजनिक वितरण मंत्रालय, भारत सरकार)
BUREAU OF INDIAN STANDARDS

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व्यापक परिचालन मसौदा

हमारा संदर्भ : सीईडी 02:1/टी-18 **04 सितम्बर 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(26502)WC	**जल विरोधी पोर्टलैंड सीमेंट —विशिष्टि** (IS 8043 तीसरा पुनरीक्षण) का भारतीय मानक मसौदा आई सी एस संख्या : 01.040.91

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: 31 अक्टूबर 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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WIDE CIRCULATION DRAFT

Our Reference: CED 02:1/T-18 **04 September 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
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(26502)WC	**Draft Indian Standard Hydrophobic Portland Cement — Specification** *(Third Revision of* IS 8043*)* ICS 01.040.91

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: 31 October 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(26502)WC

BIS Letter Ref: CED 02:1/T-18

Title: Draft Indian Standard Hydrophobic Portland Cement — Specification *(Third Revision of* IS 8043*)* ICS No. 01.040.91

Last date of comments: 31 October 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

Hydrophobic Portland Cement — Specification

(Third Revision of IS 8043*)*

Cement and Concrete Sectional Committee, CED 02	**Last Date for Comments: 31 October 2024**

Foreword

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

Hydrophobic cement deteriorates very little during prolonged storage under unfavourable conditions. This cement is obtained by intergrinding 33 grade ordinary Portland cement clinker with certain hydrophobic agents which will impart a water repelling property to the cement. The hydrophobic properties are due to the formation of a water repellent film around each particle of cement. This film is broken during the mixing of the concrete and normal hydration takes place. Hydrophobic cement shall not be confused with waterproofing cements. A test on hydrophobicity is also included in this standard.

This standard was first issued as an emergency standard in 1976 and subsequently revised in 1978. Since publication of the second revision of this standard, amendments have been issued from time to time in order to modify various requirements based on the requirements of the users and also keeping in view the raw materials and fuel available in the country for manufacture of cement. 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 have been included. In addition, packing and marking requirements have been rationalized.

Quantity of cement packed in bags and the tolerance requirements for the quantity of cement packed in bags shall be in accordance with the relevant provisions of *the Standards of Weights and Measures (Packaged Commodities) Rules* 2011 and **C-1.2** (*see* Annex C). Any modification in these rules in respect of tolerance on quantity of cement would apply automatically to this standard.

This standard contains **6.4, 9.2, 9.2.2, 9.2.2.3** and **9.3** 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 D.

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

Hydrophobic Portland Cement — Specification

(Third Revision of IS 8043)

Cement and Concrete Sectional Committee, CED 02	**Last Date for Comments: 31 October 2024**

1 SCOPE

This standard covers the manufacture, chemical and physical requirements of hydrophobic Portland cement.

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

3.1 For the purpose of this standard, the definitions given in IS 4845 and the following shall apply.

3.1.1 *Hydrophobic Cement* — Cement obtained by grinding 33 grade ordinary Portland cement clinker with an additive which will impart to ground cement, a water repelling property which shall be destroyed only by wet attrition, such as in concrete mixer. The hydrophobic quality of cement would facilitate its storage for longer periods in extremely wet climatic conditions.

4 MANUFACTURE

4.1 Hydrophobic cement shall be manufactured by intimately mixing together calcareous and argillaceous and/or other silica, alumina or iron oxide bearing materials burning them at clinkering temperature and grinding the resultant clinker with natural or chemical gypsum and small quantities (0.1 percent to 0.5 percent by mass of clinker) of a hydrophobic agent.

NOTE — Some of the hydrophobic agents used in the manufacture of hydrophobic cement are oleic acid, naphthenic acid, stearic acid, pentachlorophenol, etc.

5 CHEMICAL REQUIREMENTS

5.1 The chemical requirements of hydrophobic cement shall be as laid in IS 269.

6 PHYSICAL REQUIREMENTS

6.1 Fineness

When tested for fineness in terms of specific surface by Blaine's air permeability method as described in IS 4031 (Part 2), the specific surface of the hydrophobic cement shall be not less than 350 m^2/kg.

6.2 The physical requirements, such as soundness and setting time shall be as laid down in IS 269.

6.3 Compressive Strength

The average compressive strength of at least three mortar cubes (area of face 50 cm^2) composed of one part of cement, three parts of standard sand (conforming to IS 650) by mass and P/4 + 3.0 percent (of combined mass of cement and sand) water, and prepared, stored and tested in the manner described in IS 4031 (Part 6) shall be as follows:

a) 72 ± 1 hours	Not less than 15.69 MPa
b) 168 ± 2 hours	Not less than 21.57 MPa
c) 672 ± 4 hours	Not less than 30.40 MPa

NOTE — 'P' is percentage of water required to produce a paste of standard consistency.

6.4 By agreement between the purchaser and the manufacturer, transverse strength test of plastic mortar in accordance with the method described in IS 4031 (Part 8) may be specified in addition to the compressive strength test. The permissible value of the transverse strength for hydrophobic Portland cement shall be mutually agreed to between the purchaser and the supplier at the time of placing order.

6.5 Notwithstanding the strength requirements specified in **6.3** and **6.4**, the cement shall show a progressive increase in strength from the strength at 72 hours.

6.6 Hydrophobicity of the cement shall be tested and accepted in accordance with the method described in Annex B.

7 STORAGE, SAMPLING, TESTS AND REJECTION

7.1 Storage, sampling, tests and rejection of hydrophobic cement shall be as laid down in IS 269.

8 MANUFACTURER'S CERTIFICATE

8.1 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 despatch of the cement.

8.2 The manufacturer shall furnish a certificate, within ten days of despatch of cement, indicating, the total chloride content in present by mass of cement.

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 (*see* Annex C).

9.2.1 The net quantity of cement per bag may also be 25 kg subject to tolerances as given in **9.2.1.1** and packed in suitable bags as agreed to between the purchaser and the manufacturer.

9.2.1.1 The number of bags in a sample taken 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.

9.2.2 When cement is intended for export and if the purchaser so requires, packing of cement may be done in bags or in drums with net quantity of cement per bag or drum as agreed to between the purchaser and the manufacturer.

9.2.2.1 For this purpose the permission of the certifying authority shall be obtained in advance for each export order.

9.2.2.2 The words ‘FOR EXPORT’ and the net quantity of cement per bag/drum shall be clearly marked in indelible ink on each bag/drum.

9.2.2.3 The packing material shall be as agreed to between the manufacturer and the purchaser.

9.2.2.4 The tolerance requirements for the quantity of cement packed in bags/drum shall be as given in **9.2.1.1** except the net quantity which shall be equal to or more than the quantity in **9.2.2.**

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

NOTE -- A single bag or container containing 1000 kg or more net quantity of cement shall be considered as bulk supply of cement. Supplies of cement may also be made in intermediate containers, for example. drums of 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 'HYDROPHOBIC 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); and
g) Address of the manufacturer.

10.2 Similar information shall be provided in the delivery advices accompanying the shipment of packed or bulk cement and on cement drums (*see* **9.3**).

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 Standard Mark may be granted to manufacturers or purchasers may be obtained from the Bureau of Indian Standards.

ANNEX A
(*Clause* 2)

UST 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*)
IS 4845 : 1958	Definitions and terminology relating to hydraulic cement
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 12089 : 1987	Specification for granulated slag for the manufacture portland slag cement
IS 12174 : 1987	Specification for jute synthetic union bags for packing cement

ANNEX B
(*Clause* 6.6)

HYDROPHOBICITY TEST

B-1 QUANTITATIVE TEST

B-1.1 Take 5 g each of fresh and free flowing 33 grade ordinary Portland cement and the hydrophobic cement under test and spread each of the samples evenly in a thin layer in 15 cm (dia) petri dish. Expose it to a relative humidity of not less than 99.9 percent at 27°C ± 2°C for 24 hours. Determine the mass loss at 550°C for the two samples. Hydrophobic cement shall not show loss on ignition more than 30 percent of the value for the 33 grade ordinary Portland cement.

B-2 QUALITATIVE TEST (FLOATATION)

B-2.1 Sprinkle a small quantity of hydrophobic cement on water in a container. The cement shall float on the water for a period of not less than 24 hours.

ANNEX C
(*Clause* 9.2)

TOLERANCE REQUIREMENTS FOR THE QUANTITY OF CEMENT PACKED IN BAGS

C-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).

C-1.1 The number of bags in a sample showing a minus error greater than 2 percent or the specified net quantity (50 kg) 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.

NOTE - The matter given in **C-1** and **C-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.

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

ANNEX D
(*Foreword*)

(Committee composition will be added after finalization)

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