Annex 19

COMMENTS RECEIVED ON PUBLISHED STANDARDS

IS 269 Ordinary Portland Cement - Specification (*Sixth Revision*)

Sl No.	Basic Details	Clause/Subclause No., Paragraph No./Figure No./Table No. & Attachment	Type of Comment	Comments/Suggestions along with Justification for the Proposed Change	Proposed Change/Modified Wordings
	Name: Dilip Yadav	Clause 5.1.1 Table-1 cmt_1607512597_Use of Marble Slurry.pdf	Technical	We wish to submit that Marble Slurry from Makrana / Kishangarh contains % $CaCO_3$ and $MgCO_3$ around 80% and 9 % respectively. Marble slurry waste, consisting in fine-grained residues resulting from operations of cutting and polishing of different types of limestone, and it can be re-used as raw materials suitable for applications in cement sectors as a replacement of limestone for clinker manufacturing as well as performance improver in OPC manufacturing. Marble slurry chemically, physically, mineralogically and morphologically demonstrate high content of calcium oxide and comparable with cement grade limestone ($CaCO_3$), which shows that marble slurry can be re-used as a Limestone raw material with no treatments. Besides the economic benefits, transforming a waste into an important economic resource involves environmental advantages. Since it implies a reduction in the need for landfill storages and in the consequent associated detriments. Marble	Inclusion of Marble Slurry as Performance Improver in OPC as per IS 269 : 2015

				slurry can be an important economic resource capable of promoting the sustainability. We have send samples of Marble Slurry and OPC-43 (with use of 5% Marble Slurry prepared in Lab Ball Mill) to NTH Jaipur & NCCBM Ballabgarh for testing (Reports are attached herewith). We wish to submit that BIS has already approved use of marble / dolomite as performance improver up to 8% in revised specification of White Portland Cement as per IS 8042 : 2015. In view of above, kindly accord your permission to utilize Marble Slurry as performance improver in limestone category for manufacturing of OPC as per specification IS 269: 2015.	

IS 3812 (Part 1) Pulverized fuel ash - Specification: Part 1 For use as pozzolana in cement, cement mortar and concrete (Third Revision)

Sl No.	Basic Details	Clause/Subclause No., Paragraph No./Figure No./Table No. & Attachment	Type of Comment	Comments/Suggestions along with Justification for the Proposed Change	Proposed Change/Modified Wordings
	MUNINARAYANA R Organisation: Bureau of Indian Standards Email: muni.uas@gmail.com Mobile: 9099011248 Comment ID #:	5.1 Table 1 cmt_1622479748_IS 1727,4032,3312.pdf	Technical	For testing, CaO, Al2O3 and MgO, IS 1727 is referred as per which Ammonium nitrate is required. Ammonium nitrate being a raw material of explosives, its open sale is banned and hence it not being supplied by the suppliers of chemicals and reagents.	If feasible, IS 4032 may be referred and rapid test methods such as AAS (IS 12813), XRF (IS 12803), Colorimetric methods(IS 12423) may be permitted to carry out testing.

IS 1489 (Part 1) Portland Pozzolana Cement - Specification: Part 1 fly Ash Based (Fourth Revision)

Sl No.	Basic Details	Clause/Subclause No., Paragraph No./Figure No./Table No. & Attachment	Type of Comment	Comments/Suggestions along with Justification for the Proposed Change	Proposed Change/Modified Wordings
	Ponnusamy Organisation: N/A Email: ponnusamy.palanisamy@zcltd.com	5 1	Technical	Every year the source of fly ash shortage is due to breakdown/ maintenance of coal-fired thermal power stations. As a result, fly ash supplies are lower than anticipated and the duration of the shortage is undetermined. Cement plants are severely affected by this and forced to reduce fly ash addition as low as 15 percent. PPC produced with lower fly ash increases production cost and also adversely affects Clinker factor,Natural resources depletion and Green product concepts. Proposed change will support to plant as well as environment. Cement plants may use their captive	If the declared fly ash constituent is 15 percent in PPC. Then, 5 percent Performance improvers as stated in IS 269:2015(Clause 5.1.1) shall be added in PPC.

				limestone during fly ash shortage. Economically viable and reduces CO2 emissions.	

IS 3370 : Part 2 Code of Practice Concrete structures for the storage of liquids Part 2 Reinforced concrete structures

Sl No.	Basic Details	Clause/Subclause No., Paragraph No./Figure No./Table No. & Attachment	Type of Comment	Comments/Suggestions along with Justification for the Proposed Change	Proposed Change/Modified Wordings
	Rajesh kumar Gangwal Organisation: N/A Email: RAJESHGANGWAL786@YMAIL.COM	4.3.2 1 cmt_1627127454_IMG_7441.pdf	Technical	As per the Code, It is proposed that the Estimate of Bending Moments in Flat slab for Water retaining Structures shall not be done using the direct stress method prescribed in IS 456 and to be worked out based on the coefficients given in IS 3370 (Part-4). Since, In the Part-4, there is no table given for the coefficient for estimate the Bending moments in Flat slab. Only, Tables showing the coefficient for the circular slab have been shown. In fact, the Bending moment in the flat slab will be	Please suggest that how to calculate/find the coefficient for Bending Moment in Flat slab in Part-4 of the IS Code for water retaining structures.

				distributed in column and middle strip.	

IS 4031 : Part 2 Methods of Physical Tests for Hydraulic Cement: Part 2 Determination of fineness by Blaine air permeability method (Second Revision)

Sl No.	Basic Details	Clause/Subclause No., Paragraph No./Figure No./Table No. & Attachment	Type of Comment	Comments/Suggestions along with Justification for the Proposed Change	Proposed Change/Modified Wordings
	UGUST DUBEY Organisation: Bureau of Indian Standards Email: augustdubey@bis.gov.in	4.8	Technical	Respected Sir, Cl. 4.8, IS 4031 PART 2, Ammend-2: 1001A shall be used as the reference cement for the determination of apparatus constant As per telephonic discussion held with NCCBM, 1001A has been revised as BND 5001A. NCCBM provides BND 5001A, 5002,5003 for the determination of apparatus constant of OPC, PPC, and PSC respectiverly. It is requested, please clarify whether BND 5001 should be used for all cements (opc,ppc & psc) K value calcuation or different CRMs are to be used.	Clarification on the above point is requested. If admissible, may please be updated in IS also.

IS 4031 : Part 5 Methods of Physical Tests for Hydraulic Cement: Part 5 Determination of Initial and Final Setting Times (First Revision)

Sl No.	Basic Details	Clause/Subclause No., Paragraph No./Figure No./Table No. & Attachment	Type of Comment	Comments/Suggestions along with Justification for the Proposed Change	Proposed Change/Modified Wordings
	THECHANO C OVUNG Organisation: Bureau of Indian Standards Email: thechano.ovung@bis.gov.in	CL. 5.3	Technical	In the Standard, in Cl. 5.3 for Determination of FST, it is mentioned that the" cement shall be considered as finally set when, upon applying the needle gently to the surface of test block, the needle makes an impression thereon". However, the drop height of the needle is not specified.	The higher the height of the needle of the Vicat appartus, the longer the setting time of cement. In this regards, the height at which the needle is to be released gently therefore needs to be specified in the standard.

IS 4031 : Part 6 Methods of Physical Tests for Hydraulic Cement: Part 6 Determination of Compressive Strength of Hydraulic Cement other than Masonry Cement (First Revision)

Sl No.	Basic Details	Clause/Subclause No., Paragraph No./Figure No./Table No. & Attachment	Type of Comment	Comments/Suggestions along with Justification for the Proposed Change	Proposed Change/Modified Wordings
	AUGUST DUBEY Organisation: Bureau of Indian Standards Email: augustdubey@bis.gov.in	8	General	Sir, Cl. 7 infer to take 3 cubes for each period. This means for each period, 3 results will be obtained Cl. 8 explains about discarding of the test results and retesting. . Neither CL. 7 nor cl. 8 explicitly explains reporting that if obtained results are acceptable (as per cl. 8), In which format result (Average or minimum of 3) should be reported? Clarification on reporting is highly requested	Reporting format may be mentioned explicitly.

IS 4032 Method of Chemical Analysis of Hydraulic Cement (First Revision)

Sl No.	Basic Details	Clause/Subclause No., Paragraph No./Figure No./Table No. & Attachment	Type of Comment	Comments/Suggestions along with Justification for the Proposed Change	Proposed Change/Modified Wordings
	AMESHNAIDUPOLUPARTHI Organisation: Bureau of Indian Standards Email: rameshnaidu@bis.gov.in	7.5	Editorial	As per Amend No. 2 to IS 4032 : 1985 7.5 The method for determining chloride content in Portland slag cement shall be the same as described in 4.13. Clause 7.5 is referring to PORTLAND POZZOLANA CEMENT. This may please be corrcted.	7.5 The method for determining chloride content in Portland Pozzolana Cement shall be the same as described in 4.13.
		4.8 2 cmt_1676438177_Attachment Annex A- CRMs-References-.pdf	Technical	While estimating MgO by Method 2 (EDTA method) given in Cl. 4.8.2 of IS 4032:1985 using of Thymol Phthalexone indicator for detection of end point, difficulties have been encountered in identifying the exact end point. It is seen that the change of colour at end point is not sharp which may lead to erroneous detection of end point as a result chances of error could be high for people not well conversant	Add a new method in clause 4.8.2 after method 2: Method 3 (EDTA Method using EBT after removal of CaO by gravimetric method *Cl.* 4.7. 1) for details please see **Annexure-A of attachemnt**).

				with the method or lacking high level of expertise. From methods specified in Indian standards for estimation of Magnesium in Water and Waste water as well as papers published in International journals (**attachment enclosed**) it has been observed that use of Eriochrome Black T indicator is also suitable for estimation of Magnesium, including for Cement samples. Trials have been performed on cement CRMs for PPC (BND 5052A), PSC (BND 5053), OPC (1012M) having traceability to NCCBM (attachment enclosed). It has been observed that the use of EBT as indicator gives and clear and sharp end point which is easily detectable. The results when compared to the declared value of CRMs shows that they are equally repeatable and reproducible.	

				References: 1. Asrar Adil El-gray and Farough Bakheit, Mohamed Ahmed (2016), Determination of Major Oxides Percentages in Portland Cement of Some Sudanese Cement Manufactories, *American Journal of Applied Chemistry Vol 4, No 1, 2016, pp 14-17*. **(attachment enclosed)** 2. Sufian Rasheed, Miamat Ullah and Amir Ullah (2020), Chemical analysis of some Pakistani Portland cement/clinker and their compliance with ASTM standards, *European Journal of Chemistry vol 11, No 3, 2020, pp 194-*	

				197 **(attachment enclosed)**	
		4.2 cmt_1676603559_LOI_vs_TGA.pdf	Technical	TGA: This method of analysis is based on split loss on ignition at 105 °C and 950 °C. The ignition process can be monitored in real time and results can be presented in a TGA curve, involves automated sample handling (minimizing operator error); Can yield reliable data from sample masses (typically 30 – 50 mg which are much smaller than those needed for LOI (typically 1 g). This method needs to be studied, validated and incorporated in IS as an alternate/reference method. TGA instruments are readily available in the market. ***ASTM C114 Cl.X2.2.2*** provided the information on **determination of CO_2 using TGA as an alternate method**. Based on this principle of CO_2 determination at 950	Add a new method in clause 4.2 (Amendment 2) as an alternate method by Thermo Gravimetric Analyzer (TGA) for inclusion as instrumental method.

				°C, TGA method can be applied for LOI in cement. Reference 2 Describes the comparative study of determination of organic matter and carbonate content in sediments by LOI & TGA methods. References: 1. ***ASTM C114 Cl.X2.2.2*** 2. *Journal - Paleolimnol (2022) 67:191–197*	
	Ankit Bhumla Organisation: Bureau of Indian Standards Email: ankitbhumla@bis.gov.in	7.5 amend 2	Technical	Clause 7 of IS 4032, refers to chemical analysis of Portland Pozzolana Cement, accordingly clause 7.5 should be about estimation of Chloride analysis in Portland Pozzolana Cement. But clause 7.5 of Amend No. 2 to IS 4032:1985, states that the method for determining chloride content in Portland slag cement shall be the same as described in 4.13, which seems to be a typographical error.	Replace the existing text with "The method for determining chloride content in **Portland Pozzolana Cement** shall be the same as described in 4.13".

		4.8 cmt_1677144245_Comment_Cement.pdf	Technical	While estimating MgO by Method 2 (EDTA method) given in Cl. 4.8.2 of IS 4032:1985 using of Thymol Phthalexone indicator for detection of end point, difficulties have been encountered in identifying the exact end point. It is seen that the change of colour at end point is not sharp which may lead to erroneous detection of end point as a result chances of error could be high for people not well conversant with the method or lacking high level of expertise. From methods specified in Indian standards for estimation of Magnesium in Water and Waste water as well as papers published in International journals (see references below) it has been observed that use of Eriochrome Black T indicator is also suitable for estimation of Magnesium, including for Cement samples.	Add a new method in clause 4.8.2 after method 2: Method 3 (EDTA Method using EBT after removal of CaO by gravimetric method *Cl.* 4.7. 1) for details please see Annexure-A.

				Trials have been performed on cement CRMs for PPC (BND 5052A), PSC (BND 5053), OPC (1012M) having traceability to NCCBM (Annex-B). It has been observed that the use of EBT as indicator gives and clear and sharp end point which is easily detectable. The results when compared to the declared value of CRMs shows that they are equally repeatable and reproducible (Annex-C). References: 1. Asrar Adil El-gray and Farough Bakheit, Mohamed Ahmed (2016), Determination of Major Oxides Percentages in Portland Cement of Some Sudanese Cement Manufactories, *American Journal of Applied Chemistry*	

				Vol 4, No 1, 2016, pp 14-17. 2. Sufian Rasheed, Miamat Ullah and Amir Ullah (2020), Chemical analysis of some Pakistani Portland cement/clinker and their compliance with ASTM standards, *European Journal of Chemistry vol 11, No 3, 2020, pp 194-197* IS 3025(Part-46), Methods of sampling and test (Physical and Chemical) for water and wastewater, Part 46 Magnesium (This method is applicable when Iron and Aluminium has not separated from the test solution).	
	Vipul Bohara Organisation: Bureau of Indian Standards Email: vipulb@bis.gov.in	4.1.15 1	Technical	The quantity of Eriochrome Black T indicator required in the titration for standardization of EDTA should be 5 mg instead of	Substitute the existing line “Add 50 mg of the solid thymol phthalexone

				50 mg. Because the 50 mg quantity makes the colour of the solution very dark which makes it very difficult to observe the endpoint of the reaction during titration. Therefore, the only 5 mg of Eriochrome Black-T indicator should be recommended. The 5 mg quantity has been used and found satisfactory in Central laboratory of BIS. Substitute the existing line "Add 50 mg Eriochrome Black-T indicator" with the following new line in the 4th line of the paragraph: "Add 5 mg Eriochrome Black-T indicator" Select 4.8.4 N/A 1 Technical For titration, solid thymol phthalexone indicator has been referred in the Standard. However, this indicator is not commonly	indicator" with the following new line in the 3rd line of the paragraph: "Add **5 mg** Eriochrome Black-T indicator"

				available in the Indian Market. Therefore, instead of solid thymol phthalexone indicator, 5 mg of Eriochrome Black-T indicator may be referred.	

IS 456 Plain and reinforced concrete - Code of practice (Fourth Revision)

Sl No.	Basic Details	Clause/Subclause No., Paragraph No./Figure No./Table No. & Attachment	Type of Comment	Comments/Suggestions along with Justification for the Proposed Change	Proposed Change/Modified Wordings
		17.3 & 17.4 17.3 clause and para cmt_1596707711_CAPO TEST.pdf	Technical	As per clause based on 17.3 and subsequently Core test for the hardened structure for specific concrete grade confirmation But it may not be possible some cases of structural elements at site for congested reinforcement . I would suggest for that cases a reliable semi-destructive CAPO test in place of CORE TEST.	clause 17.4 Core test / Capo test with ultrasonic pulse velocity.
		17.3 & 17.4 17.3 clause and para cmt_1596708608_CAPO TEST.pdf	Technical	clause 17.4 Core Test. This is destructive test for hardened structure. Some cases in practically may not be possible due to congested reinforcement of structural elements. I would suggest on other	17.4 Core Test /Capo Test with Ultrasonic Pulse Velocity.

				option a reliable semi-destruct CAPO test.	
	Kunj Gupta Organisation: N/A Email: kunj.gupta@jindalstainless.com	5.6 cmt_1712940378_6619655a66c72.pdf	General	High Strenght Deformed Stainless Steel Bars for concrete reinforcment as per IS 16651:2017 As there are many projects in many govt. agencies including NHAI, Indian Railways, Metros, State PWDs which are using Stainless Steel rebars in RCC structures. There is IS code available for High Strenght Deformed stainless steel bars for concrete reinforcment but it is yet to be included in IS 456	e) High Strength Deformed stainless steel bars for concrete reinforcment as per IS 16651:2017
	PATNAM KALYAN VENKATESH Organisation: N/A Email: kalyan.mtce122211@nfsu.ac.in	26.5.1.6 1	Technical	He is Patnam kalyan venkatesh pursuing MTech civil engineering specialization in Forensic structural engineering at National Forensic Sciences University Gandhinagar	The provision says that the characteristic strength of the stirrup reinforcement in N/mm^2 should not be less than

				Gujrat campus. He has been practicing the IS 456:2000 for design of reinforced concrete cement structures design since 2016 from his diploma. He has noticed that the clause no: “26.5.1.6 Minimum shear reinforcement” Minimum shear reinforcement in the form of stirrups is provided as per the relation Asbsv≥0.4/0.87fy where As = total cross-sectional area of stirrup legs effective in shear, Sv,' = stirrup spacing along Ihe length of the member,	415N/mm^2. But now in real time there is no steel vendor is manufacturing the grade of steel which is less than 415N/mm^2. So, his concern is that the relation will still stand good for the higher grade of steel as a minimum grade. He has gone through the 5th amendment of the code done in 2021 no changes have been seen in this provision. He has attached the brochures of main stream steel manufactures in market. Such as Jindal steel

				b = breadth of the beam or breadth of the web of flanged beam, and fy = characteristic' strength of the stirrup reinforcement in N/mm^2 which shall not be taken greater than 415 N/mm^2.	Jsw steel Steel Authority India ltd Vizag steel plant ltd

IS 9103 Concrete Admixtures Specification (First Revision)

Sl No.	Basic Details	Clause/Subclause No., Paragraph No./Figure No./Table No. & Attachment	Type of Comment	Comments/Suggestions along with Justification for the Proposed Change	Proposed Change/Modified Wordings
	AJAY MAURYA Organisation: Bureau of Indian Standards Email: er.ajaymaurya@gmail.com	7.2.3 of IS 9103 Table 1A, Row (iii) cmt_1617172698_Comments 9103-converted.pdf	Technical	The cl. 7.2.3 refers to the testing for determination of Time of Initial and Final setting as per IS 8142.	The IS 8142 is withdrawn and no alternate IS is given for the test method. An amendment in this regard for the testing method to be issued.

IS 516 (Part 5/Sec 1) Hardened Concrete - Methods of Test: Part 5 Non-destructive Testing of Concrete: Section 1 Ultrasonic Pulse Velocity Testing (First Revision)

Dear Sir,
I have observed the one typing or technical mistake into the subjected IS code.
My observations are as below....
Into the ANNEX D of the code, equation for the evaluation of the dynamic Young's modulus of elasticity (E) has been as follows....

Sir, In this equation, the unit of pulse velocity should be km/sec instead of m/sec. As I have checked various literatures, most of the literature showing the km.sec, some are showing m/sec but for calculation, they have used km/sec values for E calculations....I have calculated the E values for various readings and tabulated as below., I have calculated E value by using km/sec & m/sec. The E values by using m/sec seem non realistic. Kindly check.

D-1 The dynamic Young's modulus of elasticity (E) of the concrete may be determined from the pulse velocity and the dynamic Poisson's ratio (μ), using the following relationship:

$$E = \frac{\rho(1+\mu)(1-2\mu)V^2}{(1-\mu)}$$

where

E = dynamic Young's Modulus of elasticity, in MPa;
ρ = density, in kg/m^3; and
V = pulse velocity, in m/s.

UP Velocity	Density	Dynamic Poisson's ratio	Dynamic Young's Modulus of elasticity
km/sec	kg/m^3	-	GPa
3.83	2400	0.20	31.68
4.51	2400	0.20	43.93
4.04	2400	0.20	35.25
3.98	2400	0.20	34.22

UP Velocity	Density	Dynamic Poisson's ratio	Dynamic Young's Modulus of elasticity
m/sec	kg/m^3	-	GPa
3830	2400	0.20	31684824.00
4510	2400	0.20	43934616.00
4040	2400	0.20	35254656.00
3980	2400	0.20	34215264.00

These are my observations only.
Let me know your opinions, Sir.

Thanks & Regards,
H M Kikani

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