

**For BIS Use ONLY**

**AGENDA**

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| --- | --- | --- | --- |
| **MEETING** | **DAY & DATE** | **TIME** | **VENUE** |
| **Forty-third meeting of Refrigeration and Air Conditioning Sectional Committee, MED 03** | **Monday**  **02 December 2024** | **1030 hrs onwards** | **VC through WEBEX** |

**CHAIRPERSON:** Prof (Dr) Ravi Kumar,Department of Mechanical & Industrial Engineering, Indian Institute of Technology (IIT), Roorkee, Uttarakhand.

**MEMBER SECRETARY**: Miss Neha Thakur, Scientist ‘C’/Deputy Director (MED), BIS, New Delhi.

**Item 0 WELCOME AND OPENING REMARKS**

* 1. Welcome & Opening remarks by Head (MED), BIS

**0.2** Welcome & Opening remarks by Chairperson.

**Item 1 CONFIRMATION OF THE MINUTES OF THE LAST MEETING**

The minutes of 42nd meeting of Refrigeration and Air Conditioning Sectional Committee, MED 03 held on 26 September 2024 in New Delhi was circulated vide email bearing reference MED 03/A-2.42 dated 01 October 2024. The last date comment was 16 October 2024.

No comment has been received on the minutes of the meeting.

The Committee may **CONSIDER** and **CONFIRM** the Minutes of the meeting**.**

**Item 2 SCOPE AND COMPOSITION OF COMMITTEE**

**2.1 SCOPE**

a) Formulation of standards for refrigeration and air- conditioning equipment and appliances including terminology, definitions and symbols, designation of refrigerants, testing of refrigerating systems; and refrigerating units.

b) Co-ordination of work with ISO/TC 86 Refrigeration and Air conditioning; ISO/TC 142 Cleaning equipment for air and other gases; IEC/TC 61 Safety of household appliances for refrigeration and air- conditioning and IEC TC 59/SC 59M Performance of Electrical Household and Similar Cooling and Freezing Appliances.

**Liaison:**

**ISO TC-86 (P):**Refrigeration & Air-Conditioning

**ISO TC-86 SC-1 (P):**Safety and environmental requirements for refrigerating systems

**ISO TC-86 SC-4 (P):**Testing and rating of refrigerant compressors

**ISO TC-86 SC-6 (P):**Testing and rating of air-conditioners and heat pumps

**ISO TC-86 SC-7 (P):**Testing and rating of commercial refrigerated display cabinets

**ISO TC-86 SC-8 (P):**Refrigerants and refrigeration lubricants

**ISO TC-142 (P):**Cleaning equipment for air and other gases

**IEC TC- 59M SC- 59M (P):** Performance of Electrical Household and Similar Cooling and Freezing Appliances

**IEC TC- 61C SC- 61C (P):**Safety of Refrigeration Appliances for Household and Commercial Use.

**IEC TC- 61 D SC- 61 D (P):**Appliances for Air-conditioning for Household and Similar Purposes.

**2.1.1 DRAFT REVISED SCOPE**

During 42nd meeting, the Committee decided as follows:

“Shri P K Mukherjee commented on the revised draft scope. He commented to replace ‘Circular economy and the end of the lifecycle of the product’ should be replaced with ‘sustainability’ considering the recommendations at Item 6, Sl no. 9. He also commented to replace ‘refrigerating’ with ‘refrigeration’ term in second para as refrigerating is a term used for both refrigeration and ACs. He also said to include cold-chain in second para.

MS also apprised the members that the scope may need to be revisited as new subject of standardization has been proposed by the panel ‘Safety pertaining to refilled AC gas’.

The Committee noted the following revised draft scope, the above comments and decided to revisit the scope in its next meeting.

*‘Standardization in the fields of refrigeration and air-conditioning, including terminology, mechanical and electrical safety, designation of refrigerants, methods of testing and rating equipment, measurement of sound levels, circular economy and the end of the lifecycle of the product, with consideration given to environmental protection*

*The scope also includes:*

* + *Refrigerating and similar appliances for household and commercial use;*
  + *Factory-assembled air-conditioners (cooling), heat pumps, dehumidifiers, and refrigerant reclaiming and recycling equipment as well as other devices, components and equipment such as humidifiers, ventilation equipment, line components, and refrigeration controls used in air-conditioning and refrigeration systems;*
  + *Automotive air conditioning; and*
  + *Selection, installation, commissioning and maintenance of HVAC System considering the conducive environment, safety, and human health.’ ”*

The Committee may **DISCUSS** onthe revised draft scope.

**2.2 COMPOSITION OF THE SECTIONAL COMMITTEE AND ITS SUB-COMMITEES**

**2.2.1** The composition of the Sectional Committee as last reviewed is given in **Annex 1**.

The members may **REVIEW** nominationsfrom their respective organization and **UPDATE**, if there is change by submitting revised nomination form and Declaration at Item 2.2.2.

**2.2.2** With reference to the BIS office order ref. no. PNC09/18/2023-PNC-BIS dated 06 September 2023, all members of Technical Committees have to sign and sent back the declaration (attached here), mandatorily. The form of Declaration and Nomination Proforma are attached here.



**2.2.3** Committee is referred to letter ref. no. PNC09/18/2023-PNC-BIS dated 09 November 2023 by DG BIS (attached here).

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**2.2.4** Extracts from the Standards Formulation Manual of BIS regarding the guidelines for participation in the technical committee work of BIS are given in **Annex 2.**

**2.2.5** As per the BIS guidelines, committees should represent all interest groups such as organized consumers/users, industry, technologists and regulatory bodies/NGOs, etc. However, consumer interests shall as far as possible predominate. Where non-industry interests are less than 2/3, it may be reviewed. Stakeholders such as manufacturers/service providers as well as consumer activists should as far as possible represent industries association and organizations and not individual companies. Also, it may be desirable to induct and involve new people in the work of Sectional Committees with an aim to infuse fresh ideas and it is suggested that member organizations may like to keep this aspect in view while nominating their representations in the technical committees.

Also, the Committee may **IDENTIFY** and **INVOLVE** talent available in the country related to the subject of the Committee and also **suggest a methodology** to involve them in the proceedings of the Committee.

Recently towards encouraging the participation of young professionals representing the member organizations on the Committee, it was decided by BIS that an additional member up to the age of 37 years may also be nominated by each organization.

**2.2.6 Gender Responsive Standards Initiative**

Bureau of Indian Standards is a signatory to the UNECE Gender Responsive Standards Declaration. The UNECE Gender Responsive Standards Initiative aims to provide a practical framework for standards bodies seeking to make the standards they develop, and the standards development process they follow, gender-responsive. Established in 2016, the Initiative has the objectives of:

(i) strengthening the use of standards and technical regulations as powerful tools to attain SDG 5 (Achieve Gender Equality and Empower all Women and Girls);

(ii) integrating a gender lens in the development of both standards and technical regulations; and

(iii) elaborating gender indicators and criteria that could be used in standards development.

In line with these objectives, BIS aims to work towards:

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

The Committees is **REQUESTED** to work in tandem with these aims to create a gender balanced environment in all walks of life through standards.

**2.2.7 List of Technical Experts**

a) The composition of various Panels under MED 03 is given in **Annex 3**.

b) The additional mailing list of experts maintained for expert opinions on various drafts/standards of MED 03 is given at **Annex 4**.

The Committee may **REVIEW** and **UPDATE**.

**2.2.8 Requests for Nomination to Committee/ Sub-Committee/ Panel/ Working group**

i) As decided in 42nd meeting, email has been sent to the following organizations for co-option to various panels under MED 03:

a) Shri Sajal Bhardwaj, HOD-R&D, Starion India Pvt Ltd, Greater Noida;

b) Shri Sumit Shivaji Umbarje, in personal capacity;

c) Shri Japneet Singh Juneja, Chief Technology Officer/Partner, Ace Test Labs;

d) Shri Shekh Tazimul Haque Faridi, Manager, Dyson Technology India Pvt Ltd, Gurugram, Haryana;

e) Shri Dalip Singh, in personal capacity;

f) Shri Kannan G R, Professor PSNA College of Engineering and Technology;

g) Shri Muralidharan K, Professor PSNA College of Engineering and Technology;

h) Shri Anbarasan B, Assistant Professor, PSNA College of Engineering and Technology; and

j) Shri S Murugapoopathi, in personal capacity.

The Committee may **NOTE**.

ii) Following new co-option request has been received from SML ISUZU for co-option in the panel MED 03: P28 Automotive Air Conditioning and Mobile Air-Conditioning:

Shri Mohit Gupta, Chief Manager – R&D (Homologation and vehicle testing), SML Isuzu Limited

The Committee may **CONSIDER** and **DECIDE**.

**Item 3** **ANNUAL CALENDAR AND** **PROCESS OF STANDARDISATION**

1. **Annual calendar** for Technical Committee meetings

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Technical Committee** | **1st Quarter** | **2nd Quarter** | **3rd Quarter** | **4th Quarter** |
| **MED 03** | **24 Jun 2024** | **26 Sep 2024** | **02 Dec 2024** | **07 Feb 2025** |

1. **Research & Development Projects**

Bureau of Indian Standards (BIS), as the National Standards Body of India is responsible for formulating Indian Standards for products, processes and services. In the pursuit of this endeavour, it has so far developed more than 22000 Indian Standards. Action Research and Research & Development Projects have always been part of the standardization process. However, there has been a growing realization in the context of the increasing diversification, innovation and complexities in the manufacturing sector and evolution of services and also due to the fast pace of changes in the manufacturing and services landscapes, research & development projects have to be made an integral part of the standardization process. The idea is that in principle no standard should be developed without intensive and insightful research work, which is not confined only to the review of the existing literature and focus group discussions on the subject chosen for standardization, but also covers the detailed field level study of the existing processes and practices in product manufacturing and service delivery. This requires a large network of domain area experts to carry out the research & development work. The existing network encompasses only a small segment of experts, who are either associated with technical committees as members or belong to some R&D organizations. The Memorandum of Understanding with the premier educational institutions imparting technical and professional education opens the window to the opportunities to expand this network substantially by utilizing the intellectual capital that resides with the faculty and the research scholars in these institutions. This association is conceived not only as a way to promote research & development work necessary for standards formulation but also to enrich the research ecosystem in these educational institutions.

BIS has revised its R&D Guidelines and is attached here for reference.



1. Closer examination of **new work item proposals** received from ISO/IEC.

India has established itself as a significant manufacturing hub and has a considerable stake in international trade. To ensure our active involvement in trade-related norms set by different countries, it is essential for us to participate in the standardisation process of ISO/IEC and provide input for the betterment of our industries. Standardisation is the key to influence these norms, and a **closer examination of new work item proposals** received from ISO/IEC is necessary for us to standardise products at the international level. This activity will benefit Indian manufacturers at all levels to keep up with or enter into international level trade, ultimately improving their competitiveness in the global market.

1. The measures to ensure **effective participation** by the Indian experts at ISO/IEC level.

Effective participation in ISO/IEC activities is crucial for our nation as we have a significant stake in international trade and ISO/IEC standards. Therefore, it is essential that the committee participates effectively and thoroughly examines ISO/IEC ballots with respect to their relevance. If the ballot is relevant to us, the committee should nominate experts to represent our nation in ISO/IEC meetings. This will help to ensure that our national interests are well-represented and safeguarded in the international arena.

1. **National and International events** to be participated

BIS has envisaged participation in events organized at national and international level as these events showcases the latest trends in the field of standardization and technological advancements.

Considering the importance of these events, committee may please **suggest** other such event where participation of BIS can benefit development of national standards.

1. **Scientific journals and periodicals** to be subscribed

BIS has taken a new initiative to subscribe to scientific journal and periodicals relevant to committee work. It is also envisaged that relevant articles from these journal and periodicals are shared with members of sectional committee.

Committee members may please **suggest** other important journals and magazines that may benefit this committee.

1. Creation of **pool of experts**

As part of its initiative to develop a pool of experts for standardization activities, BIS has established standardization chairs in technical institutes of national repute, including IITs, NITs, and others. In addition, BIS plans to establish standardization cells in various manufacturer's associations to further this effort. By tapping into the knowledge and skills available in the country, this initiative can assist BIS in developing more effective and technically sound standards. This approach can also ensure that technical experts are linked with the National Standards Body to foster a high-quality ecosystem in India.

**Item 4 ACTION ARISING OUT OF THE PREVIOUS MEETING(s)**

**4.1** The summary of actions taken on the minutes of the last meeting and present status are given below:

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| --- | --- | --- | --- |
| **Sl No.** | **Item no.** | **Decision of 42nd meeting** | **Present Status** |
|  | 4.1 (7) | **MED 03 (26474) Amendment no. 1 to IS 17773 : 2022 Closed-Circuit Ammonia Refrigeration System — Code of Practice for Design and Installation (ANSI/IIAR 2 : 2014, NEQ)**    The Committee noted the last date of comments. If no comment is received, the Committee approved the draft for printing.  The comment if received shall be disposed by the panel. | The last date for comments was 19 October 2024.  No comment has been received on the draft.  The Committee may **FINALIZE** and **APPROVE** the draft for printing. |
|  | 4.1 (8) | **MED 03 (26463) / IS 2167 (ISO 22044 : 2021, MOD) Commercial Beverage Coolers (fourth revision)**  The Committee noted the information and the last date of comments. If no comment is received, the Committee approved the draft for printing.  The comment if received shall be disposed by the panel. | The last date for comments was 20 November 2024.  No comment has been received on the draft.  The Committee may **FINALIZE** and **APPROVE** the draft for printing. |
|  | 4.1 (9) | **MED 03 (26440) / ISO 16890-2:2022 ‘Air filters for general ventilation — Part 2: Measurement of fractional efficiency and air flow resistance’**  The Committee noted the last date of comments. If no comment is received, the Committee approved the draft for printing.  The comment if received shall be disposed by the panel. | Last date for comments was 19 October 2024.  No comment has been received on the draft.  The Committee may **FINALIZE** and **APPROVE** the draft for printing. |
|  | 4.1 (10) | **MED 03 (19252)/ IS 1474:1959 Commercial Refrigerators (ISO 23953-2 : 2015, MOD)**  The Committee noted the information.  **Background**  MED 03 (19252) ‘Refrigerated display cabinets Part 2 Classification requirements and test conditions’ document was finalized during 37th meeting. The draft is under preparation as per Panel & Committee recommendation for printing.  The final draft (19252) was circulated to the Panel and comment has been received from Shri Vishal Nichite of M/s Western Refrigeration Private Limited on 30th March 2023.    The Committee decided that the comments of M/s Western Refrigeration Private Limited will be taken in the amendment and decided to send the final draft for printing. | The draft is under printing.  The Committee may **NOTE**. |
|  | 4.1 (11) | **IS 3615 Glossary of terms used in refrigeration and air conditioning**  The Committee noted the information. | The standard has been published.  The Committee may **NOTE**. |
|  | 4.1 (12) | **MED 03 (25074)/ ISO 16890-4:2022 Air filters for general ventilation — Part 4: Conditioning method**  The Committee noted the information. | The draft is under printing.  The Committee may **NOTE**. |
|  | 4.1 (13) | **IS 18932 : 2024 Electronic Expansion Valve — Specification**  The Committee noted the information. | The standard has been published.  The Committee may **NOTE**. |
|  | 4.1 (14) | i) **IS/IEC 60335-2-40: 2018 Household and similar electrical appliances – Safety : Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers**  Shri Satish Kumar and Shri V Manjunath informed that the working draft is almost ready and few clauses are being reviewed by them to avoid ambiguity. The Committee requested them to expedite and they also agreed to provide the final working draft. The Committee approved the draft so received for wide circulation for two months time. If no comment is received, the Committee approved the draft for printing.  The comment if received shall be disposed by the panel.  **Background**  The Committee also agreed that once the standard is published the same will be referred to in IS 1391 (Part 1) and (Part 2). | The Draft National deviation to IEC 60335-2-40: 2022 is under preparation for wide circulation.  The Committee may **NOTE**. |
|  | 4.1 (15) | **Selection, operation and maintenance of room AC – Code of Practice**    Shri Shankar Sapaliga briefed the discussions and recommendations of the panel during its 6th meeting. The Committee approved the recommendation of the panel.  Shri P K Mukherjee informed the panel that IS 10596 (Part 1 to 4):1983 under MED 20, may be referred for the structure of the working draft.  The Committee requested the panel to provide update in the next meeting. | The recommendation from the panel is awaited.  The Committee may **NOTE**. |
|  | 4.1 (17) | **Panel on Compressors**  The Committee requested panel to provide its latest recommendation on compressors. | The recommendation from the panel is awaited.  The Committee may **NOTE**. |
|  | 4.1 (18) | The Committee noted the MoM of 1st meeting of the panel. The Committee approved the recommendation of the panel.  The Committee approved the new subject ‘Identification, Storage, Transportation and Handling of Refrigerants / Cylinders’ for standard formulation under MED 03.  The Committee also deliberated that the safety pertaining to refilled AC gas and during the refilling of AC gas, may be addressed in the upcoming draft standard which is being formulated under Selection, operation and Maintenance of HVAC panel. It requested the panel to address the above aspects in the draft standard.  The Committee approved the recommendation of the panel. The Committee agreed to rename the panel to ‘Identification, Storage, Transportation and Handling of Refrigerants / Cylinders’ Panel. | The recommendation from the panel is awaited.  The Committee may **NOTE**. |
|  | 4.1 (19) | The Committee requested the panel for Room AC and Heat pumps to provide its recommendation.  **Background**  Query onProduct Manual referred in IS 1391 (Part 1& 2) :2023 and IS 8148:2018, has been received from Shri Rahul Ramtekkar of JCI Hitachi vide email dated 03 April 2023:  The Committee deliberated that basic product manual should be in hard format.  Shri P K Mukherjee suggested to include consumer organizations to the panel.  The Committee requested the panel to discuss the above and provide recommendation in the next meeting. | The recommendation from the panel is awaited.  The Committee may **NOTE**. |
|  | 4.1 (20) | **Comment on IS 14618:2022 'Automotive vehicles Air-conditioning and heating systems thermal performance Method of measurement (Second Revision)'**  The Committee approved the recommendation of the panel except the comment at Sl no.14 of 9th meeting of the panel. The Committee in detail, reviewed the comment has been received from M/s TATA Motors along with its justification document provided. The Committee following observations and discussions:   1. Solar Load is limited to available climatic test chambers which 1000 W/m2 at present. 2. The graphs in the justification document, are becoming flat when cabin temperature near to 50°C is achieved.   Considering the notification of MoRTH, the Committee requested the following Working Group to resolve the above comment:   1. Shri V Manjunath (Convener); 2. Shri Chethan Tholpady of Copeland; 3. Shri Srinivasu Moturi of Voltas; and 4. The Convener and all the members of panel MED03:P28.   The Committee requested the above WG to expedite and provide the revised draft amendment no.1 to IS 14618:2022 within 15 days. The Committee approved the draft so received for wide circulation for one month time. If no comment is received, the Committee approved the draft for printing.  The comment if received shall be disposed by the panel.  The Committee reviewed the past 3 attendance of the panel MED 03:P28 and revised the panel composition as follows:   1. Shri A A Badusha of Automotive Research Association of India, Pune (Convener) 2. Ashok Leyland Limited, Chennai 3. Automotive Research Association of India, Pune 4. Calsonic Kansei Motherson Auto Products Private Limited, Kanchipuram 5. Carrier Air Conditioning and Refrigeration Limited, Gurugram 6. Denso International India Private Limited, Gurugram 7. Hanon Automotive Systems India Pvt Ltd 8. Honda Cars India Research and Development Limited, Noida 9. Honeywell International India Private Limited, Gurugram 10. Indian Institute of Technology Delhi, New Delhi 11. Ingersoll Rand India Limited, Bengaluru 12. International Centre of Automotive Technology, Manesar 13. MAHLE ANAND Thermal Systems Private Limited, Pune 14. MG Motor India Private Limited , Gurugram 15. Mahindra and Mahindra Limited, Mumbai 16. Maruti Suzuki India Limited, Gurugram 17. Refrigeration and Air Conditioning Manufacturers Association, New Delhi 18. Renault India Private Limited, Mumbai 19. Sanden Vikas (India) Private Limited, Faridabad 20. Subros Limites, New Delhi; and 21. Tata Motors Limited, Pune. | WG had its two consecutive meetings held on 07 October 2024 and 15 October 2024.    Also, the WG had provided the draft for Amendment no. 1 to IS 14618:2022. Subsequently, the draft was put up for wide circulation for one month time with last date of comments on 17 November 2024.    No comment on the draft had been received.    Accordingly, the above draft has been sent for printing on 20 November 2024 with the approval of Chairperson. |
|  | 4.1 (21) | **Amendment no.4 to IS 11329 : 2018 Finned type heat exchanger for room air conditioner (First Revision)**  The Committee requested MS to prepare the draft amendment no. 4 to IS 11329: 2018 in consultation with the Panel Convener. The Committee decided to wide circulate the draft for two months time. If no comment is received, the Committee approved the draft for printing.  The comment if received shall be disposed by the panel. | The draft amendment no.4 is under preparation. |
|  | 3 (ii) | The Committee approved the following three projects under MED 03 for R&D project:  a) Study and Collection of Data for Bin temperature distribution and bin hours for heating though heat-pump - Dr Jyotirmay Mathur will prepare draft terms of reference (ToR)  b) Study and Collection of data for Smart refrigeration and Air-conditioning including DR (Demand Response) technologies - Shri P K Mukherjee will prepare draft ToR.  c) Study and collection of data to find out potential sources of leakage of refrigerant gases from ACs and their prevention methods - Shri Srinivasu Moturi in collaboration with Shri Shankar Sapaliga, will prepare draft ToR. | Draft ToR has been received from Shri P K Mukherjee which is attached here.      The committee may **CONSIDER** and **DECIDE**. |
|  | - | - | Following comment on IS 3315: 2024 from CMD 3 has been received dated 07 October 2024:  “Following observations have been made in the Standard:  1. Cl. 14, Storage- Testing procedure and time for which the cooler has to be kept at specified high and low temperature, has not been given.  2. Cl. 8.2, Table 2, Sound test- Unit in which measurement of sound level has to be done , has not been given.  Above comments may please be looked in to for necessary actions and Amendment to Standard may be expedited, as the product is under compulsory BIS Certification.”  The committee may **CONSIDER** and **DECIDE**. |
|  | 5.7 | **IS 3315:2024 Direct Evaporative Air Cooler ― Specification (Fourth Revision)**  The Committee in detail discussed each comments of VOICE.    It made following observations and discussions:  a) Sl no.1- It agreed for the editorial correction.  b) Sl no.2- Proper definition for clarity of the consumer may be given  c) Sl no.3- It discussed that the effect of TDS of water used for testing of desert cooler for grant of licence as per BIS certification, on Cooling efficiency and EER is negligible. However, the water to be used for normal running of desert cooler may become another subject for discussion. The Committee also discussed the compliance of desert coolers as per BEE labeling program during the cooler’s lifetime in terms of its efficiency/EER/star rating. It also discussed the possibility of referring IS 10500 for water used in testing of the coolers. As per one of the SDGs, water consumption of air cooler is being studied by the panel for incorporating limits of the same in the standard.  d) Sl no.4- clause 7.7 may be deleted as limits are specified in the standard Cooling efficiency/air delivery/power input/EER.  e) Sl no.- the value given is minimum EER requirement.  The Committee requested the panel to dispose of the comments of VOICE and provide update in the next meeting. | The recommendation from the panel is awaited.  The Committee may **NOTE**. |
|  | 5.2 | **IS 2370: 2014 ‘Walk-in Cold Rooms — Specification’**  The Committee approved the recommendation of the panel. The Committee requested the panel to provide update in the next meeting. | The WG formed under Walk-in Cold Room panel, had its meetings on 04 and 14 October 2024. The minutes are as follows.    The committee may **CONSIDER** and **DECIDE**. |
|  | 5.3 | **IS 1391 (Part 1) : 2023 Room Air Conditioners Specification Part 1 Unitary Air Conditioners (Fourth Revision) and IS 1391 (Part 2) : 2023 Room Air Conditioners Specification Part 2 Split Air Conditioners (Fourth Revision)**  The Committee approved the recommendation of the panel. The Committee requested the panel to provide update in the next meeting. | The recommendation from the panel is awaited.  The Committee may **NOTE**. |
|  | 8.4 (5) | **IS 5111 : 1993/ ISO 917:1989 Testing of refrigerant compressors (First Revision)** | This standard was last reviewed and reaffirmed in May, 2022.  However, the standard ISO 917:1989 has been withdrawn.  The Committee may **CONSIDER** and **DECIDE**. |

***\**** *The Item number refers to the proceedings of the last meeting of MED 03.*

**ITEM 5** **COMMENTS ON PUBLISHED STANDARDS**

**5.1 IS 7872: 2020 Deep Freezers ― Specification**

The Committee had requested Shri P K Mukherjee, Shri Srinivasu Moturi, and Shri Satish Kumar to discuss the comments of UL and additional comments of Voltas and provide a draft amendment.

* The draft amendment is awaited.

The committee may **CONSIDER** and **DECIDE**.

**5.2 IS 17550 (Part 1) : 2021 Household Refrigerating Appliances Characteristics and Test Methods Part 1 General Requirements**

The Committee requested the panel to dispose of the comments from Shri P K Mukherjee and Shri Satish Kumar and provide recommendation by the next meeting.

* The panel recommendation is awaited.

The committee may **CONSIDER** and **DECIDE**.

**5.3 IS 17693: 2022 Non-Electric Cooling Cabinet Made of Clay**

Background

‘The Committee noted the information and requested the previous Panel to prepare the draft amendment 2 based on the earlier comments and also by adding additional tests. The draft amendment 2 shall be wide circulated for 1 month for eliciting comments.’

During the 39th meeting, the Committee requested Shri V Manjunath of UL to provide draft amendment no. 2 and decided to wide circulate it for 1 month.

* The draft amendment no.2 is awaited.

The Committee may **CONSIDER** and **DECIDE**.

**5.4 IS 18848 : 2024 Non-Ducted Portable Air-Cooled Air Conditioners and Air-to-Air Heat Pumps having a Single Exhaust Duct - Testing and Rating for Performance**

The following comment has been received from Shri Chethan Tholpady on 30 July 2024:



The Committee may **CONSIDER** and **DECIDE**.

**ITEM 6 PANELS AND WGs HELD SINCE THE LAST MEETING**

|  |  |  |
| --- | --- | --- |
| **Sl No.** | **Name of the Panel** | **Panel Recommendation** |
|  | Service Valves | The meeting is scheduled to be held on 29 November 2024. |
|  | WG under Automotive Air-Conditioning and Mobile Air-Conditioning | WG had its two consecutive meetings held on 07 October 2024 and 15 October 2024.    Also vide Item 4.1 Sl No.13. |
|  | WG under Walk-in Cold Room panel | The WG formed under Walk-in Cold Room panel, had its meetings on 04 and 14 October 2024. The minutes are as follows.    Also vide Item 4.1 Sl No.18. |
|  | WG for scope under Heat Pump Water Heat panel | WG for scope under Heat Pump Water Heat panel, had its meetings on 07 October 2024. The minutes are as follows.    The Committee may **CONSIDER** and **DECIDE**. |

**ITEM 7 PROGRAMME OF WORK**

The present position of programme of work under MED 03 is attached.

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The Committee may **NOTE**.

**ITEM 8 ROLLING ANNUAL ACTION PLAN OF 2024-2025**

**8.1 New Work Item Proposal – Carried Forward**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl No.** | **Subject / IS** | **Decision of 42nd meeting** | **Present Status** |
|  | Heat pump water heaters - Testing and rating for performance Part 1 Heat pump water heater for hot water supply based on ISO 19967-1:2019 | Vide Item 6, Sl no. 2 | Vide Item 6, Sl no. 2 |
|  | NWIP proposal on Service Valves related to HVAC | Vide Item 6, Sl no. 8 | Vide Item 6, Sl no. 8 |
|  | NWIP proposal on highly energy efficient deep freezer products such as combination product in deep freezer : Cooler & freezer and vertical models, also PCM /Eutectic based freezers by Shri Srinivasu Moturi | Shri Srinivasu apprised the members of the current market of combination products for cooling as well as freezing. He informed that IS 7872:2020 does not include the combination products and also the freezers on wheels which are eutectic based freezers.  So, the Committee deliberated and requested the panel on deep freezers to review the NWIP and provide recommendation by the next meeting. | The Panel recommendation is awaited.  The committee may **NOTE**. |
|  | NWIP proposal on Room ACs for commercial & industrial applications by Shri Srinivasu Moturi | - | Following is the comment by Shri Srinivasu on email dated 15 July 2024  :  ‘Regarding 1391 part1 & 2 : the scope of standard is for Residencial , Commercial & Industrial application,  However each application requirements are different  the current standard is not satisfy exactly for commercial & industrial applications .  also, dehumidification effect also need to be defined appropriately in the current standard.  regarding industrial the requirements are like high ambient , applications can be in Industrial chemical  fumes etc. , which require the unit construction totally changes.’  The committee may **CONSIDER** and **DECIDE**. |

**8.2 Standard under Five year Review– Carried Forward**

As on on-going activity, Sectional Committee reviews the Indian Standards formulated by it at an interval of five years from the date of publication. Following is the list of standards reviewed during the last year but pending for publication.

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| --- | --- | --- | --- |
| **Sl No.** | **Subject / IS** | **Decision of 42nd meeting** | **Present Status** |
|  | MED/03/19252/ IS 16672 (Part 2) ‘Refrigerated Display Cabinets Part 2 Classification, Requirements and Test Conditions’ | Vide Item 4.1 Sl No.10 | The document is under printing.  The Committee may **NOTE**. |
|  | MED/03/25074/ IS 17570 (Part 4) ‘Air Filters for General Ventilation Part 4 Conditioning Method to Determine the Minimum Fractional Test Efficiency First Revision’ | Vide Item 4.1 Sl No.12 | The document is under printing.  The Committee may **NOTE**. |
|  | MED/03/22237/ IS 17550 (Part 3) Household Refrigerating Appliances - Characteristics and Test Methods Part 3 Energy Consumption and Volume ( First Revision ) | Vide Item 8.2 | The document is under printing.  The Committee may **NOTE**. |

**8.3 Standard under Five year Review – due for 2024-2025**

As on on-going activity, Sectional Committee reviews the Indian Standards formulated by it at an interval of five years from the date of publication. Following is the list of standards pending to be reviewed for this year.

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl No.** | **Subject / IS** | **Decision of 42nd meeting** | **Present Status** |
|  | IS 2370 : 2014 Walk - In cold rooms - Specification (First Revision) | The Committee decided to reaffirm the standard. | The standard has been reaffirmed in June 2024.  The Committee may **NOTE**. |
|  | IS 7872 : 2020 Deep Freezers - Specification ( Second Revision ) | The Committee decided to reaffirm the standard. | The standard has been reaffirmed in June 2024.  The Committee may **NOTE**. |
|  | IS 302 (Part 2/Sec 24) : 1994/ IEC 60335-2-24 Safety of household and similar electrical appliances: Part 2 particular requirements: Sec 24 refrigerators, food - Freezers and ice - Makers | The Committee decided to reaffirm the standard. | The standard has been reaffirmed in June 2024.  The Committee may **NOTE**. |

**8.4 Review of Pre-2000 Standards**

The BIS management has decided to revise the old standards which are A5 or pre-2000 and requested the relevant technical committees to take up the revision of the standard. In this regard, the member secretary of the committee is also directed to review the standards at their level and prepare comments in the proforma provided by the management. Further, the proforma along with its details will be put up to the committee for its review and further decision.

|  |  |  |
| --- | --- | --- |
| **Sl No.** | **Subject / IS** | **Present Status** |
|
|  | IS/ISO 11650 : 1999 Performance of refrigerant recovery and/or recycling equipment | This standard was last reviewed and reaffirmed in September, 2022.  1999 version is the latest valid version. Accordingly, the standard may be reaffirmed.  The Committee may **CONSIDER** and **DECIDE**. |
|  | IS/ISO 13261-1 : 1998 Sound power rating of air - Conditioning and air - Source heat pump equipment: Part 1 non - Ducted outdoor equipment | This standard was last reviewed and reaffirmed in August, 2021.  1998 version is the latest valid version. Accordingly, the standard may be reaffirmed.  The Committee may **CONSIDER** and **DECIDE**. |
|  | IS/ISO 13261-2 : 1998 Sound power rating of air Conditioning and air - Source heat pump equipment: Part 2 non - Ducted indoor equipment | This standard was last reviewed and reaffirmed in September, 2022.  1998 version is the latest valid version. Accordingly, the standard may be reaffirmed.  The Committee may **CONSIDER** and **DECIDE**. |
|  | IS 1474 : 1959 Specification for commercial refrigerators | The standard is being superseded by upcoming standard MED/03/19252/ IS 16672 (Part 2) ‘Refrigerated Display Cabinets Part 2 Classification, Requirements and Test Conditions’.  The Committee may **NOTE.** |
|  | IS 5111 : 1993/ ISO 917:1989 Testing of refrigerant compressors (First Revision) | This standard was last reviewed and reaffirmed in May, 2022.  However, the standard ISO 917:1989 has been withdrawn.  The Committee may **CONSIDER** and **DECIDE**. |
|  | IS 302 (Part 2/Sec 24) : 1994 Safety of household and similar electrical appliances: Part 2 particular requirements: Sec 24 refrigerators, food - Freezers and ice - Makers | The standard has been reaffirmed in June 2024.  The Committee may **NOTE**. |

**ITEM 9 NEW SUBJECT PROPOSAL RECEIVED**

**a)** The Committee accepted the NWIP proposal ‘Heat recovery ventilators and energy recovery ventilators Testing and calculating methods for seasonal performance factor Part 1: Sensible heating recovery seasonal performance factors of heat recovery ventilators (HRV)’ based on ISO 5222-1:2023, and formulated the following new panel to provide its recommendation on the working draft for the above standard:

1. Dr Jyotirmay Mathur (Convener);

2. Shri V. Manjunath;

3. Shri Vikas Mehta;

4. Shri Shankar Sapaliga; and

5. Shri Rahul Ramtekkar.

The Committee requested the panel to provide update in the next meeting.

**-** The Panel recommendation is awaited. The committee may **NOTE**.

**b)** The Committee discussed the special purpose commercial/industrial refrigerators like IS 17547 : 2021 ‘Specification for vaccine freezer or combined vaccine freezer and water-pack freezer: compression cycle — general requirements and testing methods’. The Committee after detailed deliberation agreed to formulate a standard on the refrigerators which are not yet formulated under MED 03 and formulated the following new panel to provide its recommendation in the next meeting:

1. Shri Chethan Thopady (Convener);
2. Shri Srinivasu Moturi of Voltas;
3. Shri Shankar Sapaliga;
4. Representative of Godrej;
5. Representative of Western Refrigeration;
6. Representative of Rockwell;
7. Representative of UL; and
8. Representative of Frigoglass.

**-** The Panel recommendation is awaited. The committee may **NOTE**.

**ITEM 10 NEW SUBJECTS**

**10.1** As per the policy and guidelines, before any new subject is taken up for formulation of National Standard the following issues are to be examined by BIS.

1. Whether the subject is financed by the proposer;
2. Sale ability of the standard;
3. Standards shall be user friendly;and
4. Social needs with regards to safety, health and environment.

Only after assessing the above aspects, it will be possible for BIS to consider the formulation of Indian standard. The proposal should essentially be taken in the below prescribed Performa, as preliminary work item*.* When members propose in the Technical Committee (TC) meeting, they have to fill-in the Performa beforehand which is then be considered by the TC.



The Committee may **DELIBERATE** and **DECIDE**.

**10.2** The Committee had requested the following Panel to provide recommendations on way forward for formulating Indian Standards on Cold chain and CO2 trans-critical systems:

1. Shri Ashish Fotedar of NCCD (Convener),
2. Shri Aditya Narayan, MoEFCC
3. Shri Vikas Malhotra, Carrier India
4. Shri Chethan Tholpady, Copeland
5. Shri P K Mukherjee, Personal Capacity
6. Representative from Tecumseh
7. Representative from ICE Make Refrigeration Limited, Ahmedabad
8. Representative from Rinac India Ltd.

The recommendation is awaited.

The committee may **DELIBERATE** and **DECIDE**.

**10.3** **Assistance for framing Relevant National Standards**

The Committee had requested the Panel on Cold-chain to provide proposal and boundary condition by next meeting.

The committee may **DELIBERATE** and **DECIDE**.

**ITEM 11 STATUS OF INDIAN STANDARDS**

**11.1 Quality Control Order**

The Committee may note that the following standards prepared by MED 03 have been brought under mandatory certification by Department for Promotion of Industry and Internal Trade:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **IS No.** | **Date of implementation** |
|  | IS 1391 (Part 1): 2017 Room air conditioners - Specification: Part 1 Unitary air conditioners | 01October 2023 |
|  | IS 1391 (Part 2): 2018 Room air conditioners - Specification: Part 1 Split air conditioners | 01October 2023 |
|  | IS 7872: 2020 Deep Freezers - Specification ( Second Revision ) | 01January 2024 |
|  | IS 8148 : 2018 Ducted and package air - Conditioners - Specification | 01October 2023 |
|  | IS 10617: 2018 Hermetic Compressors - Specification | 01October 2023 |
|  | IS 11329: 2018 Finned type heat exchanger for room air conditioner | 01October 2023 |
|  | IS 17550 (Part 1) : 2021 Household Refrigerating Appliances — Characteristics and Test Methods Part 1 General Requirements | 01January 2024 |
|  | IS 1475 (Part 1) : 2001 Self- Contained Drinking Water Coolers – Energy Consumption and Performance | 01 October 2024 |
|  | IS 17681 : 2022 Bottled Water Dispensers ― Specification | 1 st July, 2024 |
|  | IS 3315: 2019 Evaporative air coolers (Desert Coolers) ― Specification | 05 September 2024 |
|  | IS 17570 (Part 1) : 2021/ISO 16890-2:2016 Air Filters for general ventilation Part 1 Technical specifications requirements and classification system based upon particulate matter efficiency ePM | 05 September 2024 |

The Committee may **NOTE**.

**11.2 Proposed Quality Control Orders**

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **IS No.** | **Proposed Date** |
|  | IS 18801 : 2023/ ISO 22041:2019 Refrigerated storage cabinets and counters for professional use Performance and energy consumption | 31 May 2024 |
|  | IS 18802 : 2023/ ISO 22042:2021 Blast chiller and freezer cabinets for professional use Classification requirements and test conditions | 31 May 2024 |

During 41st meeting, the Committee requested the members to review once againIS 18801 : 2023/ ISO 22041:2019 ‘Refrigerated storage cabinets and counters for professional use Performance and energy consumption’ and IS 18802 : 2023/ ISO 22042:2021 ‘Blast chiller and freezer cabinets for professional use Classification requirements and test conditions’. It requested the members to provide feedback related to product certification for the above standards by the next meeting. It also requested members to provide their feedback in writing.

- No feedback has been received. The Committee may **NOTE**.

**11.3 BIS Domestic Licences**

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **IS No.** | **Number of Licences as on Date** |
|  | IS 1391 (Part 1) : 2023 Room Air Conditioners Specification Part 1 Unitary Air Conditioners Fourth Revision | 10 |
|  | IS 1391 (Part 2) : 2023 Room Air Conditioners Specification Part 2 Split Air Conditioners Fourth Revision | 49 |
|  | IS 11329 : 2018 Finned type heat exchanger for room air conditioner (First Revision) | 50 |
|  | IS 10617 : 2018 Hermetic compressors - Specification (Second Revision) | 08 |
|  | IS 8148 : 2018 Ducted and package air - Conditioners - Specification (Second Revision) | 12 |
|  | IS 17550 (Part 1) : 2021 Household Refrigerating Appliances Characteristics And Test Methods Part 1 General Requirements | 21 |
|  | IS 7872 : 2020 Deep Freezers - Specification ( Second Revision ) | 14 |
|  | IS 1475 (Part 1) : 2001 Self - Contained drinking water coolers - Specification: Part 1 energy consumption and performance (Third Revision) | 13 |
|  | IS 17681 : 2022 Bottled Water Dispensers ― Specification | 07 |
|  | IS 3315: 2019 Evaporative air coolers (Desert Coolers) ― Specification | 00 |
|  | IS 17570 (Part 1) : 2021/ISO 16890-2:2016 Air Filters for general ventilation Part 1 Technical specifications requirements and classification system based upon particulate matter efficiency ePM | 00 |

The Committee may **NOTE**.

**11.4 Quality Control Order for Machinery and Electrical Equipment Safety**

This is with reference to the Machinery and Electrical Equipment Safety (Omnibus Technical Regulation) Order, 2024 issued by Ministry of Heavy Industries dated 28 August 2024. Provision of the OTR has been given in the Order.



The above comes under mandatory BIS Certification under Scheme-X of BIS (Conformity Assessment) Regulations wef date as indicated in the above Order.

The Committee may **NOTE**.

**ITEM 12 INTERNATIONAL ACTIVITIES**

**12.1** The list of ISO Standards published by ISO/ IEC Committees and their sub-committees are given in the website of ISO and IEC can be accessed with official ISO website.

The committee may review ISO/IEC Standards published and identify the Standards for possible adoption as Indian Standards or inputs can be taken for revising the existing Indian Standards.

The committee may **DELIBERATE** and **DECIDE**.

**12.2** In case of ‘P-membership’ of ISO /IEC Technical Committees, it is obligatory on the part of Member Organization (country) to send ballots on documents. Committee drafts (CD), Draft International Standards (DIS) and Final Draft International Standards (FDIS) are received from the respective ISO Secretariat of the Technical Committee through E-mail only. The documents are sent to members of the committee through E-mail for eliciting their comments. The comments so received are reviewed and collated by BIS Secretariat and then put up to Chairman of the committee and a final decision is taken as to whether to send an approval/ disapproval or abstention ballot. The approval/ disapproval ballots can be sent with comments also. Once approval ballot is sent on the document, as per WTO, the member organization may be under obligation to use the ISO Standard in International Trade. It is not practically feasible to send the documents by post, accordingly all members are requested to keep BIS Secretariat updated about E-mail addresses of their respective members.

Guidelines for participation in ISO/IEC work can be downloaded from [www.iso.org](http://www.iso.org).

Committee may **NOTE**.

**12.3 List of experts in various ISO/IEC**

|  |  |  |
| --- | --- | --- |
| **ISO/TC 86** **Refrigeration and air-conditioning** | | |
| ISO/TC 86/SC 1 | Safety of Refrigeration Systems | Shri Sunil Jain of Blue Star,  Shri Vikas Mehta of Chemours  Shri Bimal Tandon of Carrier  Shri Avinash Kumar of M/s Honeywell  Miss Neha Thakur, BIS |
| ISO/TC 86/SC 1/WG 1 | Safety and environmental requirements for refrigerating systems and heat pumps | Shri Srinivasu of Voltas,  Shri Vikas Mehta of Chemours  Miss Neha Thakur, BIS |
| ISO/TC 86/SC 4 | Testing and rating of Refrigerant Compressors | Shri Chetan Tholpady of Copeland  Miss Neha Thakur, BIS |
| ISO/TC 86/SC 4/WG 1 | Testing and rating of refrigerant compressors | Shri Chetan Tholpady of Copeland  Miss Neha Thakur, BIS |
| ISO/TC 86/SC 4/WG 2 | Positive displacement refrigerant compressor | Shri Chetan Tholpady of Copeland |
| ISO/TC 86/SC 6 | Testing and rating of Air-Conditioners and Heat Pump | Dr. Jyotirmay Mathur of ISHRAE  Miss Neha Thakur, BIS |
| ISO/TC 86/SC 6/WG 1 | Air-source air-conditioners and heat pumps | Miss Neha Thakur, BIS |
| ISO/TC 86/SC 6/WG 3 | Water and brine source heat pumps and air-conditioners | Miss Neha Thakur, BIS |
| ISO/TC 86/SC 6/WG 10 | Energy recovery ventilators | Dr. Jyotirmay Mathur of ISHRAE |
| ISO/TC 86/SC 6/WG 12 | Heat pump water heaters | Dr. Jyotirmay Mathur of ISHRAE |
| ISO/ TC 86/ SC6/ WG15 | Advanced performance standards | Dr. Jyotirmay Mathur of ISHRAE  Shri Srinivasu M of Voltas  Dr. Yash Shukla  Shri V Manjunath of UL |
| ISO/TC 86/SC 7 | Testing and rating of Commercial Refrigerated Display Cabinets | - |
| ISO/TC 86/SC 7/WG 1 | Refrigerated, blast cabinets and ice makers for professional use | - |
| ISO/TC 86/SC 7/WG 2 | Commercial beverage coolers and ice cream freezers | - |
| ISO/TC 86/SC 8 | Refrigerants and Refrigeration Lubricants | Shri Sunil Jain of Blue Star,  Shri Vikas Mehta of Chemours, and  Miss Neha Thakur, BIS |
| ISO/TC 86/SC 8/MA | ISO 817 Maintenance agency | - |
| ISO/TC 86/SC 8/WG 5 | Refrigerants - Designation and safety classification | Shri Sunil Jain of Blue Star  Shri Vikas Mehta of Chemours, and  Miss Neha Thakur, BIS |
| ISO/TC 86/SC 8/WG 7 | Refrigerant properties | Miss Neha Thakur, BIS |
| ISO/TC 86/SC 8/WG 8 | Burning Velocity Test Methods | - |
| ISO/TC 86/SC 8/TF 3 | Refrigerant stability classification | Shri Vikas Mehta of M/s The Chemours |
| **IEC/TC 59/ SC 59M ‘Performance of electrical household and similar cooling and freezing appliances’** | | |
| WG 4 | Electrical household and similar cooling and freezing appliances, food preservation and storage | Shri Srinivasu of Voltas  Miss Neha Thakur, BIS |
| WG 5 | TC 59/WG 2 - Acoustical noise of household appliances | - |
| MT 2 | Electrical household and similar cooling and freezing appliances, maintenance of performance standard | Shri Srinivasu of Voltas  Miss Neha Thakur, BIS |
| **IEC/TC 61/SC 61 C ‘Safety of refrigeration appliances for household and commercial use’** | | |
| WG 4 | IEC 60335-2-89-A2/Ed2: Household and similar electrical appliances - Safety - Part 2-89: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant unit or compressor | Shri Vikas Mehta of Chemours,  Miss Neha Thakur, BIS |
| WG 5 | Review the fire safety of products covered by IEC 60335-2-24 | - |
| MT 1 | Safety of motor-compressors | Copeland / Danfoss  Miss Neha Thakur, BIS |
| MT 7 | Maintenance Team for IEC 60335-2-118 - Particular requirements for professional ice-cream makers | - |
| JWG 3 | Resistance to refrigerants of winding wires | - |
| EG 6 | Editing Committee | - |
| **IEC/TC 61/SC 61 D ‘Appliances for air-conditioning for household and similar purposes’** | | |
| WG21 | WG 21 Address A2L, A2 and A3 refrigerants and maintenance of 60335-2-40 | Shri V Manjunath of UL,  Shri Vikas Mehta of Chemours Miss Neha Thakur, BIS |
| MT 19 | Revision of 60335-2-104 work | - |
| MT 28 | Maintenance of IEC 60335-2-40 | Shri Vikas Mehta of Chemours |
| MT 29 | Maintenance of requirements for detection of leaked refrigerant | Shri Vikas Mehta of Chemours |
| Ad hoc Group 30 | Alignment of requirements for flammable refrigerant systems in appliances | Shri Vikas Mehta of Chemours |
| WG 27 | Air conditioners for cooling driver and passenger compartments when the vehicle is stationary | Shri Vikas Mehta of Chemours  Ms Shweta Kulkarni of Trane Technologies |

As per the latest directions from CA of BIS, A provision has been introduced to identify each project/ballot of ISO/IEC under High (H) /Medium (M) /Low (L) interest levels.

For project/ballot of ISO/IEC at H level, one or two designated experts shall be nominated by the respective Sectional Committees. The designated expert shall be responsible for providing detailed feedback on drafts and documents from ISO/IEC, assisting the Sectional Committee in developing the rationale for proposing NWIPs, finalizing proposals for leadership positions and secretariats and briefing the Sectional Committee on discussions at the ISO/IEC level.

The committee may **DISCUSS** and **DECIDE**.

**12.4 Participation in ISO/IEC meetings**

**12.4.1 Upcoming meetings of ISO/IEC**

| **Date** | **Month** | **Location** | **TC/SC** | **Approved Nomination** |
| --- | --- | --- | --- | --- |
| 28 | November 2024 | Virtual | IEC/ TC 59/SC 59M Plenary meeting | Ms Neha Thakur, MED, BIS |
| 02-06 | December 2024 | London (United Kingdom) | IEC/ TC 61/SC 61D Plenary meeting and its WG meetings | Shri Vikas Mehta of Chemours |
| 09-13 | December 2024 | London (United Kingdom) | IEC/ TC 61/SC 61C Plenary meeting and its WG meetings | Shri Vikas Mehta of Chemours |

The ISO/IEC experts are requested to inform the upcoming meetings and dates for their nomination approval.

**12.4.2** Standard Operating Procedure (SOP) for Hosting of International/Regional Event in India, is attached here.



The Committee may **NOTE**.

**12.4.3 ISO/IEC meetings participated**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Date** | **Month** | **Location** | **TC/SC** | **Nomination Received** | **Status** |
| 06-09 | September 2024 | Eschborn (Germany) | IEC/TC 61/SC 61C/WG 4 Household and similar electrical appliances - Safety - Part 2-89 | Shri Vikas Mehta of Chemours | Report of the meeting is attached here.    The Committee may **NOTE**. |
| 10-13 | September 2024 | Copenhagen (Denmark) | SC61D, MT 28 & 29 | Shri Vikas Mehta of Chemours | Report of the meeting is attached here.    The Committee may **NOTE**. |
| 11 | September 2024 | Virtual | ISO TC 86 SC 8 TF 3 ‘Reactivity classification of refrigerants’ | Shri Vikas Mehta of Chemours | Report of the meeting is awaited. |

The delegation is requested to **SUBMIT** the meeting reports**.**

**12.4.4 New subject proposal to ISO/ IEC**

The Committee decided to propose the subject IS 17681 : 2022 Bottled water dispensers to ISO as new proposal through the ISO portal. It requested MS to submit the proposal and provide update in the next meeting.

* The ballot for new subject

The committee may **NOTE**.

**ITEM 13** **PRIORITY LIST**

The Committee may **DECIDE** on **future work plan** and **strategies** to be adopted say in the next 5 years aiming at contribution in related standardization activity both at national and international level (if available, ISO).

The Committee requested MS to prepare list of priority items and circulate to the Committee for preparing the future work plan and strategies to be adopted for the next 5 years.

* Priority 1: Quality Control Order and request received from Ministries and Govt. departments like (DPIIT, MoEFCC, BEE, etc)
* Priority 2: Standards to be revised/reviewed under review and reaffirmation and update in base ISO and IEC standard
* Priority 3: New subjects to be taken up for standardization

The committee may **ADVISE**.

**ITEM 14 RECOMMENDATION OF THE PLANNING AND DEVELOPMENT ADVISORY COMMITTEE (PDAC) OF BUREAU OF INDIAN STANDARDS**

The Planning and Development Advisory Committee (PDAC) of Bureau of Indian Standards in its 12th meeting decided as follows:

a) Technical Committee should be sensitized for Eco requirements and standards should be formulated considering the environmental aspects.

b) The committee felt that BIS should be proactively involved so as to have greater impact in International Standardization. For this purpose, the key areas are to be identified for formulating standards for new products.

The Committee may please note.

**ITEM 15 TRANSLATION OF INDIAN STANDARDS FROM ENGLISH TO HINDI**

As per directive issued by ‘Raj Bhasha Vibhag’ to the Bureau “hence forth all new standards (or standards to be revised) are to be published both in Hindi and English simultaneously.”

Whereas a panel for Hindi translation has been identified by Hindi Deptt. of the Bureau however, the members of the technical committees of BIS may undertake translation of Indian standards from English to Hindi. Remuneration of Rs.250/- per A-4 size page (approximately 300 words) is provided for the translation. The members who are interested to do this work of translation can register their name with BIS, details available at: <http://www.bis.org.in/other/EOIHT.htm>

The Committee may **NOTE**.

**ITEM 16 E-SALE OF INDIAN STANDARDS**

The Bureau has made all the indigenous standards free of cost. The adopted standards can be either purchased from the sales office of BIS or through BIS website. Please follow the link to **register and download** the indigenous standards: <https://standardsbis.bsbedge.com/>

Please visit our website [www.bis.org.in](http://www.bis.org.in/) for more details.

The Committee may **NOTE**.

**ITEM 17 DATE AND PLACE FOR THE NEXT MEETING**

**ITEM 18 ANY OTHER BUSINESS**

**Annex 1**

(Item**2.2.1**)

**COMPOSITION OF REFRIGERATION AND AIR CONDITIONING SECTIONAL COMMITTE, MED 03**

|  |  |  |
| --- | --- | --- |
| **Meeting** | **Date** | **Place** |
| 39th | 13 Dec 2023 | WebEx |
| 40th | 21 Mar 2024 | WebEx |
| 41st | 24 Jun 2024 | WebEx |
| 42nd | 26 Sep 2024 | BIS HQ, New Delhi |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl No** | **Organisation Represented** | **Principal Member/**  **Alternate Member** | **39th** | **40th** | **41st** | **42nd** | **Total** |
|  | Indian Institute of Technology, Roorkee | Prof..(Dr.) Ravi Kumar  (*Chairman*) | Y | Y | Y | Y | 4/4 |
|  | BSH Household Appliances Manufacturing Pvt Ltd., Chennai | Shri V.K. Loganathan  Shri A. Balasubramanian (Alt) | Y | Y | Y | Y | 4/4 |
|  | Blue Star Limited, Mumbai | Shri Jitendra Bhambure  Shri Sunil Kumar Jain (Alt)  Ms. Sneha Harsora (YP) | Y | Y | Y | Y | 4/4 |
|  | Bureau of Energy Efficiency, New Delhi | Ms P. Samal  Shri Kamran Shaikh (Alt)  Ms D. Wadhwa (Alt)  Shri Dheeraj Pandey | Y | Y | Y | Y | 4/4 |
|  | CEPT University | Dr Yash Shukla | Y | Y | Y | Y | 4/4 |
|  | [Carrier Air Conditioning and Refrigeration Limited, Gurugram](javascript:;) | Shri Bimal Tandon  Shri Manmohan Kulashri (Alt)  Shri Jatinder Sharma (Alt) | Y | N | Y | Y | 3/4 |
|  | Central Power Research  Institute, Bengaluru | Dr P. Chandra Sekhar  Shri Gujjala B.Balaraja (Alt) | N | Y | N | N | 1/4 |
|  | Central Public Works Department, New Delhi | Shri Ram Raj Meena  Shri Ramayan Prasad Gupta (Alt) | NA | NA | Y | N | 1/2 |
|  | Copeland India Private Limited, Pune | Shri Chetan Tholpady | Y | Y | Y | Y | 4/4 |
|  | Daikin Air Conditioning India Private Limited, Gurugram | Shri Gaurav Mehtani | Y | Y | Y | Y | 4/4 |
|  | Danfoss Industries Pvt Ltd, Gurugram | Shri Madhur Sehgal  Shri K.L. Nagahari (Alt)  Shri M.N.S.V Kiran Kumar (Alt) | N | Y | Y | N | 2/4 |
|  | Directorate General of Quality Assurance, Ministry of Defence, New Delhi | Lt. Col. Deepak Sharma  Shri S.S. Nikam (Alt) | N | Y | Y | N | 2/4 |
|  | Electrical Research and Development Association., Vadodara | Shri Guatam Brahmbhatt  Shri Rakesh Patel (Alt) | Y | Y | Y | Y | 4/4 |
|  | [Frigoglass India Private Limited, Gurugram](javascript:;) | Shri Mahesh Kumar Mawai  Shri Mandeep Singh (Alt)  Ms. Ritu Chouhan (Alt) | N | Y | Y | N | 2/4 |
|  | Godrej & Boyce Mfg. Co. Ltd (Appliance Division) | Shri Burzin J. Wadia  Shri Jasvir Singh (Alt)  Shri Narendra Shedge (Alt) | N | Y | Y | Y | 3/4 |
|  | Honeywell International India Pvt Ltd | Shri Aaditya Pegallapati  Shri Avinash Kumar (Alt) | Y | N | Y | Y | 3/4 |
|  | Indian Institute of Chemical Engineering, Kolkata | Dr D Sathiyamoorthy  Prof Sudip K Das (Alt) | N | Y | Y | N | 2/4 |
|  | Indian Institute of Technology Madras | Dr. G. Venkatarathnam | Y | Y | Y | N | 3/4 |
|  | Indian Society of Heating, Refrigerating And Air Conditioning Engineers (ISHRAE) | Dr Jyotirmay Mathur  Shri Ashish Rakheja (Alt)  Shri V. Manjunath (Alt) | Y | Y | N | Y | 3/4 |
|  | International Copper Association India, Mumbai | Shri Mayur Karmakar  Shri Shankar Sapaliga (Alt) | Y | Y | Y | Y | 4/4 |
|  | Intertek India Pvt Ltd, New Delhi | Shri C.M. Pathak | N | Y | Y | Y | 3/4 |
|  | Johnson Controls-Hitachi, Ahmedabad | Shri Rahul Ramtekkar  Ms. Heena Ramsinghani (YP) | Y | Y | Y | Y | 4/4 |
|  | LG Electronics India Pvt Ltd , New Delhi | Shri Aditya Anil | Y | Y | Y | N | 3/4 |
|  | Ministry of Environment Forest and Climate Change, New Delhi | Shri Aditya Narayan Singh  Dr Mahendra Phulwaria(Alt) | NA | NA | Y | N | 1/2 |
|  | Refrigeration & Air-conditioning Manufacturers Association , New Delhi | Shri Kanwaljeet Jawa  Shri Harsh Vardhan Pant (Alt) | Y | Y | Y | Y | 4/4 |
|  | Samsung India Electronics Ltd., Noida | Shri Kalicharan Sahu  Shri Amit Kumar Jha (Alt) | Y | Y | Y | Y | 4/4 |
|  | Sierra Aircon Pvt Ltd | Shri D.K. Mudgal  Shri S. Dhiman (Alt) | N | Y | Y | Y | 3/4 |
|  | The Chemours India Pvt Ltd., Gurgaon | Shri Vikas Mehta  Shri Nishit Shah (Alt) | Y | Y | Y | Y | 4/4 |
|  | Trane Technologies India Private Limited, Bengaluru | Shri M. Venkanna   Shri J. Gurusamy (Alt)  Ms Shweta Kulkarni (Alt 2) | Y | N | Y | Y | 3/4 |
|  | UL India Pvt Ltd, Bengaluru | Shri V. Manjunath  Shri Satish Kumar (Alt) | Y | Y | Y | Y | 4/4 |
|  | Voltas Ltd, Mumbai | Shri Srinivasu Moturi  Shri A.D. Kumbhar (Alt) | Y | Y | Y | Y | 4/4 |
|  | Voluntary Orgn In Interest of Cons Education New Delhi | Shri H. S. Wadhwa  Shri B.K. Mukhopadhyay (Alt) | Y | Y | Y | Y | 4/4 |
|  | In Personal Capacity | Shri J. K. Agrawal | Y | Y | Y | Y | 4/4 |
|  | In Personal Capacity | Shri P.K. Mukherjee | Y | Y | Y | Y | 4/4 |

**ANNEX 2**

(Item **2.2.4**)

**EXTRACTS ON GUIDELINES FOR PARTICIPATION IN THE TECHNICAL COMMITTEE WORK OF BIS**

|  |
| --- |
| * Where an organization offered representation in BIS work feels that it has limited interests in the scope of activity of a committee it shall communicate so to the committee secretary before accepting the representation. * All organizations represented in a technical work of BIS I shall be conscious of the national role they play in the preparation of standards. They shall nominate the best available ta1.ent for this work and ensure that their nominees are fully briefed, and utilize all opportunity to express their organization’s view point in the Bureau forums. For continuity of participation, it shall be ensured that representatives once nominated are continued as long as possible and changes where inevitable are proceeded smoothly and shall be communicated to Secretary without delay. * Organizations participating in the technical work of the Bureau may also consider initiating wherever possible formal standardization activity within the organization that would amongst other things aid participation and act as permanent liaison with Bureau on all standardization matters and shall coordinate adoption and implementation of national standards. * Organizations 'representing the interests of a group/association/federation may ensure that all constituent members (whose interest he/she represent) are consulted/kept informed of the committee work. * All expenses related to the nominees for participating in this activity are to be borne by the participating organizations. * Authorities nominating representatives as members of Sectional Committee of the Bureau, if they so choose, may nominate two representatives one to be known as the principal and the other as the alternate, subject to the following:   + Generally, one representative shall attend the meeting but if this department or body so desired both the principal and alternate may attend the meeting.   + Only the principal representative shall have the right to vote.   + In the absence of the principal representative, the alternate may exercise the right to vote.   + All documents concerned with the work of the technical committee shall ordinarily be sent to the Principal representative, if both principal and alternate representatives are located at the same station. However, if principal and alternate representatives are from different stations, all documents shall be sent to both the representatives.   + Organizations may, if they so choose, nominate experts by designation instead of by name.   + In exceptional circumstances where a case in made out on the basis of regional representation or representation of special interests within any organization, more than one alternative may be accepted by the officer-in charge of the Division.   + Only the designated Principal/Alternate members can attend Sectional Committee meetings. In case of their absence, their representatives can attend the meetings. However, BIS should be given prior intimation in such cases. In any case, no more than two representatives from one organization can attend the committee meetings. * Comments on documents at any stage, as well as on printed Indian Standards, though are welcome at all times, members are requested to send them well in advance for inclusion in the agenda in order to consider them in the meeting. Comments received very late or brought along for tabling during the meeting will be liable not to be considered as other members have not had the opportunity to deliberate within their organization on these comments and form their viewpoint and are unable to put forth their views at a short notice. * In case there is continual failure to contribute either through correspondence or by attending meetings for a period of three years/three technical Committee meetings by the members, the membership of such organizations will be recommended for withdrawal. |

**ANNEX 3**

(Item **2.2.7**)

**MED 03: P1 Room Air Conditioners and Heat Pumps**

1. Shri P. K. Mukherjee, In Personal capacity (Convener)
2. Bureau of Energy Efficiency
3. Blue Star Limited, Mumbai
4. Carrier Air Conditioning and Refrigeration Limited,
5. CEPT University, Ahmedabad
6. Daikin Air Conditioning India Private Limited
7. Emerson Climate Technologies (India) Private Limited
8. Godrej & Boyce Manufacturing Company Limited
9. International Copper Association India
10. Intertek India Private Limited
11. Johnson Controls-Hitachi Air Conditioning India Limited
12. LG Electronics India Private Limited
13. Refrigeration and Air Conditioning Manufacturers Association
14. Sierra Aircon Private Limited
15. Trane Technologies
16. UL India Private Limited
17. Voltas Limited
18. Whirlpool India Limited
19. Dr. G. Venkatarathnam, IIT Madras
20. Shri H. S. Wadhwa of VOICE Society
21. Dr Subrata Mondal in individual capacity
22. Prof Akhilesh Arora, Delhi Technological University, Delhi

**MED 03: P2 Household refrigerator**

1. Shri P K Mukherjee (Convener),
2. Ms. P Samal, BEE
3. Dr. P Chandrashekhar, CPRI
4. Representative of VOICE
5. Shri C M Pathak, Intertek
6. Shri Satish Kumar, UL
7. Shri Rakesh Patel, ERDA
8. Shri Vijay Kumar, BSH
9. Shri Kali Charan Sahu, Samsung
10. Shri Mohinder Singh BC, M/s Whirlpool of India Limited
11. Shri Sunderamoorthy, M/s Panasonic India Pvt. Ltd.
12. Dr. J Mathur of ISHRAE,
13. Representative of CEAMA, and
14. Shri Mr. Viral Shah of M/s Voltas Beko
15. Shri Aditya Anil of M/s LG.
16. Dr Subrata Mondal in individual capacity
17. Prof Akhilesh Arora, Delhi Technological University, Delhi
18. Shri Gaurav Choudhary, Haier Appliances India Pvt Ltd

**MED 03: P3 Refrigerating systems and heat pumps - Safety and environmental requirements**

1. Sh Nagahari Krishna L of M/s Danfoss Ltd (Convener)
2. Sh Chetan Tholpady from M/s Emmerson Ltd
3. Sh. Vikas Malhotra of M/s Carrier Ltd
4. Sh. Satish Kumar of M/s UL Ltd.
5. Representative from M/s Ingersol Rand
6. Representative from Ministry of Environment & Forest (MoEF)
7. Representative from Ministry of Labour & Employment
8. Shri S Devetto of ISHRAE
9. Representative from RAMA.
10. Representative from CSE

**MED 03: P4 Multiple Split Systems (Variable Refrigerant Flow)**

1. Ms. P Samal, BEE (**Convener**);
2. Shri P K Mukherjee (**Co-Convener**);
3. Shri Harshvardhan Pant from RAMA;
4. Shri Gaurav Mehtani from Daikin;
5. Shri Srinivasu M from Voltas;
6. Shri Chandra Pathak from Intertek;
7. Shri Jeyaprakash Gurusamy from Ingersoll Rand;
8. Dr. Jyotirmay Mathur from ISHRAE;
9. Shri V Manjunath from UL;
10. Shri Shankar Sapaliga from Copper Association;
11. Representative from M/s Honeywell;
12. Representative from M/s Infeneon;
13. Shri Sunil Jain from Blue Star;
14. Representative from Carrier Toshiba;
15. Shri Rahul Ramtekkar from Johnson Controls –Hitachi;
16. Shri Davesh Mudgal from Sierra Aircon; and
17. Shri Manmohan K, M/s Carrier Airconditioning & Refrigeration Limited.
18. Prof Akhilesh Arora, Delhi Technological University, Delhi

**MED 03: P5 Bottle/ Beverage Coolers**

1. Shri Satish Kumar of UL (Convener)
2. Dr. Jyotirmay Mathur, ISHRAE
3. Shri Sunil Jain, Blue Star
4. Shri Srinivasu M, Voltas
5. Shri Mohinder Singh, Whirlpool India
6. Shri Vishal Nichite, Western Equipment
7. Shri Mr. Mahesh Mawai, Frigoglass
8. Shri Chethan Tholpady, Emerson
9. Shri P K Mukherjee, Personal Capacity.
10. Shri Gaurav Choudhary, Haier Appliances India Pvt Ltd

**MED 03: P6 Household and similar electrical appliances - Safety of electrical heat pumps, air-conditioners and dehumidifiers**

1. Shri Nagahari Krishna L, M/s Danfoss Ltd (Convener)
2. Shri Sunil Jain, M/s Blue Star
3. Shri Bimal Tandon, M/s Carrier Airconditioning & Refrigeration Limited
4. Shri Manmohan K, M/s Carrier Airconditioning & Refrigeration Limited,
5. Shri Vikas Mehta, M/s Chemours India Pvt Limited
6. Shri Gaurav Mehtani, M/s Daikin
7. Shri Chetan Tholpady, M/s Emerson Ltd.
8. Shri Burzin Wadia, M/s Godrej & Boyce Mfg. Co. Ltd.
9. Shri Narendra Shedge, M/s Godrej & Boyce Mfg. Co. Ltd.
10. Shri Rahul Ramtekkar, M/s Johnson Controls Hitachi-Air Conditioning India
11. Dr. Nitin Karwa, M/s Honeywell
12. Dr. Krishnakant Agarwal, IIT Delhi
13. Shri Shankar Sapaliga, International Copper Association India
14. Dr. Jyotirmay Mathur, ISHRAE
15. Representative from Ministry of Environment & Forest (MoEFCC)
16. Shri Harsh Pant, RAMA
17. Shri J M Bhambure,
18. Shri Jeyapraksh Gurusamy, M/s Trane India Pvt. Ltd
19. Shri V Manjunath, UL
20. Shri Satish Kumar, UL
21. Shri Srinivasu M, Voltas

**MED 03: P7 Ducted and Package Air Conditioners and Heat Pumps**

1. Mr Bimal Tandon of M/s Carrier (convener)
2. Representative from Bluestar
3. Representative from Voltas
4. Representative from Daikin
5. Representative from Intertek
6. Representative from BEE
7. Representative from M/s Danfoss

**MED 03: P8 Ammonia Refrigeration**

1. National Centre for Cold Chain Development, Ministry of Agriculture (Convener),
2. Shri Kiran Kumar, Danfoss India (Co-convener)
3. Ministry of Environment, Forest and Climate Change (MoEFCC),
4. Association of Ammonia Refrigeration, Mumbai
5. International Institute of Ammonia Refrigeration
6. Shri MSNV Kiran, Danfoss India
7. Shri H. Wadhwa, Voluntary Organization in Interest of Consumer Voice, New Delhi
8. Shri Harsh Vardhan Pant, Refrigeration and Air Conditioning Manufacturers Association (RAMA)
9. Shri Ramesh Paranjpey, Personal Capacity, and
10. Johnsons Control

**MED 03: P9 Compressors**

1. Shri Manjunath V, UL (Convener)
2. Shri Chethan Tholpady, Emerson
3. Himanshu Mahallik, Tecumseh
4. Shri Rahul Ramtekkar, JC Hitachi
5. Shri Aditya Anil, LG Electronics
6. Shri Sunil Jain, Blue Star
7. Shri Gaurav Mehtani, Daikin
8. Shri Vijay Roy, Danfoss
9. Representative of Godrej,
10. Representative of HIGHLY
11. Representative of GMCC Compressor
12. Shri P K Mukherjee, Personal Capacity
13. Shri Srinivasu M of Voltas
14. Shri Manmohan K of M/s Carrier
15. Shri Gurusamy of M/s Ingersol Rand
16. Representative from M/s Kirloskar
17. Representative from M/s Bitzer
18. Representative from M/s Swegon
19. Representative from AAR.
20. Dr Subrata Mondal in individual capacity.

**MED 03: P10 Deep Freezer**

1. Shri P. K. Mukherjee, In personal capacity (***Convener***)
2. Shri Srinivasu Moturi, Voltas Ltd (***Co-Convener***)
3. Bureau of Energy Efficiency
4. Blue Star Ltd.
5. Frigoglass India Pvt Ltd.
6. Godrej & Boyce Mfg. Co Ltd
7. Panasonic India Pvt Ltd
8. Refrigeration & Airconditioning Manufacturers Association,
9. UL India Pvt Ltd
10. Western Refrigeration Private Limited
11. Prof Akhilesh Arora, Delhi Technological University, Delhi
12. Shri Gaurav Choudhary, Haier Appliances India Pvt Ltd

**MED 03: P11 Air Handling Unit**

1. Representative from UL (Convener),
2. Shri Bimal Tandon from Carrier
3. Representative from ISHRAE,
4. Representative from RAMA,
5. Representative from Blue Star,
6. Representative from Voltas,
7. Representative from Sierra Aircon
8. Shri Manmohan K, M/s Carrier Airconditioning & Refrigeration Limited
9. Representative of VTS Group;
10. Representative of Edge Tech;
11. Representative of Carry Air; and
12. Representative of Wave Aircon.

**MED 03: P12 Air Filters**

1. Shri V Manjunath (Convener)
2. Representative of M/s Ingersoll Rand
3. Shri Shankar Sapaliga from ICAI.
4. Shri Anil Chopra, from Camfil Air Filtration India Pvt. Ltd
5. Representative of ISHRAE
6. Representative of RAMA

**MED 03: P13 Finned Type Heat Exchanger**

1. Shri Shankar Sapaliga (Convener)
2. Representative from UL
3. Representative from Blue Star
4. Representative from Panasonic
5. Representative from LG
6. Representative from Carrier
7. Representative from RAMA
8. Representative from Amber
9. Representative from Prijai
10. Representative from Voltas
11. Representative from Daikin
12. Representative from JCI-Hitachi

**MED 03: P14 Self-Contained Ice Making Machine**

1. Shri Satish Kumar, UL India Pvt Ltd (Convener)
2. Blue Star Ltd
3. Frigoglass India Pvt Ltd
4. Indian Society of Heating, Refrigerating and Air Conditioning Engineers (ISHRAE)
5. Panasonic India
6. Voltas Ltd
7. Western Refrigeration Private Limited
8. Whirlpool India

**MED 03: P15 Household Evaporative Air Cooler and its Pumpset**

1. Shri Srinivasu, Voltas (Convener);
2. Representative from Usha;
3. Shri PK Mukherjee;
4. Representative from BEE;
5. Representative from Blue Star;
6. Representative from UL;
7. Representative from Intertek;
8. Representative from Havel;
9. Representative from Panasonic;
10. Dr. Yash Shukla, CEPT University;
11. Representative of M/s Bajaj Electrical,
12. Representative of M/s Godrej,
13. Representative of M/s Symphony Ltd.,
14. Representative of M/s V-Guard,
15. Representative of M/s Orient,
16. Representative of M/s Crompton,
17. Representative of M/s Hindware,
18. Representative of M/s Kenstar.

**MED 03: P16 Commercial Refrigerator**

1. Representative of UL (Convener)
2. Representative from ISHRAE
3. Representative from Blue Star
4. Representative from Voltas
5. Representative from Panasonic
6. Representative from Western Equipment
7. Representative from Frigoglass
8. Representative from Whirpool
9. Shri Gaurav Choudhary, Haier Appliances India Pvt Ltd

**MED 03: P17 Electronic Expansion Valves**

1. Representative from ISHRAE (Convener)
2. Representative from Danfoss
3. Representative from RAMA
4. Representative from Emerson
5. Representative from Sanhua
6. Representative from Fujikoki India Private Limited and
7. Representative from UL.

**MED 03: P18 Bottled water dispenser and Drinking water cooler**

1. Shri Srinivasu Voltas (**Convener**);
2. Shri Sheshadri H G, Voltas;
3. Shri Sunil Jain, Blue Star;
4. Shri Sushil Kumar, Blue Star;
5. Shri Pramod Trivedi, Usha Pvt. Ltd.;
6. Shri Vikas Dua, Usha Pvt. Ltd.;
7. Shri Prashant Hanwante, Veeline Media Limited;
8. Shri Satish Kumar, UL;
9. Shri C M Pathak, Intertek;
10. Shri P K Mukherjee, Personal Capacity; and
11. Representative from Carrier Midea.

**MED 03: P19 Chiller**

1. BEE(Convener);
2. Representative from ISHRAE (Co-convener)
3. Representative from RAMA;
4. Representative from Carrier;
5. Representative from ICA;
6. Representative from Blue Star;
7. Representative from Emerson;
8. Representative from UL;
9. Shri PK Mukherjee;
10. Representative from VOICE;
11. Shri Manmohan K, M/s Carrier Airconditioning & Refrigeration Limited.

**MED 03: P20 Selection, operation and maintenance of Air Conditioners and Heat Pumps**

1. Shri Shankar Sapaliga, Convener
2. Shri PK Mukherjee
3. Representative from Voltas
4. Representative from LG
5. Representative from
6. Representative from JC Hitachi- IN
7. Representative from RAMA
8. Representative from Panasonic
9. Representative from UL
10. Representative from Intertek
11. Representative from VOICE
12. Shri Ajaj Kazi, M/s Reliance World
13. Shri Shankar Chatterjee, Individual capacity
14. Shri Ravi Kumar Gondkar, M/s LEAD Consultancy and Engg Services
15. Shri Ajit Panicker, Individual capacity,
16. Shri Dharmen Dixit, Refrigeration and Air Conditioning Trade Association (RATA),
17. Shri PK Goel, and
18. Shri Bhavesh Mehta, Reliance Retail Limited.

**MED 03: P21 Room Air Conditioner efficiency evaluation**

1. Bureau of Energy Efficiency
2. Central Pollution Control Board
3. International Copper Association India
4. Intertek India Private Limited
5. Panasonic India Private Limited
6. Refrigeration and Air Conditioning Manufacturers Association
7. Sierra Aircon Private Limited
8. Voltas Limited
9. Shri P K Mukherjee, in personal capacity

**MED 03: P22 Walk in Cold Rooms**

1. Shri Ashish Fotedar, National Centre for Cold-Chain Development (**Convener**);
2. Shri P K Mukherjee, (**Co-Convener**);
3. Shri Sunil Jain, M/s Blue Star;
4. Shri S Sapaliga, International Copper Association;
5. Shri Srinivasu M, M/s Voltas India Pvt. Ltd;
6. Shri Aditya Narayan Singh, MoEFCC;
7. Shri Vaibhav Chaturvedi, CEEW;
8. Shri Girja Shankar, Energy Efficiency Services Ltd.;
9. Shri Kiran from Danfoss;
10. Shri V K Arora;
11. Shri Bhavesh Mehta, Reliance Retail Limited;
12. Shri Manmohan K of Carrier (New);
13. Shri Vikas Malhotra of Carrier (New);
14. Shri Gaurav Mehtani of Daikin (New);
15. Shri Manoj Singh of Daikin (New);
16. Shri Anil Mehta of Panasonic (New);
17. Representative from ISHRAE (New); and
18. Shri Venkanna from TRANE.

**MED 03: P23 India Cooling Action Plan**

1. Representative of MoEFCC (**Convener**);
2. Shri Pant of RAMA (**Co-Convener**);
3. Shri V Manjunath from UL;
4. Shri Tholpady from Emerson;
5. Shri Manmohan from Carrier;
6. Shri Vikas Mehta from Chemours India;
7. Shri P K Mukherjee in Personal Capacity;
8. Shri Gaurav Mehtani from Daikin;
9. Shri Srinivasu M from Voltas;
10. Shri Avinash from Honeywell;
11. Representative from ISHRAE; and
12. Shri Shankar Sapaliga from ICA.
13. Representative from M/s Honeywell; and
14. Representative from M/s Copeland

**MED 03: P24 Cooling cabinet made of clay**

1. Shri V. Manjunath, UL India Pvt Ltd (***Convener***)
2. Consumer Electronics and Appliances Manufacturers Association
3. Blue Star Ltd.
4. Shri J. K. Agrawal, In personal capacity
5. Shri S. T. H. Faridi, In personal capacity
6. Voltas Ltd
7. VOICE

**MED 03: P25 Non-ducted Portable Air Conditioners and Heat Pumps**

1. Shri Satish Kumar (Convener);
2. Dr. J Mathur, ISHRAE;
3. Shri Srinivasu, M/s Voltas;
4. Shri Davesh Mudgal, Sierra Aircon;
5. Shri Gaurav Mehtani, M/s Daikin;
6. Shri Rahul Ramtekkar, Johnsons Control Hitachi;
7. Shri Shankar Sapaliga of International Copper Association; and
8. Ms. Sneha Harsora of M/s Blue Star.

**MED 03: P26 Smart Technology (IoT) in Refrigeration and Air Conditioning**

1. Shri V Manjunath of UL (Convener)
2. Shri Shankar Sapaliga of International Copper Association India.
3. Shri. Satish Kumar of UL
4. Shri Kiran Kumar of M/s Danfoss
5. Shri Prabhat Goel of ISHRAE
6. Prof. Vishal Garg of ISHRAE
7. Shri Vasant Kale of M/s Blue Star
8. Shri Sachin Shah of M/s Blue Star
9. Shri Vikas Mehta of M/s Chemours
10. Shri Shrinivasu of M/s Voltas
11. Shri Bharath B K of M/s TUV Rheinland (LITD 27)
12. Shri Muhammed Shameem PV of M/s Toshiba Software (India) Pvt. Ltd. (LITD 27)
13. Shri Sanjeev Chopra of M/s Electropreneur Park (LITD 27 )
14. Shri Amit Kumar Jaiswal of M/s Samsung Electronics (LITD 27)
15. Shri Mahesh Babu A K of M/s Samsung Electronics (LITD 27)
16. Shri Praveen Arora of M/s TATA Communications (LITD 27)
17. Shri Sudhakar Mairpadi of M/s Philips India Limited (LITD 27
18. Dr. Kaushik Saha of M/s Samsung Electronics (LITD 27
19. Shri Mahesh Babu A K of M/s Samsung Electronics (LITD 27)
20. Shri Sudhanshu Mittal of M/s Nasscom (LITD 27)
21. Shri Rahul Ramtekkar of M/s Hitachi
22. Shri Chetan Tholpady of M/s Copeland
23. Representative from M/s Carrier.
24. Dr. Yash Shukla, CEPT University; and
25. Representative from M/s Daikin.

**MED 03: P27 Commercial Evaporative Air Cooler**

1. Shri Srinivasu, Voltas (Convener);
2. Representative of M/s Usha;
3. Shri PK Mukherjee in Personal Capacity;
4. Representative of BEE;
5. Representative of M/s Blue Star;
6. Representative of UL;
7. Representative of Intertek;
8. Representative of M/s Havel;
9. Shri Nishant Gupta of ISHRAE;
10. Dr. Yash Shukla, CEPT University;
11. Representative of M/s Bajaj Electrical;
12. Representative of M/s Godrej;
13. Representative of M/s Symphony Ltd.;
14. Representative of M/s V-Guard;
15. Representative of M/s Orient;
16. Representative of M/s Crompton;
17. Representative of M/s Hindware; and
18. Representative of M/s Kenstar.

**MED 03: P28 Automotive Air Conditioning and Mobile Air-Conditioning**

1. Shri Madhusudan Joshi, International Centre for Automotive Technology, Manesar
2. Ashok Leyland Limited, Chennai
3. Automotive Research Association of India, Pune
4. Calsonic Kansei Motherson Auto Products Private Limited, Kanchipuram
5. Carrier Air Conditioning and Refrigeration Limited, Gurugram
6. Denso International India Private Limited, Gurugram
7. Hanon Automotive Systems India Pvt Ltd
8. Honda Cars India Research and Development Limited, Noida
9. Honeywell International India Private Limited, Gurugram
10. Indian Institute of Technology Delhi, New Delhi
11. Ingersoll Rand India Limited, Bengaluru
12. International Centre of Automotive Technology, Manesar
13. MAHLE ANAND Thermal Systems Private Limited, Pune
14. MG Motor India Private Limited , Gurugram
15. Mahindra and Mahindra Limited, Mumbai
16. Maruti Suzuki India Limited, Gurugram
17. Refrigeration and Air Conditioning Manufacturers Association, New Delhi
18. Renault India Private Limited, Mumbai
19. Sanden Vikas (India) Private Limited, Faridabad
20. Subros Limites, New Delhi
21. Tata Motors Limited, Pune
22. The Chemours India Private Limited, Gurugram
23. Volkswagen India Private Limited, Mumbai
24. Shri P K Mukherjee, In Personal Capacity
25. Lt Col Santanu Roy, In Personal Capacity

**MED 03: P29 Heat Pump Water Heater**

1. Shri P K Mukherjee (Convener);
2. Representative from Blue Star;
3. Representative from Copeland;
4. Representative from Daikin;
5. Representative from JCI-Hitachi;
6. Representative from ICAI;
7. Representative from Trane Technologies;
8. Representative from UL; and
9. Representative from Voltas.

**MED 03: P30 Service Valves**

1. Shri Srinivasu of Voltas;
2. Shri Shankar Sapaliga of ICAI; and
3. Shri Santosh Kumar of Daikin.

**MED 03:P31 Safety pertaining to refilled AC gas:**

1. Shri Shankar Sapaliga (Convener);
2. Shri V Manjunath of UL;
3. Shri Vikas Mehta of Chemours;
4. Shri Avinash of Honeywell;
5. Shri Chethan Tholpady of Copeland;
6. Shri Jitendra Bhambure of Blue Star;
7. Shri Deepak Baid of Blue Star;
8. Shri Rahul Ramtekkar of JCI Hitachi; and
9. Ms Disha of Daikin.

**MED 03:P32 Cold chain and CO2 trans-critical systems:**

1. Shri Ashish Fotedar of NCCD (**Convener**);
2. Shri Aditya Narayan, MoEFCC;
3. Shri Vikas Malhotra, Carrier India;
4. Shri Chethan Tholpady, Emerson;
5. Shri P K Mukherjee, Personal Capacity;
6. Representative from Tecumseh;
7. Representative from ICE Make Refrigeration Limited, Ahmedabad;
8. Representative from Rinac India Ltd.; and
9. Shri Bhavesh Mehta, Reliance Retail Limited

**MED 03:P33 Testing and calculating methods for seasonal performance factors of air-cooled air conditioners and air-to-air heat pumps**

1. Dr. Jyotirmay Mathur (ISHRAE)
2. Shri Satish Kumar, UL
3. Prof. S. K. Das, Indian Institute of Chemical Engineering
4. Shri Shankar Sapaliga, ICA
5. Shri Harsh Vardhan Pant, RAMA
6. Shri Chethan Tholpady, Emerson and
7. Shri Srinivasu M, M/s Voltas.

**ANNEX 4**

(Item **2.2.7**)

1. Engineers India Limited, New Delhi
2. Mandev Tubes Ltd, Umbergaon, Gujarat
3. Bharat Heavy Electricals Limited, Project Engineering Management, Noida
4. Indian Institute of Technology, Kanpur
5. Usha International Ltd.
6. Climatrol Corporation
7. Gujral Aircon Ltd.
8. Tecumseh Products India Pvt. Ltd.
9. Cool Wings
10. Highly Electrical Appliances India Private Limited