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

कार्यवृत

12 अप्रैल **2023**

हमारा संदर्भ: सीईडी 4/ए-2.28
विषय : इमारती चूना और जिप्सम उत्पाद विषय समिति, सीईडी 4 की अट्ठाइशवी बैठक के कार्यवृत

सीईडी 04 के सभी सदस्य

प्रिय महोदय/महोदया,

इमारती चूना और जिप्सम उत्पाद विषय समिति, सीईडी 04 की अट्ठाइशवी बैठक जो सोमवार **20 मार्च 2023** को नई दिल्ली में सम्पन्न हुई, के कार्यवृत्त भेजते हुए प्रसन्नता हो रही है । कार्यवृत्त की पुष्टि समिति ,सीईडी 04 के अध्यक्षा, द्वारा की जा चुकी है।

आपसे अनुरोध हे कि कृपया कार्यवृत का अवलोकन करें और इसकी यथार्थता पर अगर कोई सम्मितियॉं हों तो अधोहस्ताक्षरकर्ता को भेज दें । यदि सम्मति प्राप्त नहीं होती तो आपकी सुविधा के लिए यह समझा जाएगा कि आपने कार्यवृत का अनुमोदन कर दिया है ।

सम्मितियॉं भेजने की अंतिम तिथि : **23** अप्रैल **2023**

जिन सदस्यों को उपरोक्त बैठक में कुछ कार्य सौंपे गये है उनसे अनुरोध है कि समिति के निर्णय के अनुसार वे उन्हें शीघ्र पूरा करके भेजें ताकि हम आगे की उचित कार्रवाही कर सकें।

धन्यवाद ।

भवदीय,

(**डॉ मनोज कुमार रजक**)
सदस्य सचिव, सीईडी 04
ई मेल: manoj@bis.gov.in
दूरभाष: 011-23608253

संगलन : उपरलिखित

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

MINUTES

12 April 2023

Our Ref: CED 04/A-2.28
Subject: Minutes of the Twenty-eight Meeting of Building Lime and Gypsum Products Sectional Committee, CED 04

ALL MEMBERS OF CED 04

Dear Sir/Madam,

Please find enclosed a copy of the Minutes of the Twenty-eight Meeting of the Building Lime and Gypsum Products Sectional Committee, CED 04 held on Monday, **20 March 2023** in New Delhi. The Minutes have been duly approved by, Chairperson of the committee.

Comments, if any, confined to the accuracy of recording may please be sent to the undersigned at the earliest, preferably within two weeks' time, i.e., by **23 April 2023.** If no reply is received within the above period, we may be permitted to presume your approval of the Minutes as recorded.

The members who have been entrusted with some responsibility as recorded in the above Minutes are requested to initiate action and provide their inputs at the earliest so that further necessary action can be taken by BIS on priority.

Thanking you

Yours faithfully,

(**Dr Manoj Kumar Rajak**)
Member Secretary, CED 04
E-mail: manoj@bis.gov.in
Tel.: 011-23608253

Encl: As above

BUREAU OF INDIAN STANDARDS

MINUTES

Building Lime and Gypsum Products Sectional Committee, CED 04 : **Twenty-Eight Meeting**

Monday, 20 March 2023 : **1130 h**

Venue: Green Room, (Through Video Conference), Bureau of Indian Standards, Manak Bhawan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002

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PRESENT:

CHAIRPERSON : **PROF ANURADHA CHATURVEDI**
MEMBER SECRETARY : **DR MANOJ KUMAR RAJAK**

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MEMBERS PRESENT:

Smt Anuradha Chaturvedi, Chairperson

Shri Rohitash Barua, AIMIL Ltd, New Delhi

Smt Manasi Joshi, Automotive Research Association of India, Pune

Shri Sachin Jain, Automotive Research Association of India, Pune

Ms. Neelam Phougat, Central Soil & Materials Research Station, New Delhi

Shri Dinesh Ujjainia, SETAS, Central Public Works Department, New Delhi

Shri Roberto Bello, CTS Restoration Products India Private Limited, New Delhi

Shri B. B. Puri, Diamond International Inex Pvt Limited, Gurugram

Joint Director, Gujarat Engineering Research Institute

Shri Pappulal Dhobi, Hindalco Industries Limited, Mumbai

Shri Rajesh Sharma, Housing and Urban Development Corporation Ltd, New Delhi

Shri N. K. Verma, Indian Farmers Fertiliser Cooperative, New Delhi

Shri R. S. Jamwal, In Personal Capacity

Shri Keyur Sarda, Kesarjan Building Center Pvt Ltd, Gujarat

Dr Neha Saini, Knauf India Pvt Ltd, Khushkhera

Shri Sachin Borade, Knauf India Pvt. Ltd., Khushkhera

Shri K. K. Sirpal, Knauf India Pvt Ltd, Khushkhera

Shri Prashant Patil, Saint-Gobain Gyproc India Limited, Mumbai

Dr. Souvik Ata, Saint-Gobain Gyproc India Limited, Mumbai

Dr Mukesh Garg, Shriram Institute for Industrial Research, Delhi

Shri Raman Dhyani, Shriram Institute for Industrial Research, Delhi

Smt Payal, Mlime

Shri Samir Uttekar, samiruttekar1418@gmail.com

Shri Vijay, vj.saini68@gmail.com

ITEM 0 OPENING REMARKS OF CHAIRPERSON

The Chairperson extended a warm welcome to all the members of the committee and appreciated the interest shown by them in the work of the Committee and their contribution to the national standardization effort. She expressed satisfaction that with the co-operation of all the members, significant progress could be made in the standardization work. She then briefed members about the significance of this meeting. She also expressed concern over poor participation of some of the members in the last few meetings of the Committee and stressed that members should attend the meetings of the committee and contribute in its standardization activity. With these remarks, she requested the member secretary to proceed with the agenda item wise.

ITEM 1 CONFIRMATION OF THE MINUTES OF THE LAST MEETING

1.1 The Committee confirmed the minutes of the last meeting as circulated.

ITEM 2 COMMITTEE COMPOSITION

2.1 The Committee noted the present composition of sectional committee as given in Annex 1 of the agenda.

Item 3 PROGRAMME OF WORK

3.1 The Committee noted the present programme of work as given in Annex 2 of the Agenda.

3.2 Action Research Project (ARP)

The Committee noted the Action Research Project allocated to Committee members/BIS officers as given in Annex-3 of the Agenda.

ITEM 4 DRAFT STANDARDS/AMENDMENTS FOR APPROVAL FOR FINALIZATION

4.1 Revision of IS 712:1984 'Specification for building limes (*Third revision*)'

The Committee considered the WC draft circulated vide BIS Letter No. **CED04(21446)/**T-01 on Dated 16 December 2022 in Wide Circulation, along with the comments received and took decisions as given in **Annex 1**.

The Committee decided to finalize the draft standard with the above changes for adoption and publication. The Committee authorized the Secretariat to incorporate any editorial changes if any.

4.2 Draft Indian Standard Gypsum Ceiling Tiles – Specification

The Committee considered the WC draft circulated vide BIS Letter No. **CED04(21939)/**T-74 on Dated 14 February 2023 in Wide Circulation, along with the comments received and took decisions as given in **Annex 2**.

The Committee decided to finalize the draft standard with the above changes for adoption and publication. The Committee authorized the Secretariat to incorporate any editorial changes if any.

Item 5 ISSUES CARRIED OVER FROM PREVIOUS MEETING

5.1 Handbook on Lime

The committee advised the panel CED04/P2 to submit the draft as soon as possible.

The Composition of the Panel CED 4/P2 is given below:

Prof. Anuradha Chaturvedi, School of Planning and Architecture, (Convener)
Shri C. N. Jha, Building Materials and Promotion Technology Council,
Dr Manu Santhanam, Indian Institute of Technology Madras,
Dr Arun Menon, Indian Institute of Technology Madras,
Shri Girish Das, Saint-Gobain Gyproc India Limited,
Dr Laxmi Rawat, Shriram Institute for Industrial Research,
Dr P. Rathish Kumar, National Institute of Technology,
Shri R.S Jamwal, Archaeological Survey of India,
Smt. Anshika Verma, Indian National Trust for Art and Culture Heritage (INTACH),
Shri Ruknuddin Mirza, Indian National Trust for Art and Culture Heritage (INTACH),
Eshan Minerals Pvt. Ltd,
Dr M. Malik, NTPC Ltd,
CTS Restoration Products India Private Limited
Shri Rajesh Sharma, Housing and Urban Development Corporation Ltd,
Shri Vidya P. Agarwal, In Personal Capacity,
Shri Keyur Sarda, Kesarjan Building Centre Private Limited,
Ms. Malvika Mehta, M-Lime

The Committee decided that after receiving the draft form the panel CED04/P2, the same will be circulated as wide circulation draft for comments.

5.2 Revision of IS 2542 (Part 2) - Methods of test for gypsum plaster, concrete and products: Part 2 gypsum products (*First Revision*)

The committee advised the Working Group to submit the draft as soon as possible.

The composition of the working group is given below:

Dr P. Rathish Kumar, National Institute of Technology, (*Convener*)
Shri Ramesh Tiwari, Shriram Institute for Industrial Research,

Ms Neha Saini, Knauf India Pvt. Ltd.,
Shri Nirmal Swain, Saint-Gobain Gyproc India Limited,
Shri Ashok Kumar Pandey, National Trust for Art and Culture Heritage (INTACH),
Shri P.N. Ojha, National Council for Cement and Building Materials,

The Committee decided that after receiving the draft from the working group, the same will be circulated as wide circulation draft for comments.

5.3 Revision of IS 2547 - Specification for Gypsum Building Plaster

The committee advised the Working Group to submit the draft as soon as possible.

The composition of the working group is given below:

Shri P. N. Ojha, National Council for Cement and Building Materials, (*Convener*)
Shri Alok Ranjan, CSIR-Central Road Research Institute,
Dr Neeraj Jain, CSIR-Central Building Research Institute,
Dr M. Malik, NTPC Ltd,
Shri Nirmal Swain, Saint-Gobain Gyproc India Limited,
Ms Neha Saini, Knauf India Pvt. Ltd.,
Ruknuddin Mirza, INTACH Architectural Heritage Division,
Shri B. B. Puri, Diamond International Inex Pvt Limited,

The Committee decided to circulate the draft in Wide circulation for comments.

5.4 Revision of IS 6932 Part 1 to 11 - Method of Test for Building Limes

The committee advised the Working Group to submit the draft as soon as possible.

The composition of the Working Group is given below:

Shri Ashok Kumar Tiwari, Ultratech Private Limited
Smt Anshika Verma, Indian National Trust for Art and Culture Heritage

The Committee decided that after receiving the draft from the working group, the same will be circulated as wide circulation draft for comments.

Item 6 NEW WORK ITEM PROPOSALS RECEIVED

6.1 Slaked Lime Putty as a Ready to use Binder

The committee advised the working group to submit the draft as soon as possible.

The composition of the working group is given below:

Shri Keyur Sarda, Kesarjan Building Center Pvt Ltd, Gujarat (*Convener*)
Shri Roberto Bello, CTS Restoration Products India Private Limited, New Delhi
Ms. Malvika Mehta, M-Lime, New Delhi
Shri Nirmal Swain, Saint-Gobain Gyproc India Limited, Mumbai

The Committee decided that after receiving the draft from the working group, the same will be circulated in wide circulation for comments.

Item 7 WORK PROGRAMME OF THE COMMITTEE

The Committee noted the Programme of Work under the Committee as given at Annex 2 of the Agenda. Committee also requested all the members and the Working Groups to plan and schedule their action in terms of stage wise development of the revision of Indian standards to ensure substantial progress in the standardization work under this Committee.

Item 8 INTERNATIONAL ACTIVITIES

The Committee noted the details as provided under the agenda item.

Item 9 NATIONAL SYSTEM OF STANDARDIZATION

The Committee noted the information regarding Standards National Action Plan (SNAP) as given under this item of Agenda.

Item 10 FEEDBACK ON INTERACTIVE MEETINGS

The Committee noted the details about BIS-Industry Interaction meet on Building and Construction Sector as given under item of the agenda.

Item 11 ENVIRONMENTAL ASPECTS IN STANDARDS

The Committee noted the information under the item of the agenda.

Item 12 GENDER RESPONSIVE STANDARDS DECLARATION

The Committee noted the information under the item of Agenda regarding the UNECE's Gender Responsive Standards Initiative on which BIS is a signatory. The initiative aims to provide a practical framework for standards bodies seeking to make the standards they develop, and the standards development process they follow, gender responsive. Established in 2016, the Initiative has the objectives of:

i) Strengthening the use of standards and technical regulations as powerful tools to attain SDG 5 (Achieve Gender Equality and Empower all Women and Girls);
ii) Integrating a gender lens in the development of both standards and technical regulations; and
iii) Elaborating gender indicators and criteria that could be used in standards development.

The Committee noted that in line with the above objectives, BIS is working towards:

- Gender responsive standards;
- Gender balance at all levels in all Committees including leadership positions;
- Enhanced expertise to create and deliver gender inclusivity;

So as to create a gender balance environment in all walks of life through standards.

Item 13 INDIGENOUS INDIAN STANDARDS AVAILABLE FOR FREE DOWNLOAD

The Committee noted the information under the item of the Agenda.

Item 14 ANY OTHER BUSINESS

There being no other business, the meeting ended with hearty thanks to one and all.

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ANNEX-1

Comments Received on
Draft Indian Standard Specification for Building Limes
IS 712 CED 04 (21466) WC

Sl. No.	Clause/Para/ Table/Figure No. commented	Comments/Modified Wordings	Justification of Proposed Change	Committee Decision
1.	4 Classification	**Adding**: FORMS OF LIME for Class A, B, C, D, E, F POWDER PUTTY SLURRY	Avoiding confusion between the different form of Lime binders available in the market. More important to consider is that Storage of lime in powder form will reduce the performances of the binder over time till complete inertness, while the storage of lime Putty will increase its performances over time, and can be stored under water indefinitely.	Committee agreed with the comment, and decide to formulate three new Indian standards on the basis of end use. These standards are lime for white wash, lime putty, and lime mortar. Committee also decided to provide a detail guideline for packing and storage of these products.
2.	8 PACKING	The hydrated lime shall be supplied, in suitable containers, such as jute bags lined with polythene or high density polythene woven bags lined with polythene or craft paper bags… Should be changed with: The hydrated lime in Powder form shall be supplied, in suitable AIRTIGHT containers, such as jute bags lined with polythene or high density polythene woven bags lined with polythene or craft paper bags … The hydrated lime in PUTTU or SLURRY form shall be supplied, in suitable WATERTIGHT containers, such as HDPE drums, jute bags lined with polythene or high density polythene woven bags lined with polythene…	The packing is vital for the survival of the binder that in Powder form cannot come in contact with air or humidity and in Putty or Slurry form cannot lose its water and dry.	Agreed to modify suitably.

3.	8 PACKING	Change: “preferably containing 50 kg of lime.” With: “preferably containing 25 kg of lime. ”	Following international standards, the labours should not lift more than 25 kg at time to avoid spine injuries. Moreover, 25 kg bags are more suitable for handling and transportation as well.	Agreed to modify suitably.
4.	8.2	Change “The quicklime shall be supplied in containers like metal container or similar suitable containers preferably containing 50 kg of lime.” With: “The quicklime shall be supplied in containers like metal container or similar suitable containers preferably containing 25 kg of lime.”	Same as above	Agreed to modify suitably.
5.	8.1	The hydrated lime ---- in suitable bags ------ of lime	It talks about only bags and no container.	Agreed to modify suitably
6.	Table 1	IS-712 has proposed classification based on chemical composition of lime. For hydraulic lime classification should be based on cementation index (CI) lime	The chemical composition alone is not sufficient to determine the hydraulicity. (Elsen J, 2012) (Hughes DC) The CI is generally recognized as an expression of the potential hydraulic behavior of the produced lime. (Jan Valek, June 2014) We are using Indian hydraulic lime (kankar class E & Hydraulic B) at our many construction sites. We have shared our views based on chemical analysis, CI and compressive strength of hydraulic lime that we are using at our construction site. Indian hydraulic lime satisfies CI index and strength requirement and fails to satisfy codal provision stated in IS 712- proposed. Codal provision should correspond to hydraulic lime available in India. Detailed explanation attached in Annex-A	Agreed to modify suitably

7.	Table 1	Quicklime form should be valid classification for Class A hydraulic lime, and Class E kankar lime	Quicklime form gives better shelf life for hydraulic lime compared to pre slaked/ hydrated lime for hydraulic lime.	Agreed to modify suitably
8.	Table 1- Chemical requirement (Clause 6), Sl. No. (iii)	Limits in the revised IS 712, that is, Table 1- Chemical requirement (Clause 4.1), Sl. No. (iii) shall be retained.	As described in the Clause 4.1 Building limes shall be classified as follows: Class A **Eminently hydraulic lime, Class B - Semi-hydraulic lime and Class E Kankar lime.** All these are Hydraulic limes used for Structural purposes, masonry mortars and lime concrete. This classification is based on percentage of clay (Silica + Alumina + lron Oxide) present in the lime. Feebly Hydraulic = 5 - 10 % clay. Moderately Hydraulic = 11 -20 % clay Eminently Hydraulic = 21 -30% clay. **Reference**: 1. Boynton R. S. (1980), Chemistry and Technology of Lime and Limestone (2nd edition), Wiley, New York. 2. Classification made by vicat. 3. European Standards EN 429 - 1 2015. 4. ASTM C 141 -2014 R22 Edition. Portland Cement is Eminently Hydraulic contains 62 % Lime, 21.4 o/o Silica and 9% Alumina and lron Oxide. Hydraulic lndex is calculated by the following formula:	Agreed to modify suitably.

			Hi= $\frac{\%\,S_iO_2+\%Al_2O_3+\%F_e2O_3}{\%CaO+\%MgO}$ • To develop hydraulicity it is imperative to have slica and alumina present in chemical combination with lime.	
9.	New inclusion in the 3rd revised IS 712, that is, Table 1- Chemical Requirement (Clause 4.1), Sl. No. (ix)	ix). Sulphuric Anhydride as SOs, percent, Max (on ignited basis) Class A - 3.5% Class B - 3.0% Class C - 2.0% Class D -2.0% Class E - 3.5% Class F - 3.0% Method of Test, Ref. to IS 4032-1985*	• Increased level of SO3 • 1 induces expansion properties of mortar and formation of delayed ettringite. • May lead to durability problems. • Control setting characteristics • Limits already prescribed in other country standards but not in Indian standard. • European Standards EN 429 - 1 2015	Not agreed, however committee noted the comment and decided to review with respect to end used product.
10.	Table 2 Physical Requirements (Clause 7), iv b)	Against A hydrated Substitute '2.80' for '2.8'	Since for others value is in two digits after decimal to keep the same accuracy level value should be 2.80	Agreed to modify suitably.
11.	At no. of places in draft code.	Minor editorial corrections are required. Ex.: The term kg is appearing as Kg at no. of places	For better presentation	Agreed to modify suitably.

ANNEX-2

Comments Received on
Draft Indian Standard
Gypsum Ceiling Tiles – Specification
CED 04 (21939) WC

Sl. No.	Clause/Para/ Table/Figure No. commented	Comments/Modified Wordings	Justification of Proposed Change	Committee Decision
1.	Table 4	As per Below (Table 4)		Agreed to modify suitably as editorial in nature.
2.	7.3	The gypsum ceiling tiles, when tested for density as per IS 2095 (Part 1). It shall be in the range of 500 to 1 500 kg/m3.	The gypsum ceiling tiles, when tested for density as per IS 2095 (Part 1). It shall be in the range of 500 to 950 kg/m3	Agreed to modify suitably.
3.	Clause 7.6 Sound Transmission	Along with sound transmission criteria, sound absorption criteria in terms of NRC is required which is measured as per IS 8225 / ISO 354 / ASTM C 423. NRC shall be more than 0.70 for Type 5 and Type 6 tiles. For other types of tiles, accuracy class requirement can be decided as per ISO 11654 which is based on weighted sound absorption coefficient measured as per IS 8225 / ISO 354 / ASTM C 423. For sound transmission, criteria can be defined in terms of ceiling attenuation class measured in dB.	Based on application of ceiling tiles, the performance evaluation shall be done in terms of sound absorption coefficient – NRC and sound transmission in terms of ceiling attenuation class. The NRC rating focuses specifically on absorption i.e How well a specific material will absorb sound, particularly speech, as it passes through an object. The industry standard ranges from zero to 1, with zero being completely reflective and 1 being completely absorptive. Higher the rating better the performance. The NRC is most commonly used to rate the acoustic properties of ceiling tiles, wall panels, baffles, as well as floor coverings and construction materials. CAC is a measure for rating the performance of a ceiling system as a barrier to airborne sound transmission through a common plenum between adjacent closed spaces such as offices. The higher the CAC rating, the better the	Agreed to provide NRC value more than 0.70.

			performance. A ceiling system with a CAC less than 25 dB is very low performance, whereas a ceiling with a CAC of 35 dB or greater is considered high performance.	
4.	7.8	The gypsum ceiling tiles shall have a minimum fire resistance of 60 min when tested as per IS 2095 (Part 1). This test shall be carried out on the gypsum ceiling tiles for individual composition of raw material with respect to fibre content, and the test is repeated only when there is any change in fibre content.	As per IS 2095 part 1, (clause 7.8) Fire resistance is for F & FH type board with system, which is screw fixed on metal section with insulation material. Here these are tiles which will be placed on grid, No screwing. So this clause is not applicable here	Agreed to remove clause 7.8.
5.	7.7	The thermal conductivity of Type 4 gypsum ceiling tiles shall be in the range of 0.16 to 0.24 w/mk when tested according to IS 3346	The thermal conductivity of all gypsum ceiling tiles shall be in the range of 0.16 to 0.24 w/mk when tested according to IS 3346.	Agreed to modify suitably.
6.	Clause 7.2.1 & 7.2.2	The tolerance of straightness of edges shall be 2 mm per metre length when tested as per ~~IS 2095 (Part 1).~~ The tolerance of squareness of edges shall be 2 mm per metre length when tested as per ~~IS 2095 (Part 1)~~	IS 2095 Part 1 is a specifica-tion code The test method code is IS 2542 Part 2 section 1 to 8, but unfortunately these tests are not covered. For the test perhaps one has to take the help of flooring material codes of CC Tiles or Ceramic tiles.	The IS 2542 Part 2 is under revision and new test are expected to be include in this revision. . In view of that all the testing are referred as per IS 2095 Part 1. In the next revision all the test are aligned with IS 2542 Part 2.
7.	Clause 7.3	The gypsum ceiling tiles, when tested for density as per ~~IS 2095 (Part 1)~~. It shall be in the range of 500 to 1 500 kg/m3.	IS 2095 part 1 is a specifica-tion code. The test method code is IS 2542 part 2 section 1 to 8. For the density test, we have to used method as per IS 2542 Part 2 section 1 & 2 combined. Section 2 specify mass and mass per unit area but not the volume which is required for density.	Same as 6.
8.	Clause 7.4	The minimum flexural breaking load of gypsum ceiling tiles shall be as per Table 6 when	IS 2095 part 1 is a specification code. The test method code is IS 2542 part 2 section 4 clause 3.2. There is a printing mistake in	Same as 6 and the comments is noted to consider in the revision of IS 2542 part 2.

		tested as per ~~IS 2095 (Part 1).~~	title for clause 3.1 & 3.2. Test method 3.1 is for fibrous plaster boards while cl. 3.2 is for plaster boards. (In fibrous boards only we need to test the sample parallel and perpendicular to the fibre direction) Another discrepancy is IS 2542 Part 2 section 4 is specify the sample size while as per Cl. 7.4, we have to test the sample full length.	
9.	Table 6	We need to add one column more for length of the sample.	As the sample is to be tested for full length, the breaking load will be different for same thickness of the board having different size. Refer table 1.	For all thickness and lengths, the braking load should be satisfying.
10	Clause 7.5	The gypsum ceiling tiles, when tested for water absorption as per IS ~~2095 (Part 1)~~ 2542 part 2 section 6, shall not be more than 8 percent.		Same as 6.
11	Clause 8.2.6	any shape like holes, squares, hexagonal,	any shape like Round, squares, hexagonal,	Agreed to modify suitably as editorial in nature.
12	Table - 8	(1) (2) Ii 1000 – ~~3000~~ 2000 Iii ~~3000~~ 2000 - 5000	The logic behind correction is with increase of difference in col. (2), there shall be decrease in difference in col. (3)	Agreed to modify suitably as editorial in nature.

Table 4 Requirements of Gypsum
(Clause 6.1)

Sl No	Characteristics	Requirement	Method of Test Reference to
(1)	(2)	(3)	(4)
i)	$CaSO_4 . 2H_2O$, percent, Min	70 ~~percent~~	IS 1288
ii)	Free water, percent, Max		
	a) Natural (mineral) gypsum	5 ~~percent~~	IS 1288
	b) By-product gypsum	13 ~~percent~~	
iii)	pH		
	a) Natural (mineral) gypsum	6 – 8	IS 2720 (Part 26)
	b) By-product gypsum	5 – 9	
iv)	SiO_2, percent, Max	8 ~~percent~~	IS 1288
v)	Chloride content, ppm, Max	500 ~~ppm~~	IS 8272

NOTE – In place of above methods, use of XRF may the resorted. However, in case of any conflict, the above methods shall be treated as referee method.