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BUREAU OF INDIAN STANDARDS
(Metallurgical Engineering Department)

DOCUMENT DISPATCH ADVICE	
Our ref: **MTD-15/A-2.29**	**Dated:** **06-09-2024**

Subject: 29th Meeting of Refractories Sectional Committee, MTD15.

To,

The Chairperson and Members of MTD 15 Refractories Sectional Committee,

Dear Sir,

Please find enclosed the minutes of the **Refractories Sectional Committee, MTD 15** held on 26th July 2024 via **Hybrid mode** (Virtual + Physical) **(through WebEx for VC).** The minutes have been approved by Dr. Arup Kumar Chattopadhyay, Chairman, MTD 15.

Last date for comments is 15-09-2024**.**

Comments if any, confined to the accuracy of recording, may please be mailed to the undersigned. If no reply is received by the last date, we shall consider your consent to approve the minutes as recorded.

Thanking you,

Yours faithfully

(Saaqib Raahi)
Scientist 'C' /Deputy Director
Member Secretary, MTD-15
E-mail: mtd15@bis.gov.in **&**
saaqib@bis.gov.in

As the word file of this minutes exceeds the size to sent through the BIS portal hence the same could be downloaded from the link mentioned below:
https://docs.google.com/document/d/1DWcznSQxv8Rye5bkCIGzNe819WxUu5wwrk8850fppbU/edit?usp=sharing

BUREAU OF INDIAN STANDARDS

DRAFT MINUTES

29TH MEETING OF REFRACTORIES SECTIONAL COMMITTEE, MTD 15

MEETING DATE: 26th July 2024, (Friday)

VENUE: Mimaansa (White room), Manak Bhawan, Bureau of Indian Standard, New Delhi, India.

Chairman: Dr. Arup Kumar Chattopadhyay **Member Secretary:** Shri Saaqib Raahi

Members Present:

S.No.	Organization	Member	Member type
1.	Global Group of Companies, Kolkata	Dr Arup Kumar Chattopadhyay	Chairperson
2.	CCRT Laboratories, Thane	Dr Sanjay N Koyande	Principal Member
3.	CSIR - Central Glass and Ceramic Research Institute, Kolkata	Dr H. S. Tripathi	Principal Member
4.	Calderys India Refractories Limited, Mumbai	Dr I. N. Chakraborty	Principal Member
		Shri Santanu Basak	Alternate Member
		Ms. Suparna Basu	Representative

5.	Dalmias Institute Of Science & Industrial Research, Sundargarh, Odisha	Dr Prema Ranjan Rauta	Principal Member
6.	Engineers India Limited, New Delhi	Shri Biswarup Sarkar	Alternate Member
7.	Hindalco Industries Limited, Belgaum	Shri P.Saravanan	Alternate Member
8.	IFGL Refractories Limited, Odisha	Shri S D Majumdar	Principal Member
		Shri Sajahan Mandal	Alternate Member
9.	Indian Refractory Makers Association, Kolkata	Dr Arup Ghosh	Principal Member
10.	Mahakoshal Refractories Private Limited, Katni	Shri Niloy Chakraborty	Alternate Member
		Shri Arnab Kr. Das	Alternate Member
11.	National Aluminium Company Limited, Bhubaneswar	Shri Satyakam Nayak	Alternate Member
12.	National Council for Cement and Building Materials, Faridabad	Dr S. K. Chaturvedi	Principal Member
		Shri Giasuddin Ahamed	Alternate Member
13.	National Test House, Kolkata	Shri V. R. Venkatesh	Alternate Member
14.	Steel Authority of India Limited, Bhilai Steel Plant, Bhilai	Ms. D. Sathya Devi	Alternate Member
		Shri Amit Roy	Young Professional
15.	Steel Authority of India, Centre for Engineering and Technology, Ranchi	Shri Arvin Chandra Goyal	Principal Member
16.	TRL Krosaki Refractories Limited, Belpahar	Shri S. K. Subudhi	Alternate Member
17.	In Personal Capacity	Dr Barun Deb Mukherjee	Principal Member
18.	IN Personal Capacity	Shri K K Paul	Personal Capacity

Invitees:-

Sl No.	Organization	Member	Member Designation
1.	MECON, Ranchi	Shri Anuj Kumar Ray	AGM, C&C
		Shri Sanjay Behera	
2.	AIIFA Sustainable Steel Manufacturers Association	Shri Rajesh Kabra	Sr. Vice President
		Shri Prabhakar Mishra	Sr. Executive Director

ITEM 0 GENERAL

0.1 Inaugural address by Head of Metallurgical Engineering Department

Head MTD, Shri Sanjiv Maini, graciously welcomed all members and the Chairperson Dr A. K. Chattopadhyay to the 29th meeting of the MTD 15 Technical Committee. He kindly suggested that the committee aim to meet quarterly, striving for at least 4 meetings a year to review all the pre-2000 and other pending standards for revision or new formulation.

In his inaugural address, he encouraged increasing BIS standards' outreach by holding at least one physical meeting annually at technical institutes which has signed MOU(s) with BIS like NITs or IITs and other regional institutes. These meetings would include a half-day seminar on the basics, latest technological developments, and important standards, allowing the younger generation to understand how standards are formulated and the functions of BIS.

He respectfully urged committee members to actively participate in all the meetings and respond to all documents circulated, even if they had no comments or expertise. He emphasized the importance of participation and politely suggested considering action against organizations that did not participate in two consecutive meetings, and suggested to replace them with new ones.

He highlighted that standards for revision or new formulation should follow the new BIS guidelines, which included action research projects such as literature surveys, empirical data surveys, or small R&D projects. He also mentioned that the Terms of Reference (TOR) for R&D projects were available on the BIS portal and invited members with relevant expertise to apply through the portal, sir also mentioned that the expenses incurred in the projects up to 10 lakh will be funded by BIS.

0.2 Opening Remarks by the Chairperson

Dr A. K. Chattopadhyay, Chairperson, MTD-15 welcomed the members of the committee to the 28th Meeting of Refractories Sectional Committee, MTD 15. During his address, he thanked Head MTD Shri Sanjiv Maini sir and enlightened the point raised by him about increasing the frequency of meeting so that a greater number of issues can be addressed. Also, he said to hasten up the process so that we can cope up with requirement of robustly growing economy and also stressed upon conducting at least one of the meetings in a physical manner. Also sir has requested all the committee members to actively participate in all the proceedings of the committee as mentioned by head MTD. Sir mentioned that the committee should work in a manner that the associated industry get maximum benefits out of it. Sir emphasize to focus more to formulate our indigenous standard rather to adopt ISO standards as many technological developments were taken place across our country and globe in the last 30 years. Sir also mentioned to make working group for monolithic rather than specific to mortars only to discuss and cover the vast scope of the monolithic like castable, gunning material, ramming mass etc. Sir further mentioned that like of ISO we also try to focus on standardization more towards unshaped material from shaped one.

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ITEM 1 CONFIRMATION OF MINUTES OF LAST MEETING

1.1 Since, there were no comments received till the last date of receiving the comments i.e. 10-05-2024 on the minutes of the 28th meeting of Refractories Sectional Committee, MTD-15 held on 19th January 2024 via WebEx (VC) circulated vide our letter No. MTD-15/A-2.28 dated 23-04-2024 through BIS portal, hence the committee during its meeting confirmed the minutes of its previous (28^{th}) meeting.

ITEM 2 SCOPE AND COMPOSITION OF SECTIONAL COMMITTEE, MTD 15

2.1 The Committee noted the information given in Item **2.1** to **2.2** of the Agenda of the Meeting.

2.2 The Committee noted the information given in Item **2.3** of the Agenda of the meeting and after deliberation requested all the members to participate actively in the committee meetings to avoid any termination of his/her membership. In case of any emergency, if any member unable to attend the committee meeting, member should inform the same to the chairperson. Further the committee requested members who had not yet submitted the self - declaration (either principal or alternate member) (list is enclosed below) to submit the same to the member secretary at the earliest.

membernotsubmitteddeclaration.docx

The decision taken with respect to the organizations who have not attended the last 2 consecutive meetings along with this meeting is enclosed below:

Sl No	Organization Name	Status	Decision of the committee during this meeting
1.	Tata Steel Ltd, Jamshedpur	Letter was once again sent on 11^{th} June 2024 vide mail reminding to send fresh nominations or to actively participate in the upcoming committee meetings of the committee. **However no reply was received.**	The committee in its meeting noted the information given in **Item no 2.3** of the agenda of the meeting and after deliberation decided that the organization is not participating in the committee meetings consequently and also not responding to the multiple active participation mail sent to them, hence **decided to withdraw** their membership from the committee as per the office order No. PNC09/18/2023-PNC-BIS dated 05-09-2023 and requested member secretary to **send termination letter to them**.

2.	**Rashtriya Ispat Nigam Ltd, Vishakhapatnam**	Letter was sent on 6th June 2023 vide mail to send fresh nominations or to actively participate in the upcoming committee meetings of the committee. Subsequently the Fresh nomination enclosed below received via mail dated 13th November 2023.However declarations are awaited and also the organization had not attended the previous meeting.  APPROVED BIS SUB COMMITTEE MEMBE Letter was once again sent on 4 July 2024 vide mail to actively participate in the upcoming committee meetings of the committee. **However, no reply was received.**  RINL ACTIVE PARTICIPATION.pdf	----------do----------

2.3 The committee noted the composition of the committee given **in Item 2.4 of the Agenda** of this meeting and after deliberation decided to **withdraw the nominations** of Young Professionals/2nd Alternate members of the member organization **having more than two representatives** the details of which is enclosed below.

alternate members.docx

The committee further noted the information regarding the composition of the panel given in **Item 2.4 of the agenda** of this meeting and after deliberation decided as follows:

1.To split the panel 1 into three working groups WG 1,WG 2 and WG 3 which will consists of :-

a) WG - 1 For Dense and Insulating Shaped Refractories (for looking after documents prepared by ISO WG 32)

i) Shri Sanjay N Koyande of M/s CCRT Laboratories, Thane (**Convener)**
ii) Shri Anuj Kumar Ray of M/s MECON, Ranchi
iii) Shri S.K. Subudhi of M/s TRL Krosaki Refractories Ltd, Jharsuguda
iv) Dr. I.N. Chakraborty of M/s Calderys India Refractories Ltd, Nagpur

The committee requested Shri Arvin Chandra Goyal of M/s Centre for Engineering and Technology (CET), SAIL, Ranchi to provide the details of the persons/organization for induction into this working group WG-1. Further the committee nominated **Shri Sanjay N Koyande** from this working group to participate in ISO WG 32 whose responsibility would be to take the viewpoint of the panel/committee into that WG meeting.

b) WG -2 Refractory Mortars and Monolithics (for looking after documents prepared by ISO WG 27)

i) Dr. Sukumar Adak of M/s Mahakoshal Refractories Pvt Lld, Katni (**Convener)**
ii) Shri S D Majumdar of M/s IFGL Refractories Ltd, Kolkata
iii) Shri. Shantanu Basak of M/s Calderys India Refractories Ltd, Nagpur
iv) Shri Satyakam Nayak of M/s National Aluminium Company Ltd, Angul, Odisha
v) Shri S.K. Subudhi of M/s TRL Krosaki Refractories Ltd, Jharsuguda
vi) Shri Sanjay Kumar Behera of M/s MECON, Ranchi
vii) Dr. Prema Ranjan Rauta of M/s Dalmias Inst. of Scientific & Industrial Research, Rajganapur
viii) Shri Sanjay N Koyande of M/s CCRT Laboratories, Thane

Further the committee nominated **Dr. Sukumar Adak** from this working group to participate in ISO WG 27.

c) WG-3 Refractory Test Piece Preparation via Gunning Techniques (for looking after documents prepared by ISO WG 25)

i) Dr. I.N. Chakraborty of M/s Calderys India Refractories Ltd, Nagpur (**Convener)**

The committee requested Shri Arvin Chandra Goyal of M/s Centre for Engineering and Technology (CET), SAIL, Ranchi to provide the details of the persons/organization for induction into this WG-3. Further the committee nominated **Dr. I.N. Chakraborty** from this working group to participate in ISO WG 25 proceedings.

2. To modify the scope of the panel 2 as "Panel for formulation of new standard on classification standard on **Basic dense shaped Refractory Products"**.

3. To modify the scope and tittle of the panel 3 as **Panel 3-Panel for review of progress of R&D project for identification of critical parameters for classification standard on insulating bricks.**

4. To change the title of the panel 4 as "**Test Methods for Refractories"** from "For reviewing of Pre 2000 (Formulated before 2000) Test Method standards".

5. To change the title of the panel 5 as "**Product specification for refractories"** from "For reviewing Pre 1987 (formulated before year 1987) product specifications and include **AIIFA Sustainable Steel Manufacturers Association into the panel.**

2.4 The Committee noted the information given in **Item 2.5 of the Agenda** of this meeting regarding the co-opted organization and after deliberation decided as follows:

Sl. No.	**Name of the Organization**	**Decision of the committee in this meeting**
1.	RHI Magnesita Private Limited, Gurugram	The committee in its meeting deliberated that the organization is not responding to the multiple co-option request sent to them and hence **decided to withdraw** their nomination.
2.	BHEL, Hyderabad	----------DO----------
3.	Sigma Test and Research Centre Delhi	The committee **noted the information regarding the withdrawal** of the co-option of the organization.

2.5 The committee noted the information given in Item no **2.8** of the agenda of the meeting. As the organization given below is interested to continue with the proceedings of the meeting and sent their fresh nominations, hence the committee after deliberation decided to re co-opt the organizations into the committee:

Sl No	Organization Name	Members
1.	Steel Authority of India Ltd, R&D Centre for Iron and Steel, Ranchi	Shri M.K. Kujur (General Manager) (Principal Member) Mr. Shri Indranil Roy (Assistant General Manager) (Alternate Member)
2.	MECON, Ranchi	Shri Anuj Kumar Ray (AGM,C&C) (Principal Member) Shri Sanjay Kumar Behera, (Sr. Manager refractories) (Alternate Member)

ITEM 3 ACTION TAKEN REPORT

3.1 The committee considered the summary of Actions taken as given in the agenda and decided as follows:

Issues arising out of previous meeting:				
Sl. No.	**Subject**	**Background/Decisions in the previous to previous meeting**	**Decision of the committee in its 28th meeting**	**Decision of the committee in this meeting**
1.	**Formulation of New Standard on "Testing Procedures For Dry Vibratable Masses"**	**Decision of the committee in its 26th meeting** The committee noted the information as given in **Annexure 2, Sl. No.8** of the Agenda of 26th meeting and after deliberation requested Dr I. N. Chakraborty to give his final views/recommendations on comments received from IFGL and Tata Steel on the draft enclosed at **Annexure-1 of the Agenda of the 26th meeting.** The committee further requested MS	Further with respect to the new standard on DVM (Dry Vibratable mass) the committee after deliberation requested member secretary to share the draft so prepared to Shri S D Majumdar and the members of Panel-4 to have their views/comments/recommendations on the test method procedures	The committee noted the information given in **Item 3.1 Annexure-2 Sl. No 1** of the agenda of this meeting and after deliberation requested **Panel 4 Convener Dr. I. N. Chakraborty** to submit the draft Standard on "Testing Procedures for Dry Vibratable Masses" before 30th September 2024 after discussion in the panel .The draft submitted

		to send views/recommendations so received from Dr I. N. Chakraborty to the chairperson MTD15 for further reviewing and if approved would be sent for WC/printing as required. **Action taken:** As requested by the committee to Dr INC of M/s Caldreys to giv his final views on the comment raised by IFGL and Tata steel. Dr. INC gave his final comments vide email dated 29 March 2023 and with respect to comments from Tata steel the following was recommended:  Dr INC FINAL Comments.pdf "While optimising the numbers of strokes to be used for sample preparation it was observed that 10 strokes from each end suffices. This is because by increasing the numbers of strokes, no measurable change in the specimen height was observed. This implied that for the specified load of the Sand Rammer, 10 strokes from each end are optimum. Increasing the number of strokes will not increase the test specimen bulk density (BD) and as an extension of the statement we may say that specimen apparent porosity (AP) will not be lowered."	incorporated in the standard which has been prepared by taking assistance from ISO 1927 Part 5 and Part 6 , IS 10047 and requested panel convener Dr. I. N. Chakraborty to submit the finalized draft to BIS/member secretary. The committee further decided to review the finalized draft to be submitted by the panel in the next committee meeting. **Action taken:** As per the decision of the committee the draft modified by Member Secretary enclosed below  Dry Vibratable Mass (DVM) BY SAAQIB 2N was shared with Shri S D Majumdar of M/s IFGL and the members of **panel 4** via e-mail dated 20-06-2024 to have their views/comments/recommendations on the test method procedures incorporated in the standard which has been prepared by taking assistance from ISO 1927 Part 5 and	will be discussed in the next committee meeting.

		For the comments raised by IFGL regarding the sample preparation of Basic ramming masses/dry vibratable masses, it was recommended by Dr INC : "That the method of preparation of dry vibratable masses is entirely different and a new standard has to be developed for the same. " Accordingly, Dr. INC submitted the draft by modifying the scope and **excluding** the **dry vibratable masses** from the standard vide email dated 18 April 2023 and is enclosed at Appendix-1 and the same was sent for approval to chairperson of the committee along with the final comments of Dr. INC. The chairperson of the committee vide email dated 26 April 2023 agreed with the final comments made by Dr INC and accorded the approval for sending the draft enclosed at Appendix-1 for printing. The approval of the chair is enclosed below. Also, the Panel 4 in its Ist meeting on 24th May 2023 also recommended the same. The recommendations of the Panel 4 on the formulation of new standard on DVM is enclosed at Item 6.7.1, Page 28. **Final Status:**	Part 6 , IS 10047 and requested panel convener Dr. I. N. Chakraborty to submit the finalized draft to BIS/member secretary before 10-07-2024. **However the reply/revised draft was awaited.**	

		The revised draft of IS 10047 has been sent for printing and is enclosed below.  F1MTD3811337_12052023_2.docx **The committee may please note.** **Further Actions Required:** 1) The standard is also due for review **at** Item 6.5, Sl. No 15, Page No.22. It is being recommended to **reaffirm and revise** the standard also. 2) The committee may also deliberate on formulation of the new standard for testing of **dry vibratable masses (DVM).** It is being recommended to form a panel for the same and nominate a project leader for the same who will submit an R&D proposal to BIS under Small R&D project for getting the funding for the same under 2 lacs. (Please refer to the R&D guidelines given at Item 11, Page 66). **Decision of the committee in its 27th meeting:**		

		The committee after detailed deliberation decided to **reaffirm and revise the standard** as the standard is under due for review and currently under printing and further decided to formulate the new standard on DVM (Dry Vibratable mass) and requested Dr INC to share the DVD measurement procedure with Shri S D Majumdar of M/s IFGL Refractories Limited, Odisha who will draft the remaining test procedures including the sampling & test piece preparation and then discuss it jointly with Panel4 to prepare a finalized draft of the new test method procedure for DVM (Dry Vibratable Mixes) before the next committee meeting and further requested Dr INC to share the finalize draft document to the BIS Secretariat . The committee also requested the Member Secretary that on receipt of the draft that same shall be circulated among the members for the comments. The committee further held that the testing and validation part of the test method will be discussed also in the next committee meeting upon the receipt of the draft document/standard. **Action taken:** Decision taken on the review of the standard is to **Reaffirm and revise** the standard and also the standard has been published on 28 August 2023.		

		Further with respect to the DVM (Dry Vibratable mass) Dr INC submitted the first draft enclosed below incorporating the DVD measurement procedure vide email dated 22-June-2023 and Dr INC also shared the same with Shri S D Majumdar of M/s IFGL Refractories Limited, Odisha who were supposed to draft the remaining test procedure for dry vibratable masses. Dry Vibratable Mass (DVM) Evaluation Pr first emil from Dr INC.pdf Again, discussion was held with Dr INC and a second draft enclosed below was received vide email dated 25-June-2023 Dry Vibratable Mass (DVM) Evaluation Pr in which method of preparation of test pieces for determination of BD, CCS and PLC was given and test procedures were referred to IS 10047 and was shared again with Shri S D Majumdar of M/s IFGL Refractories Limited, Odisha who raised his concerns about the curing temperature of 250 for Bakelite and stated that they are using some other resin and users will not agree to 250 degrees curing temperature. However Dr. INC		

		argued that, we can keep that open in the standard as agreement between buyer and supplier about the curing temperature of resin and may modify the clause 3.7 as follows: *"Since you are using a different resin, the curing temperature is expected to be different. So, instead of specifying any specific resin, we may make the following statements.* *Section 3.7* *"Thermo setting / hardening resin should be and the used"* *Method* *"For the product which does not contain any organic binder and / or any resin, add 1.5%, by weight, a thermo setting / hardening resin. For the products containing a resin or an organic hardener, carry out a preliminary test of release from the mould and cohesion of the test pieces. Add 1.5 % of thermo setting / hardening resin, if required.* *Once the resin mixed DVM is prepared, the procedure for the test piece preparation is as per IS 10047. Height aimed of the test piece after drying is 50-mm ∓ 2 mm. Subsequently, the DVM filled mould should be cured at the hardening temperature specified by the resin*		

		supplier for 2 hours. Remove the mould from the drying oven; cool it down to room temperature and subsequently remove the cured DVM from the mould." *Should we specify the heat treatment temperatures for the measurement of other properties? We may keep it open ended by saying "properties would be measured after curing the test specimens at the temperatures and duration agreed between the refractory maker and the buyer".* Further Communications are given in the below object:  Email INC and Majumdar sir.pdf  CALDE_MIX_SC_84_M16.pdf  SILICA_MIX_4_B_10.pdf Based on all the observations, again the draft was modified by Member Secretary as per BIS format and taking assistance from ISO 1927-3, ISO 1927-5, ISO 1927-6, ISO 1927-8 and shared via WhatsApp on 7 August 2023 with Dr INC and the same is enclosed below.		

		Dry Vibratable Mass (DVM) BY SAAQIB 2N Reply was received vide email dated 2 Sep 2023 giving his observations on the modified draft and is enclosed below. final mail dR INC.pdf Dry Vibratable Mass (DVM) BY SAAQIB 2N However, it was requested over telephonic conversation to look again into the draft and the comments provided by BIS especially for PLC determination by matching the details given in IS 10047 and ISO 1927-6 and submit the final draft to BIS for circulation among the committee members. **However, the final draft is awaited.** It was further proposed that we may align our monolithic standards for test perice preparation with ISO 1927-5, and cover test methods in single standard like that of ISO 1927-6 and ISO 1927-8. We will not adopt them in totality but we can have copy their format. This action we can start in the next financial year.		

2.	**Revision of IS 1526 : 1960** Sizes and shapes for firebricks 230 mm Series **& IS 5495 :1969** Sizes and shapes for firebricks (300 mm And Higher Sizes	The committee decided to allot the review to **Panel 4 on reviewing of Test method standards** and requested them to review the standard in order to align our Indian standard with the current practices being followed by industry and simultaneously should be at par with international standards. The panel convener shall submit the final recommendations i:e whether to revise/reaffirm/ withdraw to the committee within 3 months' time period. **Action taken:** The panel 4 was requested to review the standard vide email dated 16 June 2022 and further reminder was sent vide email dated 23 August 2022 and 23 November 2022. The Panel Convener Dr Sukumar Adak replied vide email dated 23 November 2022 that he is already working on it and will revert back due course of time. However further reply was awaited. Further it is to inform to the committee that for dimensions of brick mentioned in IS 1526: 1960 Size and Shape for firebrick and IS 5479: 1969 Sizes and shape for fire bricks (300mm and higher) there exists ISO standards on similar subject ISO 5019(6 parts) which covers the dimensions of refractory bricks such as Arch Bricks , rectangular bricks, rectangular checker bricks for regenerative furnaces, dome bricks for	The committee after deliberation agreed with the recommendation of the panel 5 to adopt all the 6 parts of ISO 5019.Further the committee deliberated that in future it can be taken up as R & D project for its revision to include the refractory bricks of different sizes (higher sizes) as per our industrial requirements. **Action taken:** It was informed to the committee that the sizes of 300 mm and higher are not covered in ISO 5019 series. Hence it was proposed to keep the indigenous standards as it is without harmonizing with ISO 5019 series and drop the subject from revision.	The committee noted the information given in **Item 3.1 Annexure-2 Sl. No 2** of the agenda of this meeting and after deliberation decided not to harmonize the standards IS 1526 and IS 5495 with ISO 5019 series and further the committee **decided to drop** the revision of our indigenous standard, keeping the standard as it is.

		EAF, dimensions for skewbacks, dimensions of bricks for BOF and ISO 5417 which is dimensions for bricks in rotary kilns. **Decision of the committee in its 26th meeting** The committee after deliberations in its 26th meeting requested **Panel 4 on test method stanadrds** to give their view/recommendations till 01 March 2023 on feasibility of adoption of ISO standards and harmonizing the existing Indian standards on dimension of refractory bricks. **Action taken:** The panel 4 on test methods in it Ist panel meeting held on meeting on 24th May 2023, after detailed deliberation recommended to withdraw IS 5495 and IS 1526 and adopt ISO 5019 (part1 to Part 6) in totality and issue a different/New IS Number which will supersede IS 5495 and IS 1526. **Decision of the committee in its 27th meeting:-** The committee after deliberation agreed with the recommendations of the panel and decided to withdraw the standard and **adopt the following 6 parts of ISO 5019 in totality** under dual numbering system with different IS Number as		

		the ISO 5019 series covers much wider range of bricks : ISO 5019-1:1984 Refractory bricks — Dimensions — Part 1: Rectangular bricks ISO 5019-2:1984 Refractory bricks — Dimensions — Part 2: Arch bricks ISO 5019-3:1984 Refractory bricks — Dimensions — Part 3: Rectangular checker bricks for regenerative furnaces ISO 5019-4:1988 Refractory bricks — Dimensions — Part 4: Dome bricks for electric arc furnace roofs ISO 5019-5:1984 Refractory bricks — Dimensions — Part 5: Skewbacks. ISO 5019-6:2005 Refractory bricks — Dimensions — Part 6: Basic bricks for oxygen steel-making converters **Action taken:-** As recommended by the committee in its previous meeting, the MTDC in its 30th meeting held on 14th September 2023 approved the		

		withdrawal of the standard. Accordingly, the standards will be withdrawn from portal. However, some of the brick dimensions mentioned in IS 5479 are not covered in the ISO parts. It was being proposed to conduct an R&D project for identification of brick dimensions being used in various furnaces across India. And if the sectional committee feels that no R&D is required , the brick dimensions mentioned in the ISO standards are used and require no R&D, then we can go ahead with the wide circulation of these 6 drafts and withdrawal of IS 1526 and IS 5479.		
3.	**Revision of IS 2042 : 2006** Insulating Bricks - Specification **& IS 12951 Mica Insulating bricks for high temperature applications** **&Adoption of ISO 2245: 2006** Shaped insulating refractory products — Classification	The Committee in its 24th meeting after detailed deliberation decided to agree with the recommendation of the Panel and decided to adopt ISO 2245 : 2006 as an Identical Standard to bring Indian Standard in line with the international practices. The committee further decided to send the draft Indian Standard for wide circulation for a period one month. If no comments are received or comments received are editorial in nature then the draft document will be sent for printing with the permission of the chairman.	The committee noted the decision taken by the special meeting held on 14 November 2023 in hybrid mode to initiate the small R&D project to develop an indigenous standard on classification of refractory insulating bricks and Terms of reference of the project enclosed below.  Further the committee formally approved the minutes of the above	The committee noted the information given in **Item 3.1 Annexure-2 Sl. No 3** of the agenda of this meeting and after deliberation requested the members to bid for this small R&D project hoisted in the BIS portal before last date for the submission.

	(MTD/15/15892)	The matter was put forward to HMTD for approval for wide circulation of the revision of standard IS 2042 : 2006 by adopting ISO 2245 : 2006. However comments were received as below: "The proposed ISO 2245 (2006 version) standard is not exact replacement to the existing Indian standard, IS 2042:2006. Hence, it is requested to the TC to reconsider its decision for replacing IS 2042:2006 standrad with ISO 2245 standard. Instead, IS 2042 can be revised by incorporating the additional requirements given, if any, in ISO 2245" Also DPIIT is desirous of having product standards on Refractory bricks and carbon bricks. The conversion of product standard to classification standard is not amenable for product certification by BIS which is against the interest of DPIIT. In order to take care of the perspective of users on this standard, the view point of users is a must. Hence the panel may be reconstituted by incorporating the users and associations like BHEL, AIIFA etc. into the panel. **Decisions in 25th meeting:**	mentioned special meeting and requested Shri Saran Khemka of M/s Achint Chemicals (Manufacturer of Refractories & Monolithics), Bhilwara and Shri Bishwaroop Sarkar of M/s Engineers India Limited, New Delhi to make the bid for the same. **Action taken:** The R&D project was floated on BIS portal and we had received proposals from the institute BITS Pilani (Prof. Anupam Singhal) and Guru Nanak Dev Engineering College, Ludhiana (Dr Amrinder Singh Pannu) the same were evaluated by the Research Evaluation Committee (REC) which include two external experts namely Dr I. N. Chakraborty of M/s and Dr A. K. Chattopdhyay and the technical proposals failed the minimum 70 mark criterion. MTD 0140-2_0001.pdf MTD 0140-1_0001.pdf evaluation.pdf	

		The Committee after detailed deliberation in its 25th meeting decided to constitute Panel 3 to draft the revised specification standard by incorporating the additional requirements given in ISO 2245 and other international standards in our Indian standard and making other necessary changes (like including in the standard, clauses for classification and grades of magnesia carbon bricks, technical requirements, test methods, packaging, marking) and submit the draft standard within 1month's time. The composition of the Panel 3 Constituted for this purpose is given below: Dr I N Chakraborty, (Convener) Shri Prasenjit Saha, M/s EIL Dr. Ranjan Dey Shri Saran Khemka Shri S. N. Su **Actions Taken:** The **panel 3** was requested vide email dated 12-September -2022 to submit the revised draft on IS 2042 . However, no reply was received. Further it is proposed to drop the earlier Doc. No. **(MTD/15/15892)** in which the ISO 2245:		

		2006 adoption was recommended and sent for wide circulation. Since both IS 2042 and IS 2245 have different scopes. **Decision of the committee in its 26th meeting** The committee after deliberations requested the panel 3 to give their suggestions/recommendations on formulating a classification standard or a revised specification by modifying the ISO document ISO 2245:2006 and suggest a way forward. The committee further decided to drop the earlier document number since both the IS 2042 and IS 2245 have different scopes, one being classification and the other being a product specification. **Actions Taken:** As decided by the committee, the document number (MTD/15/15892) was dropped and a new number will be assigned once the draft will be sent for P-Circulation. **A first combined meeting between Panel 3 and Panel 5** was held on 02-June 2023 and the minutes of which are enclosed below.  Minutes 1st combinedMTD15 pa		

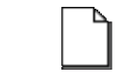
		The panel after deliberation recommended to formulate new standard on classification and **adopt ISO 2245 in total** and **with respect to the revision of IS 2042** , Mr. Saran Khemka of M/s Achint Chemicals (Manufacturer of Refractories & Monolithics), Bhilwara and Mr Bishwaroop Sarkar of M/s Engineers India Limited, New Delhi informed the panel that usage of IS 2042 is now a days become limited to SAIL or PSU's only also many purchasers quote orders referring to some **standard manufacturers specification** or private company's specification **standard (for example Skamol and thermal ceramics specification standard)** and different international specification standard which makes it difficult for manufacturers to comply, **so we should have Indian standard on specification which specifies at least basic specification** (for different groups which are mentioned in ISO classification standard). Also to keep the specification standard open so that orders shall be quoted as agreed between purchaser and supplier. **Both EIL and Achint chemicals agreed to submit the revised draft of IS 2042 merging both IS 2042 and IS 12951,** and including the grades in standard by considering the purchaser's demand data and manufacturers supply data to member secretary before 3 months' time **by 20th August 2023**. The draft		

		submitted will be discussed further in the next panel meeting. **Subsequently panel also recommended to follow** the **same prototype** for other product standard i.e to adopt ISO with reference to classification and accordingly revise our Indian standard on product specification where ever product specification is also required. **Final recommendations:** 1) The panel recommended to adopt ISO 2245 in total as a separate standard for classification 2) Revise IS 2042 & IS 12951 into a single standard and will submit the revised draft by 20th August 2023 3) Follow the prototype in all other product standards wherever product specification is required, otherwise go for classification only. **Decision of the committee in its 27th meeting:-** The committee after deliberation decided not to have separate standards for product specification and classification as the product specification is not relevant in today's context and most of the International Organizations have only classification and test method standards		

		and further decided to not to adopt ISO 2245 in totality and further requested **panel 3** to formulate an indigenous/own separate standard for classification only, for insulating bricks instead of formulating a product standard , and classify the insulating bricks based of critical parameters relevant in the Indian industry and classify insulating bricks accordingly and further decided that the decision regarding the withdrawal of the product specifications for insulating bricks namely IS 2042 : 2006 and IS 12951:2006 will be discussed in the next committee meeting after the revised draft on classification of Insulating bricks will be submitted by the panel 3 . The committee further requested to the members of Panel 3 namely Shri Saran Khemka of M/s Achint Chemicals (Manufacturer of Refractories & Monolithics), Bhilwara and Shri Bishwaroop Sarkar of M/s Engineers India Limited, New Delhi to lead the project and complete the same before 20th August 2023 by submitting a new draft document on classification of Insulating bricks. The committee further requested the above members that if they want to register the same under small R&D project, the TOR (Terms of reference) of the R&D project enlisting the scope and methodology and the estimated cost may be submitted to BIS in order to get the funding under small R&D projects which		

		involves costs for literature survey, empirical data collection etc. up to 10 lacks. **Action taken:** It was decided by the committee in its previous meeting that Panel 3 headed by Shri Saran Khemka of M/s Achint Chemicals (Manufacturer of Refractories & Monolithics), Bhilwara and Shri Bishwaroop Sarkar of M/s Engineers India Limited, New Delhi will develop an indigenous standard on classification of refractory insulating bricks. However, during the special meeting held on 14 November 2023 in hybrid mode decided to initiate the small R&D project for the same and approved the below Terms of reference of the project for circulation on BIS portal for invitation of Bids from interested parties. The ToR and the minutes of special meeting are enclosed below. Also, the minutes were circulated to members on 11 January 2024 inviting their comments till 17-04-2023. It was further proposed to formally approve the minutes of the Special meeting held on 14-Nov-2023.   		

		Remarks/proposals by member secretary: The committee may please note and approve the minutes of special meeting. And in case any further comments on ToR are there the same may be put forward. Further it was requested to Shri Saran Khemka of M/s Achint Chemicals (Manufacturer of Refractories & Monolithics), Bhilwara and Shri Bishwaroop Sarkar of M/s Engineers India Limited, New Delhi to make the bid for the same.		
4.	**Formulation of new standard on Carbon Bricks -Classification**	The committee in its 24th meeting deliberated on the proposal received from JS (DPIIT) for formulation of Product standard on the Carbon Bricks and decided that the decided to formulate the Panel on Carbon Brick with the following composition to give their recommendation on the given subject to the Sectional Committee: a) Shri S K Subudhi, (Convenor) b) Dr A K Pattnaik c) Dr Arup Ghosh d) Dr Sukumar Adak e) Shri Gautam Ghosh	The committee in its meeting after deliberation requested panel 4 to deliberate on the revised draft received (which is identical to ISO 10081-3 except the percentage of residual carbon in basic dense shaped refractory products which is 7%-50% in ISO and 5% -50% in the revived draft) from Shri S K Subudhi like which chemical analysis method to be referred in the standard etc. and come up with the recommendations/suggestions/final revised draft. The recommendation/revised draft submitted by the panel will further be circulated among the members for their views/comments and will be	The committee noted the information given in Item 3.1 Annexure-2 Sl. No 4 of the agenda of this meeting and after deliberation requested once again to **Panel 4 member Shri S. K Subudhi** to submit the final draft on Carbon Bricks –Classification by changing its title in sync with ISO or as appropriate and including the reference to test method standards in sync with ISO 10081-3 and also submit their recommendation on adopting the other parts of ISO 10081 as well before 30th September 2024 after discussion with the other panel members. The committee further requested the **Panel 4** to look into the matter of adopting ISO 10081-1 or devising an indigenous standard based on ASTM or any other appropriate

		The Panel convener Shri S K Subudhi of M/s TRL Krosaki Refractories Limited was requested to submit the recommendation vide email dated 9-05-2022. However, the recommendations were awaited. The recommendations received from Dr Sukumar Adak are placed below: 'We recommend only classifying the Carbon Bricks as per ISO 10081 : Part 1 and ISO 10081 : Part 2'  Adobe Acrobat Document The committee in its 25th meeting held on 2nd June, 2022 noted the decision of panel on Carbon Brick which recommended only classifying the Carbon Bricks as per ISO and after detailed deliberations decided to constitute Panel 2 to draft the new specification standard and submit the same to the secretariat within 1 month time as discussed in the meeting. The composition of the Panel 2 Constituted for this purpose is given below: Shri S K Subudhi (Convener) Shri Amit Roy (M./s Bhilai steel Plant)	discussed in the next committee meeting. The committee further deliberated that similar to that of different parts of ISO Standard 10081 for Classification of dense shaped refractory products this standard should be Part 1 for Basic products containing from 5 % to 50 % residual carbon, Part 2 for containing less than 5 % residual carbon and Part 3 for Special products i.e. for dense shaped refractory products of special composition like oxide and non-oxide products, non-oxide silicon carbide or carbon-based products etc. The other parts shall be developed after the finalization of first part by the panel.  Classification of dense shaped Carbo **Action taken:** Accordingly as per the decision of the committee, panel 4 was requested via mail dated 20-06-2024 to deliberate on the revised draft received from Shri S K Subudhi like which chemical analysis method are to be referred in the standard etc. and come up with the	classification standard for Alumina Silica refractories classification before 30th September 2024. The draft submitted and recommendation received will be discussed in the next committee meeting.

		Dr. M K Mishra (M/s RHI Magnesita) Dr. A K Patnaik (M/s OCL , Dalmia) Dr. Prema Ranjan Raut(M/s DISIR) Dr. H S Tripathi (M/s CGCRI, CSIR) **Actions taken :** The 1st panel meeting of Panel 2 was conducted on 21st October 2022 and the minutes of which are enclosed below.  9223_271020221039 31_0(1).docx The panel requested Dr N K Mishra to draft a product specification on carbon bricks on the basis of GB/T 22589 : 2017 and after consultation with other members and relevant stakeholders and submit the same within 3 weeks' time till 10th Nov 2022. However, no reply was received. **Decision of the committee in its 26th meeting** The committee in its 26th meeting detailed deliberations requested Panel 2 Convenor Shri S K Subudhi to submit the revised draft to the BIS Secretariat till 10th February 2023. The committee further requested MS that on the	final recommendations/suggestions/final revised draft before 10-07-2024. **However the reply was awaited.** The committee was further requested to deliberate on the title also whether the title should be in line with ISO or otherwise. *"**Classification of dense shaped refractory products — Part 1:*** ***Basic products containing from 5 % to 50 % residual carbon".***	

		receipt of the revised draft the same shall be sent in P circulation for a period of one month. In case no comments are received or comments received are editorial in nature the same shall be sent for wide circulation for a period of one month, with the permission of the chairperson, MTD15. In case no comments are received or comments received are editorial in nature , the draft shall be finalized and sent for printing with the permission of the chairperson,MTD15 Action Taken: **2st panel meeting:** The panel in its 2nd meeting held on 13th March 2023 , after detailed discussion recommended to formulate a new **classification standard** according to ISO-10081(Part3) with addition of new category Carbon bricks with 5-7% carbon content and will submit the draft by 30th April 2023.However, the draft was awaited. The minutes of the second panel meeting is enclosed below:  MOM of panel-2 meeting held on 11.  2nd panel meeting.pdf **3rd panel meeting :**		

		The panel held its 3rd panel meeting on 25th May 2023 and requested the member secretary to share the ISO 10081 part 2, Part3 and Part4 documents. **The panel further decided** to submit the modified draft by including the new category of 5-7 % carbon category (ISO which mentions only more than 7 percent carbon) and other categories based on ISO 10081-4 and ISO 10081-3 for carbon bricks to Member Secretary by 15th June 2023. The minutes of the 3rd panel meeting is enclosed below: 3rd panel meeting minutes.docx Accordingly the required, documents were shared. However, no draft document was received. **Decision of the committee in its 27th meeting:-** The committee after detailed deliberation **requested the Panel-2 Convener** to submit the revised draft before September 2023 along with the supporting documents/ sources/		

		international standards/journals/Mill test certificate from which the data was put in the standards for each clause in the draft document itself. The Committee further requested Member Secretary that on the receipt of the draft circulate it to committee members for further suggestions/inputs/recommendations for a period of 21 days. In case no comments are received/ comments received are editorial in nature, the draft document shall be sent for wide circulation for a period of two month with the concurrence of the chairperson of MTD15 Technical Committee. **Action taken:** Accordingly as per the decision of the committee panel 2 convenor Shri S K Subudhi was requested vide mail (enclosed below)dated 18-12-2023 to submit the revised draft along with the supporting documents,  Email to panel.pdf The draft recived from Shri S K Subudhi vide email dared 18 Jan 2024 is enclosed below:		

		Classification of dense shaped Carbc		

ITEM 4 LIST OF INDIAN STANDARDS OF MTD-15

4.1. The committee noted the updated list of Indian standards formulated by MTD-15 given in Item **4.1** of the agenda of this meeting.

ITEM 5 COMMENTS ON PUBLISHED STANDARDS

5.1. The committee noted the information given in Item **5.1** and **5.2** of the agenda of this meeting.

ITEM 6 REVIEW OF INDIAN STANDARDS

6.1. The committee noted the information given in Item **6.1 to 6.5** of the agenda of this meeting and after detailed deliberations on Item **6.5** which is due for review this FY year (2024-2025) decided as follows:

Sl No.	**IS Number**	**IS Title**	**Remarks of member secretary**	**Decision of the committee in this meeting.**
1.	IS 1528 (Part 1) : 2010	Methods of sampling and physical tests for refractory materials: Part 1 determination of pyrometric cone equivalent (PCE) or softening point (Third Revision)	The panel after deliberation recommended that the test procedure of both IS 1528 (Part 1) and ISO 528 are same. But ISO recommends ISO cones (ISO 1146). Whereas in Indian industry Orton cones are used predominantly. Hence recommended to stay with IS. Subsequently the committee in its 27th meeting held on 20th June 2024 after deliberation concurred with the recommendation of the panel and decided to stay with IS in its current form. Further we had received the comment from Shri P. Saravanan on Dec 07, 2022 through BIS Portal regarding the reference temperature which has been typed incorrectly as 170 instead	The committee noted the information given in Item 6.5 Sl. No 1 of the agenda of this meeting and after deliberation decided to "**Reaffirm and amend**" the standard. The committee further requested member secretary to prepare the draft amendment and send it for Wide circulation for a period of one month with the concurrence of the chairperson of the committee.

			of 1700 against Segar cone 31 in Clause 4.5.1 table 1 which is a editorial/typographical error in nature. Hence it was proposed to **reaffirm and amend** the standard.	
2.	IS 1528 (Part 15) : 2020/ISO 5017:2013	Methods of Sampling and Physical Tests for Refractory Materials Part 15 Method for Determination of Bulk Density, Apparent Porosity and True Porosity of Dense Shaped Refractory Products (Second Revision)	It was informed that the **committee in its 27th meeting after deliberation decided to vote as "CONFIRM" to the SR ballot** of ISO 5017 received as the panel 4 recommended that no changes are required in this already adopted standard and **nominated Dr. I. N. Chakraborty of M/s Calderys India Refractories Limited, Mumbai** as an expert to ISO in case **ISO decides to revise the standard** Further it was informed to the committee that currently ISO is revising this already adopted ISO standard ISO 5017:2013 and is under committee draft stage. Also BIS had commented with respect to the accuracy of measurement of drying oven details of which is enclosed below to the ISO/CD ballot received. Dr. I N Chakraborty was requested to participate actively in the revision of the standard. ISO_commenting_template_ISO_5017 (2) Hence it was proposed to **reaffirm our standard** currently and actively participate in the ISO standards development.	The committee noted the information given in Item 6.5 Sl. No 2 of the agenda of this meeting and after deliberation decided to "**Reaffirm**" the standard in its current form.

			Once the new ISO standard is published we will send the same for wide Circulation**.**	
3.	IS 1528 (Part 16) : 2020/ISO 8894-2 : 2007	Methods of Sampling and Physical Tests for Refractory Materials Part 16 Determination of Thermal Conductivity According to Hot-Wire Method (Parallel) (Second Revision)	It was informed to the committee that **panel 4 after deliberation recommended** to **stay with the current IS** as it is. Subsequently the **committee in its 27th meeting** held on 20th June 2024 after deliberation **concurred with the recommendation of the panel and decided to stay with IS** in its current form Further it was informed to the committee that this adopted ISO standard was last reviewed and confirmed by ISO in 2021.And will be reviewed again in 2026 till then the same edition will be continued. Hence it was proposed to **reaffirm the standard**.	The committee noted the information given in Item 6.5 Sl. No 3 of the agenda of this meeting and after deliberation decided to "**Reaffirm**" the standard in its current form.
4.	IS 1528 (Part 19) : 2020/ISO 16835 : 2014	Methods of Sampling and Physical Tests for Refractory Materials Part 19 Determination of Thermal Expansion (First Revision)	It was informed to the committee that **panel 4 after deliberation recommended** to **stay with the current IS** as it is. Subsequently the **committee in its 27th meeting** held on 20th June 2024 after deliberation **concurred with the**	The committee noted the information given in Item 6.5 Sl. No 4 of the agenda of this meeting and after deliberation decided to "**Reaffirm**" the standard in its current form.

			recommendation of the panel and decided to stay with IS in its current form Hence it was proposed to **reaffirm the standard** as of now and nominate an expert in case ISO decides to revise the standard. Further it was informed to the committee that this adopted ISO standard was last reviewed and confirmed by ISO in 2019 and is currently under systematic review.	
5.	IS 1528 (Part 21) : 2020/ISO 8894-1 : 2010	Methods of Sampling and Physical Tests for Refractory Materials Part 21 Determination of Thermal Conductivity According to Hot-Wire Method (Cross-Array and Resistance Thermometer) (First Revision)	It was informed to the committee that **panel 4 after deliberation recommended** to **stay with the current IS** as it is. Subsequently the **committee in its 27th meeting** held on 20th June 2024 after deliberation **concurred with the recommendation of the panel and decided to stay with IS** in its current form Also it was informed to the committee that this adopted ISO standard was last reviewed and confirmed by ISO in 2021.Further the standard will be reviewed after 5 years i.e in 2026 till then the same edition will be continued. Hence it was proposed to **reaffirm the standard**.	The committee noted the information given in Item 6.5 Sl. No 5 of the agenda of this meeting and after deliberation decided to "**Reaffirm**" the standard in its current form.
6.	IS 1528 (Part 3) : 2010	Methods of sampling and physical tests for refractory materials: Part	It was informed to the committee that ISO 21736 standard exists on the similar subject as that of Indian Standard but the procedure is difficult to comprehend, especially the one	The committee noted the information given in Item 6.5 Sl. No 6 of the agenda of this meeting and after

		3 determination of spalling resistance (Third Revision)	related to "Grid". **Hence panel 4 recommended to stay with IS in its current form. Subsequently the committee also in its 27th meeting held on 20th June 2024 after deliberation agreed with the panel recommendation to stay with the IS in its current form.** Hence it was proposed to **Reaffirm the standard.**	deliberation decided to "**Reaffirm**" the standard in its current form.
7.	IS 1528 (Part 6) : 2010	Methods of sampling and physical tests for refractory materials: Part 6 determination of permanent linear change after reheating for shaped insulating and dense refractories (Second Revision)	It was informed to the committee that determination of permanent linear change of for shaped insulating and dense refractories was covered in two standards in ISO, ISO 2477 and ISO 2478 respectively but in IS 1528 (Part 6) covers both dense and insulating in the same document and assistance has already been derived from ISO 2477 and ISO 2478. **Hence the panel recommended to stay with IS in its current form. Subsequently the committee also in its 27th meeting held on 20th June 2024 after deliberation agreed with the panel recommendation to stay with the IS in its current form**. Hence it was proposed to **reaffirm the standard** in its current form**.**	The committee noted the information given in Item 6.5 Sl. No 7 of the agenda of this meeting and after deliberation decided to "**Reaffirm**" the standard in its current form.
8.	IS 1528 (Part 7) : 2010	Methods of sampling and physical tests for refractory materials: Part 7 methods of sampling and criteria for conformity (Second Revision)	It was informed to the committee that the **panel 4 after deliberations recommended to Revise IS 1528 (Part 7) to make it more logical/scientific in nature** and further recommended not to adopt ISO 5022, ISO 1927-2 and ISO 8565 for sampling which is much complex and statistical in nature and difficult for the Indian industry to comply with. Accordingly **the committee in its 27th meeting** held on 20th June 2024 after deliberation concurred with the	The committee noted the information given in Item 6.5 Sl. No 8 of the agenda of this meeting and after deliberation decided to "**Reaffirm and revise**" the standard **to make it more logical/scientific in nature**.

			recommendation of the panel and **decided to revise the standard** by doing the required technical changes. Hence it was proposed to **reaffirm and revise** the standard.	
9.	IS 1528 (Part 24) : 2020/ISO 16334 : 2013	Methods of Sampling and Physical Tests for Refractory Materials Part 24 Monolithic Refractory Products- Determination of Resistance to Explosive Spalling	It was informed to the committee that **panel 4 after deliberation recommended** to **stay with the current IS** as it is. Subsequently the **committee in its 27th meeting** held on 20th June 2024 after deliberation **concurred with the recommendation of the panel and decided to stay with IS** in its current form Also tt was informed to the committee that this adopted ISO standard was under systematic review and BIS has voted as "CONFIRM" to the ISO ballot received. Hence it was proposed to **reaffirm the standard** in its current form.	The committee noted the information given in Item 6.5 Sl. No 9 of the agenda of this meeting and after deliberation decided to "**Reaffirm**" the standard in its current form.
10.	IS 1528 (Part 25) : 2020/ ISO 16349 : 2015	Methods of Sampling and Physical Tests for Refractory Materials Part 25 Determination of Abrasion Resistance at Elevated Temperature	It was informed to the committee that **panel 4 after deliberation recommended** to **stay with the current IS** as it is. Subsequently the **committee in its 27th meeting** held on 20th June 2024 after deliberation **concurred with the recommendation of the panel and decided to stay with IS** in its current form Also it was informed to the committee that this adopted ISO standard was last reviewed and confirmed by ISO in 2020 and the same edition of the standard will be continued till 2025.	The committee noted the information given in Item 6.5 Sl. No 10 of the agenda of this meeting and after deliberation decided to "**Reaffirm**" the standard in its current form.

			Hence it was proposed to **reaffirm the standard** in its current form as of now.	
11.	IS 9930 : 2005	Zircon refractories for glass furnace applications - Specification (First Revision)	The committee in its previous (28th) meeting held on 19th January 2024 after deliberation requested **panel 5** to review all the remaining 42 product standards and recommend whether to reaffirm/revise/withdraw/archive/amend the product standards. Accordingly as per the decision of the committee panel 5 was requested via mail dated 19-06-2024 to provide their recommendations on all the remaining 42 product standards. Panel-5 held its 5th meeting on 22-06-2024 and came up with recommendations enclosed below. However, the justifications for withdrawal and the **point regarding w**hich classification standards need to be formulated and the relevant product standards which can be withdrawn after publication of classification standards? Also the relevant details of international standards of those classifications **were missing.**  Copy of product standards.xlsx	The committee noted the information given **in Item 6.5 Sl. No 11 to Sl. No 16 of the agenda** of this meeting and after deliberation requested Panel 5 to give the complete final recommendation on product specifications which was missing from the excel sheet provided such as justifications for withdrawal, the **point regarding w**hich classification standards need to be formulated and the relevant product standards which can be withdrawn after publication of classification standards and the relevant details of international standards of those classifications etc. Based on the recommendations received, the decision will be taken accordingly in the next committee meeting.
12.	IS 10551 : 2005	Zircon mullite refractories for glass furnace applications - Specification (First Revision)	----------DO----------	--------do----------

13.	IS 10817 : 1984	Specification for bauxite for refractory industry	----------DO----------	--------do----------
14.	IS 15507 : 2004	Basic insulating coating material for application in tundish used in steel plants - Specification	----------DO----------	--------do----------
15.	IS 15508 : 2004	Refractory mass (Basic Gunning) for steel plant application - Specification	----------DO----------	--------do----------
16.	IS 6 : 1983	Moderate Heat Duty Fireclay Refractories, Group `A'	----------DO----------	--------do----------

6.2 The committee noted the information as given in Item **6.6** to **6.7** on review of pre 2000 test methods standards of the agenda of this meeting and after detailed deliberations on Item **6.7.1** decided as follows**;**

Sl No.	**IS**	**ISO Title**	**Recommendations of the panel 4 after reviewing test method standards and decision of the committee in its previous meetings**	**Decision of the committee during this meeting.**
1. Stay With IS :				
i)	**IS 1528 (Part 2) : 2011** Determination Of Refractoriness Under Load	**ISO 1893:2007** **Refractory products — Determination of refractoriness under load — Differential**	**Recommendation of Panel 4 after its first meeting:** The panel after deliberation recommended that the ISO method is different, and the equipment is not readily available in India**. Hence adopt ISO 1893 as a sep**arate standard in IS 1528 series and retain IS 1528 (Part2). **Decision of the committee in its 27th meeting :-**	The committee noted the information given on **Item 6.6.1.1 Sl. No 1 i) of Actions taken on test method** standards of the agenda of this meeting and after deliberation again requested **panel 4** to submit the revised draft of IS 1528 (Part 2): 2011 by incorporating the different procedure for the measurement of the temperature at different locations,

		method with rising temperature	The committee in its previous (27th) meeting after deliberation decided to stay with the IS and not to harmonize with ISO standard. **Decision of the committee in its 28th meeting :-** The committee noted the information given in **Item No 6.2.1 Sl No 5** of the agenda of the meeting and upon deliberation noted the point raised by CCRT Labs that the test procedures are different in the IS 1528(Part 2) and ISO 1893 standards. According to IS 1528(Part 2), temperature at different locations of the sample is identify/measured by using optical pyrometer the accuracy of which depends on the eye sight of the observer and the deformation is measured by dial gauge based system while the standard ISO 1893 is based on the differential method i.e. by using creep equipment to determine the refractoriness. Further the method specified in the IS 1528(Part 2) could be modified by replacing optical pyrometer by thermocouples which can be place at different locations of the sample to measure the exact temperature and dial gauge system should be replaced by other apparatus which are able to measure even 0.5 micron deformation at different temperature which will be much accurate than dial gauge measurement. Also as the creep equipment is not readily available in small/ medium scale industries to test as per ISO 1893.Hence the committee after deliberation decided not to adopt ISO 1893 : 2007 and take up the revision of IS 1528	procedure for the measurement of deformation of the sample as suggested by CCRT Laboratories and by incorporating the graph representing the percentage change in the height of the test piece as a function of temperature and other changes desired by the panel, before 15 September 2024.The committee further deliberated that the revised draft submitted will be discussed in the next committee meeting.

			(Part 2) : 2011. Further the committee allocated the revision of IS 1528 (Part 2) task to Panel 4 (Panel for the review of pre 2000 test method standard) and requested to submit the revised draft to the member secretary which will be discussed in the next committee meeting. **Action taken:** As per the decision of the committee, the Panel 4 was requested to submit the revised draft to the BIS secretariat via mail dated 20-06-2024 before 10-07-2024 by incorporating the changes suggested by CCRT Laboratories and also by incorporating the graph representing the percentage change in the height of the test piece as a function of temperature measured as per Figure 4 of ISO 1893 in order to understand the reporting of the result and the other changes as required. **However the reply/draft was awaited.**	
2. Stick to IS and revise:				
i)	**IS 1528 (Part 7) : 2010** Methods Of Sampling And Physical Tests For Refractory Materials	**ISO 1927-2:2012** **Monolithic (unshaped) refractory products — Part 2:**	The panel after deliberations recommended to **Revise IS 1528 (Part 7)** to make it more logical/scientific in nature and further recommended not to adopt ISO which is much complex and statistical in nature and difficult for the Indian industry to comply with.	The committee noted the information given on **Item 6.6.1.1 Sl. No 2 i) of Actions taken on test method** standards of the agenda of this meeting and after deliberation again requested **panel 4** to submit the revised draft of IS 1528 (Part 7) : 2010

		Sampling for testing **ISO 5022:1979** **Shaped refractory products — Sampling and acceptance testing** **ISO 8656-1:1988 - Sampling scheme**	**Decision of the committee in its previous meeting :-** The committee in its previous (27th) meeting after deliberation decided to not to adopt ISO 5022, ISO 1927-2 and ISO 8565 for sampling as being too statistical and difficult to comply for Indian Industry and further requested panel 4 on test methods to submit the revised draft by doing the required technical changes (such as incorporating procedure for sampling and lot sizes for raw materials , including the sampling procedures for castables etc. which are not clearly present in the IS 1528 Part 7) to make the standard more logical and self-explanatory to the Member secretary before the next committee meeting. The committee further requested the Member Secretary that on receipt of the revised draft , the same draft shall be sent for Wide Circulation for a period of two months. In case no comments are received/ comments received are editorial in nature, the draft shall be finalized and sent for printing with the permission of the chairperson of MTD 15 Technical Committee. **Action Taken:-** As per the decision of the committee in its previous meeting the panel 4 were requested via mail (enclosed below) dated 18-12-2023 to submit the revised draft by doing the required technical/editorial changes as discussed in the committee meeting. However, the revised draft was awaited.	by incorporating the procedure for sampling, lot sizes for raw materials, including the sampling procedures for castables etc as discussed in the previous meetings to the member secretary before 15 September 2024. The committee further deliberated that the revised draft submitted will be discussed in the next committee meeting.

			 Emailnn.pdf **Decision of the committee in its 28th meeting:-** The committee after detailed deliberation again requested Panel 4 to submit the revised draft by doing the required technical/editorial changes as discussed in the previous meetings before the next committee meeting. **Action taken:** Accordingly as per the decision of the committee panel 4 was requested via mail dated 20-06-2024 to submit the revised draft by doing the required technical/editorial changes (such as incorporating procedure for sampling and lot sizes for raw materials, including the sampling procedures for castables etc. which are not clearly present in the IS 1528 Part 7) to make the standard more logical and self-explanatory as discussed in the previous meetings to the member secretary before 10-07-2024. **However the reply/draft was awaited.**	

ii)	**1528 (Part 14) – 1974** DETERMINATION OF SIEVE ANALYSIS	**ASTM C92 & ISO 13765-5**	The panel recommended to continue the standard IS 1528 (Part 14) as the method is used for other refractory materials than mortars also as informed by Subdudhi Ji vide email dated 21 May2023 and during the panel meeting. subdhi ji comments.pdf . The panel finally recommended to retain the standard and revise it by aligning the scope and title with ASTM C92 and including determination of water content in the scope and title and by doing other technical/editorial changes. The panel requested Subudhi Ji to submit the revised draft. **Decision of the committee in its previous meeting :-** The committee in its previous (27th) meeting after deliberation requested panel 4 to submit the revised draft by aligning the scope and title with ASTM C92-95 'Standard Test Methods for Sieve Analysis and Water Content of Refractory Materials' and including determination of water content in the scope and title and by doing other technical/editorial changes. The committee further requested Member secretary that on the receipt of the revised draft, the same draft shall be sent for Wide Circulation for a period of two months. In case no comments are received/ comments received are editorial in nature, the draft shall be finalized and sent for printing with the permission of the chairperson of MTD 15 Technical Committee. **Action Taken:-**	The committee noted the information given on **Item 6.6.1.1 Sl. No 2 ii) of Actions taken on test method** standards of the agenda of this meeting and after deliberation again requested **Panel 4** to submit the revised draft of IS 1528 (Part 14) by doing the required editorial changes /technical changes (if required) like mentioning of determination of water content in scope and title etc as discussed in the previous meetings to the member secretary before 15 September 2024. The committee further deliberated that the revised draft submitted will be discussed in the next committee meeting.

			As per the decision of the committee in its previous meeting, the panel 4 was requested via mail (enclosed below) dated 18-12-2023 to submit the revise draft by doing the required technical/editorial changes as discussed in the meeting, however the revised draft was awaited.  Emailnn.pdf **Decision of the committee in its previous (28th) meeting :-** Shri S. K. Subudhi sir mentioned that this standard and ASTM C92 are technically identical, accordingly the committee after deliberation requested Panel 4 convener to submit the revised draft by doing only the required editorial changes and technical changes (if required) like mentioning of determination of water content in scope and title etc within 1 week to member secretary. The committee further deliberated that the draft so received shall be sent for Wide circulation for a period of 1 month after due approval from chairperson. **Action taken:** Accordingly as per the decision of the committee, Panel **4 convener** was requested via mail dated 20-06-2024 to submit the revised draft by doing the required editorial changes and technical changes (if required) to the member secretary before 10-07-2024. **However the reply/draft was awaited.**	

3. Withdrawal of IS and harmonization with ISO:				
1.	**IS 13185** Method Of Test For Determination Of Drying Shrinkage Of Refractory Mortars.	**ISO 13765-7:2021** **Refractory mortars — Part 7: Determination of permanent change in dimensions on heating**	The panel after deliberation **recommended adopting ISO 13765-7** as another part of IS 16051 series as part 7 because the ISO 13765-7 standard covers Drying as well as high temperature Shrinkage and further recommended to withdraw IS 13185. **Decision of the committee in its previous meeting :-** The committee in its previous (27th) meeting after detailed deliberation decided to adopt ISO 13765-7 : 2021 as part 7 in the IS 16051 series under dual numbering system in order to bring all the mortar testing standard in one single series and further decided to withdraw IS 13185 as ISO 13765-7 is more detailed standard and covers high temperature shrinkage testing in addition to drying shrinkage. The committee further requested the member secretary to prepare the national foreword for the adoption of ISO 13765-7 : 2021 and send the same for wide circulation for the period of 2 months. In case no comments are received/comments received are editorial in nature, the draft document shall be finalized and sent for printing with the permission of the chairperson of the MTD 15 Technical Committee.	The committee noted the information given in **Item no 6.7.1 Sl No. 3-1** of the agenda of this meeting regarding the superseding and the withdrawal of the standard IS 13185 : 1991 and IS 11452 : 1985.

			Action taken:- Accordingly, as per the decision of the committee the National Foreword for adoption of ISO 13765-7 was prepared by member secretary and was sent for wide circulation bearing document number MTD 15 (23720) on 06-10-2023 inviting comments till 7-12-2023, However no comments were received. **Decision of the committee in its previous (28th) meeting :-** Since no comments were received on the Wide-circulated draft, the committee in its meeting after deliberation decided to finalize the draft and send it for printing. Further the committee noted the information regarding the approval of MTDC in its 30th meeting for the withdrawal of IS 13185 given in Item No 6.2.3 Sl No 1 of the agenda of this meeting. **Action taken:** Accordingly as per the decision of the committee the National foreword for the adoption of ISO 13765-7:2021 was sent for printing on 04-04-2024 and subsequent to the publishing of the standard as IS 16052 (Part7) (that is another part in testing of mortars in the IS 16052 series) , the following standards shall be superseded:	

			Completely supersedes IS 13185 : 1991 'Method of test for determination of drying shrinkage of refractory mortars', and partially supersedes the test methods of drying and firing shrinkage covered in IS 11452 : 1985 'Methods of testing air-setting refractory mortars'.	
4. NEW ADOPTIONS RECOMMENDED:				
1.	**New standard** **Doc No: MTD/15/23738** **Title of IS: Refractory bricks for use in rotary kilns – Dimensions** (Identical To: ISO 5417:1986)	**ISO 5417: 1986 Refractory bricks for use in rotary kilns — Dimensions**	The panel after deliberation recommended adopting ISO as a separate/New standard. **Decision of the committee in its previous (27th) meeting :-** The committee after deliberation agreed with the recommendations of the panel to adopt ISO 5417:1986 as a new standard under dual numbering system. The committee further requested the member secretary to prepare the national foreword for the adoption of ISO 5417: 1986 and send the same for wide circulation for the period of 2 months. In case no comments are received/comments received are editorial in nature, the draft document shall be finalized and sent for printing with the permission of the chairperson of the MTD 15 Technical Committee. **Action taken:-**	The committee noted the information given in **Item no 6.7.1 Sl No. 4 - 1** of the agenda of this meeting.

			Accordingly, as per the decision of the committee in its previous meeting, the National Foreword for the adoption of ISO 5417 :1986 was prepared by member secretary and was sent for wide circulation bearing document number MTD 15 (23738) on 10-10-2023 inviting comments till 11-12-2023, However no comments were received till the last date to comment. **Decision of the committee in its 28th meeting:** As no comments were received on the wide circulated draft till the last date to comment, the committee in its meeting after deliberation decided to finalize the draft and send it for printing. **Action taken:** Since no comments were received on the WC draft and as per the decision of the committee, the finalized draft of the National Foreword for adoption was prepared by member secretary as per IS 12 (Part 2) and was sent for printing on 10-06-2024.	
2.	**New standard**	**ISO 9205: 1988 Rotary**	The panel after deliberation recommended adopting it as a separate standard.	The committee noted the information given in **Item no 6.7.1 Sl No. 4 - 2** of the agenda of this meeting.

	Title of IS : Refractory bricks for use in rotary kilns - Hot-face identification marking **Doc No: MTD/15/23734** (Identical To: ISO 9205:1988)	**Kiln Brick Hot Face Marking**	**Decision of the committee in its previous (27th) meeting :-** The committee after deliberation agreed with the recommendations of the panel to adopt ISO 9205:1988 as a new standard under dual numbering system. The committee further requested the member secretary to prepare the national foreword for the adoption of ISO 9205: 1988 and send the same for wide circulation for the period of 2 months. In case no comments are received/comments received are editorial in nature, the draft document shall be finalized and sent for printing with the permission of the chairperson of the MTD 15 Technical Committee. **Action taken:-** Accordingly, as per the decision of the committee in its previous meeting, the National Foreword for adoption of ISO 9205: 1988 is prepared by member secretary and was sent for wide circulation bearing document number MTD 15 (23734) on 10-10-2023 inviting comments till 11-12-2023, However no comments were received till the last date to comment. **Decision of the committee in its 28th meeting:** As no comments were received on the wide circulated draft till the last date to comment, the committee in its meeting after deliberation decided to finalize the draft and send it for printing. **Action taken:**	

			Since no comments were received on the WC draft and as per the decision of the committee, the finalized draft of the National Foreword for adoption was prepared by member secretary as per IS 12 (Part 2) and was sent for printing on 10-06-2024.	
3.	**New Standard** **Doc No.: MTD/15/23766** **Title of IS : Refractory test-piece preparation – Gunning materials : Part 2 Gunning refractory panels by Wet Gunning Technique** (Identical To: ISO 18886:2016)	ISO 18886 : 2016 Gunning Material Test Piece Preparation by Wet Gunning Technique	The panel after deliberation recommended adopting it. **Decision of the committee in its previous (27th) meeting :-** The committee after deliberation agreed with the recommendations of the panel to adopt ISO 18886 : 2016 as a new standard under dual numbering system with different IS number. The committee further requested the member secretary to prepare the national foreword for the adoption of ISO 18886 : 2016 1986 and send the same for wide circulation for the period of 2 months. In case no comments are received/comments received are editorial in nature, the draft document shall be finalized and sent for printing with the permission of the chairperson of the MTD 15 Technical Committee. **Action taken:-** Accordingly as per the decision of the committee in its previous meeting, the National Foreword for adoption of ISO 18886 : 2016 is prepared by member secretary and was sent for wide circulation bearing document number MTD 15 (23765) on 12-10-2023 inviting comments till 13-12-2023, However no comments were received till the last date to comment.	The committee noted the information given in **Item no 6.7.1 Sl No 4 - 3** of the agenda of this meeting.

			Decision of the committee in its 28th meeting: As no comments were received on the wide circulated draft till the last date to comment, the committee in its meeting after deliberation decided to finalize the draft and send it for printing. **Action taken:** Since no comments were received on WC draft and as per the decision of the committee, the **finalized draft was sent for printing** on 10-06-2024.Also the title was modified and Pneumatic gunning technique was made part 1 and Wet gunning Technique was made Part2 for test piece preparation of gunning materials.	
4.	**New Standard** **Doc No: MTD/15/23766** **Title of IS : Refractory test-piece preparation – Gunning materials : Part 2 Gunning refractory panels by pneumatic - Nozzle Mixing Type Gun** (Identical To: ISO 20182:2008)	ISO 20182: 2008 Gunning Material Test Piece Preparation by pneumatic - Nozzle Mixing Type Gun	The panel after deliberation recommended adopting it. **Decision of the committee in its previous (27th) meeting :-** The committee after deliberation agreed with the recommendations of the panel to adopt ISO 20182: 2008 as a new standard under dual numbering system with different IS number. The committee further requested the member secretary to prepare the national foreword for the adoption of ISO 20182: 2008 and send the same for wide circulation for the period of 2 months. In case no comments are	The committee noted the information given in **Item no 6.7.1 Sl No 4 - 4** of the agenda of this meeting.

			received/comments received are editorial in nature, the draft document shall be finalized and sent for printing with the permission of the chairperson of the MTD 15 Technical Committee. **Action taken:-** Accordingly, as per the decision of the committee the National Foreword for adoption was prepared by member secretary and was sent for wide circulation bearing document number MTD 15 (23766) on 12-10-2023 inviting comments till 13-12-2023. However, no comments were received. **Decision of the committee in its 28th meeting:** As no comments were received on the wide circulated draft till the last date to comment, the committee in its meeting after deliberation decided to finalize the draft and send it for printing. **Action taken:** Since no comments were received on WC draft and as per the decision of the committee, the **finalized draft was sent for printing** on 10-06-2024.Also the title was modified and Pneumatic gunning technique was made part 1 and Wet gunning Technique was made Part2 for test piece preparation of gunning materials.	

5.	**New Standard: IS 1528 (Part 26)** **Doc no**: MTD/15/23809 **Title of IS: Methods of Sampling and Physical Tests for Refractory Materials : Part 26 Method for Determination of Resistance to Sulfuric Acid of Dense Shaped Refractory Products** (Identical To: ISO 8890:1988)	ISO 8890: 1988 Dense shaped refractory products — Determination of resistance to sulfuric acid	The panel after deliberation recommended adopting it as a separate standard in IS 1528 series. **Decision of the committee in its previous (27th) meeting :-** The committee after deliberation agreed with the recommendations of the panel to adopt ISO 8890 : 1988 as a new standard under dual numbering system in the IS 1528 series. The committee further requested the member secretary to prepare the national foreword for the adoption of ISO 8890: 1988 and send the same for wide circulation for the period of 2 months. In case no comments are received/comments received are editorial in nature, the draft document shall be finalized and sent for printing with the permission of the chairperson of the MTD 15 Technical Committee. **Action taken:-** Accordingly, as per the decision of the committee the National Foreword for adoption was prepared by member secretary and was sent for wide circulation bearing document number MTD 15 (23809) on 18-10-2023 inviting comments till 19-12-2023. However, no comments were received. **Decision of the committee in its 28th meeting:** As no comments were received on the wide circulated draft till the last date to comment, the committee in its meeting after deliberation decided to finalize the draft and send it for printing.	The committee noted the information given in **Item no 6.7.1 Sl No 4 - 5** of the agenda of this meeting.

			Action taken: Since no comments were received on WC draft and as per the decision of the committee, the **finalized draft was sent for printing** on 08-03-2024.	
6.	**IS 1528 (Part 27) series** Doc No.: MTD/15/23834 **Title of IS : Methods of Sampling and Physical Tests for Refractory Materials : Part 27 Method for Determination of Compressive Strength at Elevated Temperature of Refractory Product** (Identical To: ISO 22685:2021)	ISO 22685: 2021 Determination of compressive strength at elevated temperature.	The panel after deliberation recommended adopting it as a separate standard in IS 1528 series. **Decision of the committee in its previous (27th) meeting :-** The committee after deliberation agreed with the recommendations of the panel to adopt ISO 22685: 2021 as a new standard under dual numbering system in the IS 1528 series. The committee further requested the member secretary to prepare the national foreword for the adoption of ISO 22685: 2021 and send the same for wide circulation for the period of 2 months. In case no comments are received/comments received are editorial in nature, the draft document shall be finalized and sent for printing with the permission of the chairperson of the MTD 15 Technical Committee. **Action taken:-** Accordingly, as per the decision of the committee the National Foreword for adoption was prepared by member secretary and was sent for wide circulation bearing document number MTD 15 (23834) on 18-10-2023 inviting comments till 19-12-2023. However, no comments were received.	The committee noted the information given in **Item no 6.7.1 Sl No 4 - 6** of the agenda of this meeting.

			Decision of the committee in its 28th meeting: As no comments were received on the wide circulated draft till the last date to comment, the committee in its meeting after deliberation decided to finalize the draft and send it for printing. **Action taken:** Accordingly as per the decision of the committee, the finalized draft of the National Foreword for adoption was prepared by member secretary as per IS 12 (Part 2) and was sent for printing on 08-03-2024.	
7.	**New Standard** **Doc No.: MTD/15/23822** **Title of IS: Refractories - Determination of dynamic Young modulus (MOE) at elevated temperatures by impulse excitation of vibration** (Identical To: ISO 22605:2020)	ISO 22605: 2020 Determination of dynamic Young's modulus(MOE) at elevated temperatures by impulse excitation of Vibration	The panel after deliberation recommended to adopt it as a separate standard in IS 1528 series. **Decision of the committee in its previous (27th) meeting :-** The committee after deliberation agreed with the recommendations of the panel to adopt ISO 22605: 2020 as a new standard under dual numbering system with different IS number than 1528. The committee further requested the member secretary to prepare the national foreword for the adoption of ISO 22605: 2020 and send the same for wide circulation for the period of 2 months. In case no comments are received/comments received are editorial in nature, the draft document shall be finalized and sent for printing with the permission of the chairperson of the MTD 15 Technical Committee.	The committee noted the information given in **Item no 6.7.1 Sl No. 4-7** of the agenda of this meeting.

			Action taken:- Accordingly, as per the decision of the committee the National Foreword for adoption was prepared by member secretary and was sent for wide circulation bearing document number MTD 15 (23822) on 18-10-2023 inviting comments till 17-12-2023. However, no comments were received till the last date. **Decision of the committee in its 28th meeting:** As no comments were received on the wide circulated draft till the last date to comment, the committee in its meeting after deliberation decided to finalize the draft and send it for printing. **Action taken:** Accordingly as per the decision of the committee, the finalized draft of the National Foreword for adoption was prepared by member secretary as per IS 12 (Part 2) and was sent for printing on 10-06-2024.	
8.	**New Standard** **Doc No.: MTD/15/23810** **Title of IS : Methods of test for refractory products : Part 1 Determination of dynamic Youngs modulus (MOE) by impulse excitation of vibration**	ISO 12680-1 : 2005 Methods of test for refractory products — Part 1: Determination of dynamic Young's	The panel after deliberation recommended adopting it as a separate standard in IS 1528 series. **Decision of the committee in its previous (27th) meeting :-** The committee after deliberation agreed with the recommendations of the panel to adopt ISO 12680-1 : 2005 as a new standard under dual numbering system with different IS number as allotting the IS number under IS 1528 will create confusion when other parts of the standard will get published.	The committee noted the information given in **Item no 6.7.1 Sl No 4 - 8** of the agenda of this meeting and after deliberation decided to send the finalized draft of the National Foreword for adoption of ISO 12680-1 : 2005 for printing as part of IS 1528 series rather than separate standard with the main title same as that of IS

	(Identical To: ISO 12680-1:2005)	modulus (MOE) by impulse excitation of vibration	The committee further requested the member secretary to prepare the national foreword for the adoption of ISO 12680-1 : 2005 and send the same for wide circulation for the period of 2 months. In case no comments are received/comments received are editorial in nature, the draft document shall be finalized and sent for printing with the permission of the chairperson of the MTD 15 Technical Committee. **Action taken:-** Accordingly, as per the decision of the committee the National Foreword for adoption was prepared by member secretary and was sent for wide circulation bearing document number MTD 15 (23810) on 17-10-2023 inviting comments till 19-12-2023. However, no comments were received. **Decision of the committee in its 28th meeting:** As no comments were received on the wide circulated draft till the last date to comment, the committee in its meeting after deliberation decided to finalize the draft and send it for printing. **Action taken:** Not sent for printing. The committee was proposed to deliberate and decide on keeping it as a separate standard or as a part of IS 1528 series.	1528 series and Part title as "**Determination of dynamic Youngs modulus (MOE) by impulse excitation of vibration of refractory products".**

6.3 The committee noted the information given in Item **6.7.2** on review of pre 2000 product standards of the agenda of this meeting and after detailed deliberations decided as follows**:**

Sl No.	Indian Standard Designation	Background/Decision of the committee in its previous meetings	Decision of the Committee in its previous meeting	Decision of the committee in this meeting
1.	**IS 9010 :1978 Specification for super heat duty fireclay refractories (Phase 2) and other remaining product standards**	Already allocated to BIS Officer on 29-04-2021 and submitted the ARP on 24-Sep-2021 it has been recommended by the officer that no major changes are required in the standard, except for some editorial changes like, incorporation of Revised version of referred standards, BIS act details, Marking clauses. Standard may be revised after the due process for the same by the MTD 15 (Refractories Sectional Committee The review and recommendations attached below were circulated to members via BIS Portal on 11th November 2021 for their comments.	**Decision of the Committee in its 28th meetings:-** The committee in its meeting after deliberation requested **panel 5** to review all the remaining 42 product standards and recommend:  ROWASPECWISE (1).xlsx 1. Which product standard needs to be withdrawn immediately which are no longer relevant to our current industrial requirements? 2. Which classification standards need to be formulated and the relevant product standards which can be withdrawn after publication of	The committee noted the information given in **Item no 6.7.2.3 B Sl No. 1** of the agenda of this meeting and after deliberation requested panel 5 to give the final recommendation on product specifications along with justifications and the relevant data (in case of withdrawal of product standards also). The committee further requested panel 5 also to recommend which classification standards needs to be formulated and the relevant product standards which can be withdrawn after publication of classification standards. Also provide the relevant details of international standards of those classifications, which was missing in the recommendation of the panel. The committee further deliberated that the recommendation and justifications so received will be discussed in the next committee meeting and decisions will be taken accordingly.

		9010 (1).docx 321415921_9010.wordfile VB sir (1).docx The committee after detailed deliberation in **its 25th meeting** decided held on 02 June 2022 **that Panel 5** will review the recommendations submitted by BIS Officer and submit their final views/comments on the standard within 3 months' time period. The committee further requested the panel to relook at the standard and review it again as the BIS Officers not being technical experts in the area have submitted only the editorial changes needed in the standard. **Action taken:** The **panel 5** was requested to review the standard vide email dated 16 June 2022 and further reminder was sent vide email dated 23 August 2022 and 23 November 2022.	classification standards? Also provide the relevant details of international standards of those classifications. 3. Which product standards need to be archived as of now and take it up for revision at the latter stage. 4. Prioritize the product standards which require the revision first. 5. Which product standards require no change and has to be kept as it is? Before 15 days from the circulation of the minutes of this meeting. **Action taken:** Accordingly as per the decision of the committee panel 5 was requested via mail dated 19-06-2024 to provide their recommendations on all the remaining 42 product standards regarding:	

		The Panel Convener Dr Sukumar Adak replied vide email dated 23 November 2022 that he is already working on it and will revert in due course of time. **However, no reply was received.** **Decision of Committee in its 26th meeting :** The committee after deliberations in its 26th meeting again requested **Panel 5** give their views/recommendations till 01 March 2023 on whether to revise/withdraw the standard. **Action Taken:** Recommendations received vide email dated June 18 2023. It is being **recommended to archive** the standard. 20230618 Recomendation of F However, since as discussed in the previous meeting that the standards like IS 6 and IS 8 are still being used in the	 1. Which product standards need to be withdrawn immediately which are no longer relevant to our current industrial requirements? 2. Which classification standards need to be formulated and the relevant product standards which can be withdrawn after publication of classification standards? Also provide the relevant details of international standards of those classifications.	

		industry and also IS 9010 is another member in such series. It is **proposed to revise the standard** along with another products in series of fireclay refractories namely IS 6, IS 8 which are for Moderate Heat Duty Fireclay and High Heat duty fireclay refractories. Further, the standard is being referred in IS 9977 : 1998 Design and construction of box type forging furnaces - Guidelines (First Revision) . It is further **being proposed to nominate a project leader in the panel and register it as a small project under BIS Funds** who will submit a proposal for the small R&D project and revise these 3 standards. **Decision of the Committee in its 27th meetings:-** The committee while deliberating on the subject of product standards and classification standards held that out of the 48 Product Standard ,most of them have become irrelevant in the	**3.** Which product standards need to be archived as of now and take it up for revision at the latter stage. **4.** Prioritize the product standards which require the revision first. **5.** Which product standards require no change and has to be kept as it is? Before 10-07-2024 to the member secretary. Further it was informed to the committee that **panel 5** held its 5th meeting on 22-06-2024 and came up with recommendations enclosed below. However, the justifications and the **point No. 2 given above** was missing.	

		present context of refractory industry as per the reasons cited above and committee in principle agreed for formulation of new classification of the products and withdrawal of the product standard once the classification standard gets published and after deliberation requested **panel 5** to review all the remaining **42** product standards and submit the recommendations on which product standards need to be withdrawn immediately that is where no classification standard is required and for which of the product standards we need to formulate vertical classification standards and submit the list of those product standards along with the respective classification group name against each group of standards before the next committee meeting. The committee further requested the panel to try to parallelly draft the classification standards before November 2023 and further held that once the	 Copy of product standards.xlsx	

		classification standards get published we will withdraw their respective product specifications. The committee also requested the Member secretary to share the list of all such product standards with the panel. **Action taken:-** It was **proposed to archive the standard** as the fire clay refractories are being used in the industry along with other standards IS 6 and IS 8 and can be taken into revision after the panel above gives the priority of works on product standards to be reviewed in the subsequent year.		

ITEM 7 NEW SUBJECTS FOR STANDARDIZATION

7.1. The committee noted the information given in **Item 7.1 to 7.5** of the Agenda of this meeting.

7.2. The committee noted the information given in **Item 7.6 of the agenda** of this meeting and after deliberation decided to co-opt "AIIFA Sustainable Steel Manufacturers Association" into the committee and Panel 5 to discuss the way forward on whether to formulate new product standard combined or separately on quartz and quartzite-based silica ramming mass or to include the same as an annexure to the new Standard formulating on **"Testing Procedures For Dry**

Vibratable Masses". The committee further requested Shri S. K. Subudhi to give the collective data of last 10 to 15 years related to the quartz and quartzite-based silica ramming mass for the fruitful discussion on the same, also requested AIIFA to provide the first draft of the standard.

ITEM 8 WTO-TBT ENQUIRY POINT

8.1. The committee noted the information given in Item **8.1 to 8.6** of the agenda of this meeting.

ITEM 9 INTERNATIONAL ACTIVITIES

9.1 The committee noted the information given in Item **9.1 to 9.3** of the agenda and after detailed deliberation requested the members to actively give their comments on all ISO documents formally circulated for voting within the technical committee and on draft documents at different stages. Further the committee requested members to actively participate in the ISO meeting to also have India's point of view at ISO, So that whatsoever the standard formulate at ISO shall have contents as per our current industrial requirements. The committee while deliberating on Item 9.2.3 of the agenda of this meeting regarding the ISO ballot received decided as follows:

Sl No.	Committee / Working Group	Reference/ISO Standards	Remarks of Member Secretary	Decision of the committee in this meeting
1.	DIS / ISO/TC 33	ISO/DIS 10059-1 (Ed 3) - Dense shaped refractory products — Determination of cold compressive strength — Part 1: Referee test without packing. Do you approve the technical content of the draft? — Approval / Approval with comments * / Disapproval * / Abstention  ISO_DIS_10059-1_(E).pdf  ExplanatoryReport (2).pdf	As **IS 1528 (Part 4)** : 2012 "Determination Of Cold Crushing Strength Of Dense Shaped Refractories Products" **covers both the ISO procedures ISO 10059-1:1992** "Dense shaped refractory products — Determination of cold compressive strength — Part 1: Referee test without packing" **and ISO 10059-2:2003** "Dense shaped refractory products — Determination of cold compressive strength — Part 2: Test with packing". Hence the **panel 4 after deliberation**	The committee noted the information given in **Item no 9.2.3 Sl No. 1** of the agenda of this meeting. As there are very minor changes changes/incorporations/modifi cations were done in revised draft of ISO 10059-1, hence the committee after deliberation **approved** the technical content of revised draft of ISO 10059-1 and decided to cast the vote as "**Approve**" to the DIS ballot received.

			recommended to stay with IS since no separate standard to be used for packing. Subsequently **the committee** in its 27th meeting after deliberation **decided to stay with the IS and not to harmonize with ISO** standard. Further it was to inform to the committee that **BIS had voted as "Abstain" and "NO" in ISO CIB and CD ballot** on the **revision of ISO 10059-1** received as per the inputs received from the committee members. Now the revision of this standard is in DIS stage, Hence **committee members was requested** to **peruse the ISO draft** enclosed herewith and **give your comments** if any related to the technical/editorial content of the draft to align the ISO standard with Indian standard so that the standard so formulated at ISO could be adopted easily in future if required.	
2.	DIS / ISO/TC 33 Adopted as IS 1528 (Part	ISO/DIS 5014 (Ed 4) - Dense and insulating shaped refractory products — Determination of modulus of rupture at ambient temperature.	It was informed to the committee that we had already adopted this ISO standard under dual numbering system as IS 1528 (Part 5) : 2007	The committee noted the information given in Item no 9.2.3 Sl No 2 of the agenda of this meeting. As there is a very few changes/incorporations/modifi

	5) : 2007/ISO 5014:1997	Do you approve the technical content of the draft? — Approval / Approval with comments * / Disapproval * / Abstention  ISO_DIS_5014_(E).pdf  ExplanatoryReport (1).pdf	ISO 5014:1997. Further it was informed to the committee that **BIS had voted as "Abstain" and "NO" in ISO CIB and CD ballot** received on the **revision of this ISO standard.** Now the revision of this standard is in DIS stage. Hence the committee members was requested to peruse the revised ISO draft enclosed herewith and give your comments if any related to the technical content of the draft so that the revised standard so formulated at ISO should have the contents as per the requirement of our current Indian industrial practices.	cations were done in revised draft of ISO 5014, hence the committee after deliberation **approved** the technical content of revised draft of ISO 5014 and decided to cast the vote as "**Approve**" to the DIS ballot received.
3.	ISO/FDIS 20182 (Ed 3) Under Adoption	Refractory test-piece preparation — Gunning refractory panels by the pneumatic-nozzle mixing type guns. **Question** — **Possible options** Do you approve the technical content of the final draft? — 1)Approval 2)Approval with corrections * 3)Disapproval * 4)Abstention	It was informed to the committee that this ISO standard is under adoption under dual numbering system and the adoption is currently under printing stage. Hence the committee members was proposed to peruse this final draft attached herewith and give their comments if any related to the technical/editorial content of the draft, so that the standard so formulated should have the contents as per our current industrial requirements/practices.	The committee noted the information given in Item no 9.2.3 Sl No 3 of the agenda of this meeting and after deliberation approved the technical content of revised draft of ISO 20182 and decided to cast the vote as "**Approve**" to the FDIS ballot received.

		 ISO_FDIS_20182_(E).pdf  ReportVoting.pdf		
4.	SR / ISO/TC 33 Adopted as IS 1528 (Part 19) : 2020 ISO 168 2014	ISO 16835:2014 (vers 2) - Refractory products — Determination of thermal expansion. 1 Recommended action: Withdraw * / Revise/Amend * / Confirm / Abstain due to lack of consensus / Abstain due to lack of national expert input 2 Has this International Standard been adopted or is it intended to be adopted in the future as a national standard or other publication? Yes * / No * 3 Is the national publication identical to the International Standard or was it modified? Identical / Modified * 4 If this International Standard has not been nationally adopted, is it Yes * / No	It was informed to the committee that we had already adopted this ISO standard under dual numbering system as IS 1528 (Part 19) : 2020 ISO 16835: 2014. Hence it was **proposed to vote as "CONFIRM" to the SR ballot received** and **nominate experts** in case ISO decides to revise the standard.	The committee noted the information given in Item no 9.2.3 Sl No 4 of the agenda of this meeting and after deliberation decided to cast the vote as "**Confirm**" to the ballot received.

		applied or used in your country without national adoption or are products/processes/services used in your country based on this standard?			
		5 Is this International Standard, or its national adoption, referenced in regulations in your country?	Yes * No		
		6 If the committee decides to revise or amend, do you propose an expert and/or project leader for the development of that project?	Yes (name(s) and proposed role(s): expert or project leader) * No		
		(*) A Comment is required for this answer value.			
		ISO_16835_2014_ed.1_-_id.57790_Public			

<table>
<tr>
<td>5.</td>
<td>SR / ISO/TC 33</td>
<td>ISO 10635:1999 (vers 5) Refractory products — Methods of test for ceramic fibre products.

<table>
<tr><th>No.</th><th>Questions</th><th>Possible Answers</th></tr>
<tr><td>1</td><td>Recommended action</td><td>Withdraw *
Revise/Amend *
Confirm
Abstain due to lack of consensus
Abstain due to lack of national expert input</td></tr>
<tr><td>2</td><td>Has this document been adopted or is it intended to be adopted in the future as a national standard or other publication?</td><td>Yes *
No *</td></tr>
<tr><td>3</td><td>Is the national publication identical to the document or was it modified?</td><td>Identical
Modified *</td></tr>
</table>
</td>
<td>It was informed to the committee that IS 14656 : 1999

“Ceramic fibre products - Methods of test” in

CHD 27 (Thermal Insulation Sectional Committee) exists on the similar subject as that of this ISO standard and no Indian standard exists in MTD 15 TC on this subject of the ISO standard.

Hence it was proposed to vote as “Abstain” to the SR ballot received or transfer the same to the CHD 27 sectional committee for reviewing and voting.</td>
<td>The committee noted the information given in Item no 9.2.3 Sl No 5 of the agenda of this meeting and after deliberation decided to cast the vote as “Abstain” to the SR ballot received as it is out of scope of the NMC which deals with only refractories.</td>
</tr>
</table>

		4 If this document has not been nationally adopted, is it applied or used in your country without national adoption or are products/processes/services used in your country based on this document? — Yes * / No 5 Is this document, or its national adoption, referenced in regulations in your country? — Yes * / No 6 If the committee decides to revise or amend, do you propose an expert and/or project leader for the development of that project? — Yes (name(s) and proposed role(s): expert or project leader) * / No (*) A Comment is required for this answer value.  ISO_10635_1999_ed.1_-_id.18729_Public		

<table>
<tr>
<td>6.</td>
<td>SR / ISO/TC 33
IS 1528 (Part 6)</td>
<td>ISO 2477:2005 (Ed 3, years 4) Shaped insulating refractory products — Determination of permanent change in dimensions on heating.

<table>
<tr><th>No:</th><th>Questions</th><th>Possible Answers</th></tr>
<tr><td>1</td><td>Recommended action</td><td>Withdraw *
Revise/Amend *
Confirm
Abstain due to lack of consensus
Abstain due to lack of national expert input</td></tr>
<tr><td>2</td><td>Has this document been adopted or is it intended to be adopted in the future as a national standard or other publication?</td><td>Yes *
No *</td></tr>
<tr><td>3</td><td>Is the national publication identical to the document or was it modified?</td><td>Identical
Modified *</td></tr>
<tr><td>4</td><td>If this document has not been nationally</td><td>Yes *
No</td></tr>
</table>
</td>
<td>It was informed to the committee that the committee in its 27th meeting after deliberation on the SR ballot of ISO 2478 “Dense shaped refractory products — Determination of permanent change in dimensions on heating” received , decided to vote for the revision of the standard to the SR ballot and also comment on the standard for merging ISO 2477 and ISO 2478 into a single standard which will cover requirements for both dense and insulating refractory products like that of our Indigenous Standard IS 1528 (Part 6) and nominated Dr. Arup Kumar Samanta of M/s TRL Krosaki Refractories Limited, Belpahar as an expert to ISO.

Hence it was proposed to cast the vote as “Revise” for the revision of this standard by merging both the ISO 2478 and ISO 2477 like that of our Indigenous Standard.</td>
<td>The committee noted the information given in Item no 9.2.3 Sl No 6 of the agenda of this meeting and after deliberation decided to cast the vote as “Revise” and subsequently comment to merge both ISO 2477 and ISO 2478 into a single standard as that of our Indigenous Standard IS 1528 (Part 6).Further the committee nominated Shri Sanjay N Koyande of M/s CCRT Laboratories, Thane as an expert to ISO.</td>
</tr>
</table>

		adopted, is it applied or used in your country without national adoption or are products/processes/services used in your country based on this document? 5 Is this document, or its national adoption, referenced in regulations in your country? Yes * / No 6 If the committee decides to revise or amend, do you propose an expert and/or project leader for the development of that project? Yes (name(s) and proposed role(s): expert or project leader) * / No (*) A Comment is required for this answer value.  ISO_2477_2005_ed.3_-_id.36181_Publica		

<table>
<tr>
<td>7.</td>
<td>SR / ISO/TC 33
Under Adoption</td>
<td>ISO 12680-1:2005 - Methods of test for refractory products — Part 1: Determination of dynamic Young's modulus (MOE) by impulse excitation of vibration

<table>
<tr><th>No.</th><th>Questions</th><th>Possible Answers</th></tr>
<tr><td>1</td><td>Recommended action</td><td>Withdraw *
Revise/Amend *
Confirm
Abstain due to lack of consensus
Abstain due to lack of national expert input</td></tr>
<tr><td>2</td><td>Has this document been adopted or is it intended to be adopted in the future as a national standard or other publication?</td><td>Yes *
No *</td></tr>
<tr><td>3</td><td>Is the national publication identical to the document or was it modified?</td><td>Identical
Modified *</td></tr>
</table>
</td>
<td>It was informed to the committee that this ISO standard is under adoption under dual numbering system and completed WC stage. As no comments were received on the WC draft subsequently the committee in its 28th meeting held on 19th January 2024 after deliberation decided to send it for printing.

Now the standard is due for review at ISO.

Hence it was proposed to cast vote as “Confirm” to the SR ballot of the standard received.</td>
<td>The committee noted the information given in Item no 9.2.3 Sl No 7 of the agenda of this meeting and after deliberation decided to cast the vote as “Confirm” to the ballot received.</td>
</tr>
</table>

		4 If this document has not been nationally adopted, is it applied or used in your country without national adoption or are products/processes/services used in your country based on this document? — Yes * / No 5 Is this document, or its national adoption, referenced in regulations in your country? — Yes * / No 6 If the committee decides to revise or amend, do you propose an expert and/or project leader for the development of that project? — Yes (name(s) and proposed role(s): expert or project leader) * / No (*) A Comment is required for this answer value.  ISO_12680-1_2005_ed.1_-_id.37670_Pub		

<table>
<tr>
<td>8</td>
<td>SR / ISO/TC 33</td>
<td>ISO 21078-2:2006 Determination of boron(III) oxide in refractory products — Part 2: Acid extraction method for the determination of boron(III) oxide in binder components
<table>
<tr><th>No.</th><th>Questions</th><th>Possible Answers</th></tr>
<tr><td>1</td><td>Recommended action</td><td>Withdraw *
Revise/Amend *
Confirm
Abstain due to lack of consensus
Abstain due to lack of national expert input</td></tr>
<tr><td>2</td><td>Has this document been adopted or is it intended to be adopted in the future as a national standard or other publication?</td><td>Yes *
No *</td></tr>
<tr><td>3</td><td>Is the national publication identical to the document or was it modified?</td><td>Identical
Modified *</td></tr>
</table>
</td>
<td>It was informed to the committee that no Indian standard exists in MTD 15 TC on this subject of the ISO standard.

Hence it was proposed to vote as “Abstain” to the SR ballot received.</td>
<td>The committee noted the information given in Item no 9.2.3 Sl No 8 of the agenda of this meeting and after deliberation decided to circulate it to MTD 34 TC and in case no comments are received cast the vote as “Abstain” to the ballot received.</td>
</tr>
</table>

		4 If this document has not been nationally adopted, is it applied or used in your country without national adoption or are products/processes/services used in your country based on this document? — Yes * / No 5 Is this document, or its national adoption, referenced in regulations in your country? — Yes * / No 6 If the committee decides to revise or amend, do you propose an expert and/or project leader for the development of that project? — Yes (name(s) and proposed role(s): expert or project leader) * / No (*) A Comment is required for this answer value.  ISO_21078-2_2006_ed.1_-_id.43838_Pub		

The committee noted the information given in Item **9.3** of the agenda of this meeting

ITEM 10 IMPLEMENTATION OF INDIAN STANDARDS

10.1 The committee noted the information given in Item **10** of the agenda of this meeting.

ITEM 11 R&D PROJECTS FOR ESTABLISHMENT/REVISION OF INDIAN STANDARDS

11.1 The Committee noted the information given in Item **11** of the Agenda of this meeting.

ITEM 12 LATEST INITIATIVES TAKEN BY BIS

12.1 The Committee noted the information given in item **12.1 to 12.6** of the agenda of this meeting.

12.2 The Committee has noted the rolling annual action plan presented by the member secretary during the meeting, as outlined in item **12.7.1** of the agenda of this meeting.

12.3 The Committee noted the Tentative Annual Calendar of Technical committee meetings given in item **12.7.3** of the agenda of this meeting and after deliberation decided to conduct 2nd and 3rd committee meeting of FY 2024-25 on the first week of December 2024 and the last week of March 2025 respectively. The final date will be decided in concurrence with the chairperson of the committee.

12.4 The Committee noted the information given in item **12.7.5** of the agenda of this meeting after deliberation requested committee members to provide the details of National and International events to be participated and Scientific Journals/Magazines to be subscribed which would be beneficial for standardization, getting information of stakeholders, identification of new subjects /areas for standardization etc.

12.5 The Committee noted the information given in item **12.7.6** of the agenda of this meeting regarding the guidelines issued by BIS for the Effective Implementation of the Process Reforms for Strengthening of the Standardization Ecosystem in the Country.

ITEM 13 TASKS ASSIGNED TO TECHNICAL COMMITTEES BY BIS

13.1 The committee noted the information given in Item **13.1** of the agenda of this meeting and after deliberation requested committee members to come forward to actively participate in casting vote to the ISO ballot of the ISO document at different stages and in the proceedings of the ISO to have effective implementation of India's point of view.

ITEM 14 ANY OTHER BUSINESS

14.1 The committee noted the information given in Item **14 Sl No 1 to Sl No 3** of the agenda of this meeting and after deliberation decided that as the number of organization in the technical committee is limited ,therefore committee requested members to give inputs of the details of organization/members of different stakeholders in the Google sheet (the link of which is given below) for creating database of mailing list for the identification of experts/sharing of the documents like WC document/get their comments on WC documents/contributing in standardisation/get their expertise/outreach our activities etc though mailing list.

https://docs.google.com/spreadsheets/d/1YrojUje7EluAbKFDw-qOT4XJHqWOiJbrPMSfhCFr0o8/edit?usp=sharing

14.2 The meeting ended with a vote of thanks by the Member Secretary to the chairperson and other members of the technical committee.