

भारतीय मानक
Indian Standard

IS 269 : 2015

साधारण पोर्टलैंड सीमेंट — विशिष्टि

(छठा पुनरीक्षण)

Ordinary Portland Cement — Specification

(Sixth Revision)

ICS 91.100.10

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Price Group 5

Cement and Concrete Sectional Committee, CED 02

FOREWORD

This Indian Standard (Sixth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Cement and Concrete Sectional Committee had been approved by the Civil Engineering Division Council.

This standard was first published in 1951 and subsequently revised in 1958, 1967, 1976, 1989 and 2013. This fifth revision incorporates the experience gained with the use of this specification and brings the standard in line with the latest developments in this field.

This standard pertains to ordinary Portland cement and covers the requirements such as its manufacture, chemical and physical requirements, packing and marking. This standard also prescribes requirements for sleeper grade cement for use in manufacture of concrete sleepers for railways.

In this revision, the Indian Standard specifications pertaining to 43 and 53 grade ordinary Portland cement have been included which were previously covered separately in the Indian Standards, IS 8112 : 2013 'Ordinary Portland Cement, 43 grade — Specification' and IS 12269 : 2013 'Ordinary Portland Cement, 53 grade — Specification', respectively. IS 8112 and IS 12269 shall stand withdrawn subsequently. Further, following are the significant modifications incorporated in this revision:

- a) Use of industrial by-products from copper, steel and zinc industries and from oil refinery as performance improvers has been specified based on the extensive experimental research.
- b) Manufacture of cement by interblending process by intimately and uniformly blending the individually ground materials has been permitted.
- c) Uniform value of insoluble residue of not more than 5 percent has been specified irrespective of the grade of cement.
- d) Provisions for railway sleeper cement have been modified.
- e) Requirement of marking the 'best before date' of cement has been introduced.

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 **B-1**. Any modification in these rules in respect of tolerance on quantity of cement would apply automatically to this standard.

This standard contains Table 2, SI No. (viii) and **13.2.1** which give option to the purchaser and Table 3, SI No. (v) and **10.2, 10.3, 10.4** and **10.4.3**, which call for agreement between the purchaser and the supplier.

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 be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

ORDINARY PORTLAND CEMENT — SPECIFICATION

(*Sixth Revision*)

1 SCOPE

This standard covers the manufacture and chemical and physical requirements of ordinary 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

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

4 CLASSIFICATION

The ordinary Portland cement shall be classified into the following categories and shall have designations as shown against each category:

- | | |
|---|-----------|
| a) Ordinary Portland cement, 33 Grade | : OPC 33 |
| b) Ordinary Portland cement, 43 Grade | : OPC 43 |
| c) Ordinary Portland cement, 53 Grade | : OPC 53 |
| d) Ordinary Portland cement, 43 Sleeper Grade | : OPC 43S |
| e) Ordinary Portland cement, 53 Sleeper Grade | : OPC 53S |

5 MANUFACTURE

5.1 Ordinary Portland cement shall be manufactured by intimately mixing together calcareous and argillaceous and/or other silica, alumina or iron oxide bearing materials, burning them at a clinkering temperature and grinding the resultant clinker so as to produce a cement capable of complying with this standard. No material shall be added after burning, other than gypsum (natural mineral or chemical, *see* Note), water, and not more than a total of 1.0 percent of air-entraining agents or other agents including colouring agents, which have proved not to be harmful.

The performance improver(s) may be added at grinding stage; and their limits of addition shall be governed by the provision under **5.1.1**. All such additions may also be done by interblending process by intimately and uniformly blending the individually ground materials so as to produce a cement capable of complying with this standard.

NOTE — Chemical gypsum shall be added provided that the performance requirements of the final product as specified in this standard are met with.

5.1.1 Limit of addition of performance improver shall be as given in Table 1 and shall be inclusive of 1.0 percent additives as mentioned above.

If a combination of above performance improvers is added, the maximum limit of total addition shall be 5 percent.

6 CHEMICAL REQUIREMENTS

When tested in accordance with the methods given in IS 4032, ordinary Portland cement, shall comply with the chemical requirements given in Table 2.

7 PHYSICAL REQUIREMENTS

Ordinary Portland cement shall comply with the physical requirements given in Table 3.

8 STORAGE

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

9 MANUFACTURER'S CERTIFICATE

9.1 The manufacturer shall satisfy himself that the cement conforms to the requirements of this standard and, if requested, shall furnish a test certificate to this effect to the purchaser or his representative, within ten days of testing of the cement (except for 28 days compressive strength test results, which shall be furnished after completion of the test). The type and percentage addition of performance improver(s) shall also be indicated in the certificate.

9.2 The manufacturer shall furnish a certificate indicating the alkali content, if requested.

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Table 1 Performance Improvers

(Clause 5.1.1)

Sl No. (1)	Performance Improver (2)	Percentage Addition by Mass (3)	Requirement (4)
i)	Fly ash	5	Conforming to IS 3812 (Part 1)
ii)	Granulated slag	5	Conforming to IS 12089
iii)	Silica fume	5	Conforming to IS 15388
iv)	Limestone	5	CaCO ₃ content calculated from CaO content shall not be less than 75 percent when tested in accordance with IS 1760 (Part 3)
v)	Rice husk ash	5	a) Reactive silica shall not be less than 80 percent when tested as per IS 3812 (Part 1) b) Pozzolanic activity index shall not be less than 90 percent when tested as per 10 of IS 1727 c) Loss on ignition shall not be more than 5.0 percent when tested as per IS 1727
vi)	Metakaolin	5	Conforming to IS 16354
vii)	Copper slag	5	a) Proportion of lumps exceeding 50 mm size shall not be more than 5 percent of the mass of slag b) When tested as per IS 4032 the composition of slag shall comply the following chemical requirements: 1) SiO ₂ : 20 percent to 40 percent 2) Fe ₂ O ₃ : 40 percent to 70 percent 3) SO ₃ , Max : 1 percent c) Glass content as determined by the method of optical microscope shall not be less than 25 percent
viii)	Steel slag	5	a) Proportion of lumps exceeding 10 mm size shall not be more than 5 percent of the mass of slag b) When tested as per IS 4032 the composition of slag shall comply the following chemical requirements: 1) CaO : 40 percent to 55 percent 2) SiO ₂ : 10 percent to 20 percent 3) MgO : 1 percent to 5 percent 4) MnO ₂ : 0 percent to 1 percent 5) Al ₂ O ₃ : 0.5 percent to 4 percent 6) Fe (total) : 15 percent to 30 percent 7) P : 0.5 percent to 2 percent c) Glass content as determined by the method of optical microscope shall not be less than 25 percent
ix)	Lead-Zinc slag	5	a) Proportion of lumps exceeding 10 mm size shall not be more than 5 percent of the mass of slag b) When tested as per IS 4032 the composition of slag shall comply the following chemical requirements: 1) ZnO – 5 percent to 15 percent 2) PbO – 0.5 percent to 2 percent 3) Fe ₂ O ₃ – 30 percent to 40 percent 4) SiO ₂ – 15 percent to 25 percent 5) CaO – 10 percent to 20 percent 6) Al ₂ O ₃ – 10 percent to 15 percent 7) MgO – 1 percent to 3 percent c) Glass content as determined by the method of optical microscope shall not be less than 25 percent
x)	Spent fluidized catalytic cracking equilibrium catalyst	5	Conforming to IS 1344

10 PACKING

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

- Jute sacking bag conforming to IS 2580,
- Multi-wall paper sacks conforming to IS 11761,
- Light weight jute conforming to IS 12154,
- HDPE/PP woven sacks conforming to IS 11652,
- Jute synthetic union bags conforming to IS 12174, or
- Any other approved composite bag.

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

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

10.2 The net quantity of cement per bag may also be 25 kg, 10 kg, 5 kg, 2 kg or 1 kg and packed in suitable bags as agreed to between the purchaser and the manufacturer but the bag shall be of the material and quality as given in with **10.1**. The quantity of cement in the bags shall also be subject to tolerances as given in Annex B for 50 kg bags.

Table 2 Chemical Requirements for Ordinary Portland Cement

(Clause 6.1)

Sl No.	Characteristic	Requirement				
		OPC 33 (3)	OPC 43 (4)	OPC 43S (5)	OPC 53 (6)	OPC 53S (7)
(1)	(2)					
i)	Ratio of percentage of lime to percentages of silica, alumina and iron oxide, when calculated by the formula: $\frac{\text{Cao} - 0.7 \text{ SO}_3}{2.8 \text{ SiO}_2 + 1.2 \text{ Al}_2\text{O}_3 + 0.65 \text{ Fe}_2\text{O}_3}$	0.66 – 1.02	0.66 – 1.02	0.80 – 1.02	0.80 – 1.02	0.80 – 1.02
ii)	Ratio of percentage of alumina to that of iron oxide, <i>Min</i>	0.66	0.66	0.66	0.66	0.66
iii)	Insoluble residue, percent by mass, <i>Max</i>	5.0	5.0	2.0	5.0	2.0
iv)	Magnesia, percent by mass, <i>Max</i>	6.0	6.0	5.0	6.0	5.0
v)	Total sulphur content calculated as sulphuric anhydride (SO ₃), percent by mass, <i>Max</i>	3.5	3.5	3.5	3.5	3.5
vi)	Loss on ignition, percent by mass, <i>Max</i>	5.0	5.0	4.0	4.0	4.0
vii)	Chloride content, percent by mass, <i>Max</i>	0.1 0.05 (for prestressed structures)	0.1 0.05 (for prestressed structures)	0.1 0.05 (for prestressed structures)	0.1 0.05 (for prestressed structures)	0.1 0.05 (for prestressed structures)
viii)	Alkali content	(see Note 1)				

NOTES

1 Alkali aggregate reactions have been noticed in aggregates in some parts of the region. On large and important jobs where the concrete is likely to be exposed to humid atmosphere or wetting action, it is advisable that the aggregate be tested for alkali aggregate reaction. In the case of reactive aggregates, the use of cement with alkali content below 0.6 percent expressed as sodium oxide (Na₂O+0.658 K₂O), is recommended. Where, however, such cements are not available, use of alternative means may be resorted to for which a reference may be made to appropriate provisions on durability in the concrete codes. If so desired by the purchaser, the manufacturer shall carry out test for alkali content.

2 Cement used for railway sleepers shall additionally satisfy the following chemical/mineralogical requirements:

- a) Tricalcium aluminate content, percent by mass, *Max* : 10.0
- b) Tricalcium silicate, percent by mass, *Min* : 45.0

The tricalcium aluminate content (C₃A) and tricalcium silicate content (C₃S) are calculated by the formula:

$$C_3A = 2.65 (Al_2O_3) - 1.69 (Fe_2O_3)$$

$$C_3S = 4.07 (CaO) - 7.60 (SiO_2) - 6.72 (Al_2O_3) - 1.43 (Fe_2O_3) - 2.85 (SO_3)$$

where each symbol in brackets refers to the percent (by mass of total cement) of the oxide.

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

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

10.4 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.

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

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

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

10.4.4 The tolerance requirements for the quantity of cement packed in bags/drum shall be as given in **10.2.1** except the net quantity which shall be equal to or more than the quantity in **10.4**.

11 MARKING

11.1 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 name and designation of the ordinary Portland cement as applicable (*see 4*);
- 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) Need for testing of cement more than 3 months old to check conformity before its use.
- h) Address of the manufacturer; and

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Table 3 Physical Requirements for Ordinary Portland Cement
(Clause 7)

Sl No.	Characteristic	Requirement					Method of Test, Ref to
		OPC 33	OPC 43	OPC 43S	OPC 53	OPC 53S	
(1)	(2)	(3)	(3)	(3)	(3)	(3)	(4)
i)	Fineness, m ² /kg, <i>Min</i>	225	225	370	225	370	IS 4031 (Part 2)
ii)	Soundness:						
	a) By Le-Chatelier method, mm, <i>Max</i>	10	10	5	10	5	IS 4031 (Part 3)
	b) By autoclave test method, percent, <i>Max</i>	0.8	0.8	0.8	0.8	0.8	
		<i>see Note 1</i>	<i>see Note 1</i>	<i>see Note 1</i>	<i>see Note 1</i>	<i>see Note 1</i>	
iii)	Setting time:						IS 4031 (Part 5)
	a) Initial, min, <i>Min</i>	30	30	60	30	60	IS 4031 (Part 6)
	b) Final, min, <i>Max</i>	600	600	600	600	600	
		<i>see Note 2</i>	<i>see Note 2</i>	<i>see Note 2</i>	<i>see Note 2</i>	<i>see Note 2</i>	
iv)	Compressive strength, MPa (<i>see Note 4</i>):						
	a) 72 ± 1 h, <i>Min</i>	16	23	23	27	27	IS 4031 (Part 8)
	b) 168 ± 2 h, <i>Min</i>	22	33	37.5	37	37.5	
	c) 672 ± 4 h, <i>Min</i>	33	43	43	53	53	
	<i>Max</i>	48	58	—	—	—	
v)	Transverse strength (optional)	<i>See Notes 3 and 4</i>	<i>See Notes 3 and 4</i>	<i>See Notes 3 and 4</i>	<i>See Notes 3 and 4</i>	<i>See Notes 3 and 4</i>	IS 4031 (Part 8)

NOTES

1 In the event of cements failing to comply with any one or both the requirements of soundness specified in the above table, further tests in respect of each failure shall be made as described in IS 4031 (Part 3), 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 to 80 percent for a total period of 7 days. The expansion of cements so aerated shall be not more than 5 mm and 0.6 percent when tested by Le-Chatelier method and autoclave test respectively. For OPC 43S and OPC 53S, the requirement of soundness of unaerated cement shall be maximum expansion of 5 mm when tested by the Le-Chatelier method.

2 If cement exhibits false set, the ratio of final penetration measured after 5 min of completion of mixing period to the initial penetration measured exactly after 20 s of completion of mixing period, expressed as percent, shall be not 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 (Part 5) after breaking the false set, shall conform to the value given in the above table.

3 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. The permissible values of the transverse strength shall be mutually agreed to between the purchaser and the supplier at the time of placing the order.

4 Notwithstanding the compressive and transverse strength requirements specified as per the above table, the cement shall show a progressive increase in strength from the strength at 72 h.

- j) Type and percentage of performance improver(s) added, in case of addition of performance improvers.

the purchaser or his representative, or by any person appointed to superintend the work for the purpose of which the cement is required or by the latter's representative.

11.2 Similar information shall be provided in the delivery advices accompanying the shipment of packed or bulk cement and on cement drums (*see 10.3*).

11.3 BIS Certification Marking

The cement may also be marked with the Standard Mark.

11.3.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 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 producers may be obtained from the Bureau of Indian Standards.

12 SAMPLING

12.1 A sample or samples for testing may be taken by

12.1.1 The samples shall be taken within three weeks of the delivery and all the tests shall be commenced within one week of sampling.

12.1.2 When it is not possible to test the samples within one week, the samples shall be packed and stored in air-tight containers and tested at the earliest but not later than 3 months since the receipt of samples for testing.

12.2 In addition to the requirements of **12.1**, the methods and procedure of sampling shall be in accordance with IS 3535.

12.3 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 cement sampled.

13 TESTS

13.1 The sample or samples of cement for test shall be taken as described in **12** and shall be tested in the manner described in the relevant clauses.

13.2 Independent Testing

13.2.1 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.

13.2.2 The manufacturer/supplier shall supply, free of charge, the cement required for testing. Unless otherwise specified in the enquiry and order, the cost of the tests shall be borne as follows:

- a) By the manufacturer/supplier, if the results show that the cement does not comply with

the requirements of this standard, and

- b) By the purchaser, if the results show that the cement complies with the requirement of this standard.

13.2.3 After a representative sample has been drawn, tests on the sample shall be carried out as expeditiously as possible (*see 12.1.1 and 12.1.2*).

14 REJECTION

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

14.2 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 No.	Title
1344 : 1981	Specification for calcined clay pozzolana (<i>second revision</i>)		strength of hydraulic cement (other than masonry cement) (<i>first revision</i>)
1727 : 1967	Methods of test for pozzolanic materials (<i>first revision</i>)	(Part 8) : 1988	Determination of transverse and compressive strength of plastic mortar using prism (<i>first revision</i>)
1760	Methods of chemical analysis of limestone, dolomite and allied materials: Part 3 Determination of iron oxide, alumina, calcium oxide and magnesia (<i>first revision</i>)	4032 : 1985	Methods of chemical analysis of hydraulic cement (<i>first revision</i>)
(Part 3) : 1992		4082 : 1996	Recommendations on stacking and storage of construction materials and components at site (<i>second revision</i>)
2580 : 1995	Textiles — Jute sacking bags for packing cement — Specification (<i>third revision</i>)	4845 : 1968	Definitions and terminology relating to hydraulic cement
3535 : 1986	Methods of sampling hydraulic cements (<i>first revision</i>)	4905 : 1968	Methods for random sampling
3812	Specification for pulverized fuel ash: Part 1 For use as pozzolana in cement, cement mortar and concrete (<i>third revision</i>)	11652 : 2000	Specification for high density polyethylene (HDPE)/polypropylene (PP) woven sacks for packing cement (<i>second revision</i>)
(Part 1) : 2013		11761 : 1997	Specification for multi-wall paper sacks for cement (<i>first revision</i>)
4031	Methods of physical tests for hydraulic cement	12089 : 1987	Specification for granulated slag for manufacture of Portland slag cement
(Part 2) : 1999	Determination of fineness by specific surface by Blaine airpermeability method (<i>second revision</i>)	12154 : 1987	Light weight jute bags for packing cement
(Part 3) : 1988	Determination of soundness (<i>first revision</i>)	12174 : 1987	Jute synthetic union bags for packing cement
(Part 5) : 1988	Determination of initial and final setting times (<i>first revision</i>)	15388 : 2003	Specification for silica fume
(Part 6) : 1988	Determination of compressive	16354 : 2015	Specification for metakaolin

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ANNEX B

(Foreword and Clause 10.1.1)

TOLERANCE REQUIREMENTS FOR THE QUANTITY OF CEMENT PACKED IN BAGS

B-1 The average of 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:

<i>Batch Size</i>	<i>Sample Size</i>
100 - 150	20
151 - 280	32
281 - 500	50
501 - 1 200	80
1 201 - 3 200	125
3 201 and over	200

The bags in a sample shall be selected at random. For methods of random sampling, IS 4905 may be referred to.

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. Also the minus error in none of such bags in a sample shall exceed 4 percent of the specified net quantity of cement in the bag.

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

NOTE — The mass of a jute sacking bag to hold 50 kg of cement is 531 g, the mass of a 6-ply paper bag to hold 50 kg of cement is approximately 400 g, the mass of a light weight jute bag to hold 50 kg of cement is approximately 450 g, the mass of a HDPE/PP woven sack to hold 50 kg of cement is approximately 70 g/71 g respectively, and the mass of a jute synthetic union bag to hold 50 kg of cement is approximately 420 g.

ANNEX C

(Foreword)

COMMITTEE COMPOSITION

Cement and Concrete Sectional Committee, CED 02

<i>Organization</i>	<i>Representative(s)</i>
Delhi Tourism and Transportation Development Corporation Ltd, New Delhi	SHRI JOSE KURIAN (Chairman)
ACC Ltd, Mumbai	SHRI S. A. KHADILKAR SHRI RAMAN SADANAND PARULEKAR (<i>Alternate</i>)
Ambuja Cements Limited, Mumbai	SHRI J. P. DESAI SHRI C. M. DORDI (<i>Alternate</i>)
Atomic Energy Regulatory Board, Mumbai	SHRI L. R. BISHNOI SHRI SAURAV ACHARYA (<i>Alternate</i>)
Builders' Association of India, Mumbai	REPRESENTATIVE
Building Materials and Technology Promotion Council, New Delhi	SHRI J. K. PRASAD SHRI C. N. JHA (<i>Alternate</i>)
Cement Manufacturers' Association, Noida	DR K. C. NARANG DR S. K. HANDOO (<i>Alternate</i>)
CSIR-Central Building Research Institute, Roorkee	SHRI S. K. SINGH SHRI SUBHASH GURRAM (<i>Alternate</i>)
CSIR-Central Road Research Institute, New Delhi	DR RAKESH KUMAR
CSIR-Structural Engineering Research Centre, Chennai	DR K. RAMANJANEYULU SHRI P. SRINIVASAN (<i>Alternate</i>)
Central Public Works Department, New Delhi	SHRI A. K. GARG SHRI RAJESH KHARE (<i>Alternate</i>)
Central Soil and Materials Research Station, New Delhi	SHRI MURARI RATNAM SHRI S. L. GUPTA (<i>Alternate</i>)
Central Water Commission, New Delhi	DIRECTOR (CMDD) (N&W) DEPUTY DIRECTOR (CMDD) (NW&S) (<i>Alternate</i>)
Conmat Technologies Pvt Ltd, Kolkata	DR A. K. CHATTERJEE
Construction Chemicals Manufacturers' Association, Mumbai	SHRI SAMIR SURLAKER SHRI UPEN PATEL (<i>Alternate</i>)
Delhi Development Authority, New Delhi	CHIEF ENGINEER (DESIGN) EXECUTIVE ENGINEER (DESIGN) (<i>Alternate</i>)
Engineers India Limited, New Delhi	SHRI RAJANJI SRIVASTAVA SHRI ANURAG SINHA (<i>Alternate</i>)
Fly Ash Unit, Deptt of Science and Technology, New Delhi	SHRI CHANDER MOHAN
Gammon India Limited, Mumbai	SHRI VENKATARAMANA N. HEGGADE SHRI MANISH MOKAL (<i>Alternate</i>)
Hindustan Construction Company Ltd, Mumbai	DR CHETAN HAAZAREE SHRI MANOHAR CHERALA (<i>Alternate</i>)
Housing and Urban Development Corporation Limited, New Delhi	SHRI DEEPAK BANSAL
Indian Association of Structural Engineers, New Delhi	PROF MAHESH TANDON SHRI GANESH JUNEJA (<i>Alternate</i>)
Indian Concrete Institute, Chennai	SHRI VIVEK NAIK SECRETARY GENERAL (<i>Alternate</i>)
Indian Institute of Technology Madras, Chennai	DR DEVDAS MENON DR MANU SANTHANAM (<i>Alternate</i>)
Indian Institute of Technology Roorkee, Roorkee	DR V. K. GUPTA DR BHUPINDER SINGH (<i>Alternate</i>)
Indian Roads Congress, New Delhi	SECRETARY GENERAL DIRECTOR (<i>Alternate</i>)

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<i>Organization</i>	<i>Representative(s)</i>
Institute for Solid Waste Research & Ecological Balance, Visakhapatnam	DR N. BHANUMATHIDAS SHRI N. KALIDAS (<i>Alternate</i>)
Lafarge India Pvt Ltd, Mumbai	MS MADHUMITA BASU SHRI YAGYESH KUMAR GUPTA (<i>Alternate</i>)
Military Engineer Services, Engineer-in-Chief's Branch, Army HQ, New Delhi	MAJ GEN S. K. SRIVASTAV SHRI MAN SINGH (<i>Alternate</i>)
Ministry of Road Transport & Highways, New Delhi	REPRESENTATIVE
National Council for Cement and Building Materials, Ballabgarh	SHRI V. V. ARORA DR M. M. ALI (<i>Alternate</i>)
National Test House, Kolkata	SHRI B. R. MEENA SHRIMATI S. A. KAUSHIL (<i>Alternate</i>)
Nuclear Power Corporation of India Ltd, Mumbai	SHRI ARVIND SHRIVASTAVA SHRI RAGHUPATI ROY (<i>Alternate</i>)
OCL India Limited, New Delhi	DR S. C. AHLUWALIA
Public Works Department, Govt of Tamil Nadu, Chennai	SUPERINTENDING ENGINEER EXECUTIVE ENGINEER (<i>Alternate</i>)
The India Cements Limited, Chennai	DR D. VENKATESWARAN SHRI S. GOPINATH (<i>Alternate</i>)
The Indian Hume Pipe Company Limited, Mumbai	SHRI P. R. BHAT SHRI S. J. SHAH (<i>Alternate</i>)
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The National Institute of Engineering, Mysore	DR N. SURESH SHRI H. N. RAMATHIRTHA (<i>Alternate</i>)
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