

**For BIS Use ONLY**

**AGENDA**

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| --- | --- | --- | --- |
| **MEETING** | **DAY & DATE** | **TIME** | **VENUE** |
| **Thirty-****Ninth meeting of Refrigeration and Air Conditioning Sectional Committee, MED 03** | **Wednesday**  **13 December 2023** | **1030-1500 hr** | **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 ‘B’/Assistant 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 the 38th meeting of Refrigeration and Air Conditioning Sectional Committee, MED 03 held on 17th July 2023 through VC (WebEx) was circulated vide email bearing reference MED 03/A-2.38 dated 28th July 2023. The last date comment was on 11th August 2023.

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.

The Committee reviewed the scope of MED 03 and drafted the revised scope of MED 03 as follows:

*‘Standardization in the fields of refrigeration and air-conditioning, including terminology, mechanical and electrical safety, methods of testing and rating equipment, measurement of sound levels, refrigerant and refrigeration lubricant, with consideration given to environmental protection.*

*The scope also includes:*

* 1. *Refrigerating and similar appliances for household and commercial use such as refrigerators, frozen-food storage cabinets, food freezers, display cabinets, cold chain refrigeration system and components, etc.;*
  2. *Factory-assembled air-conditioners (cooling), heat pumps, dehumidifiers, refrigerants, 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;*
  3. *Automotive air conditioning; and*
  4. *Selection, installation, commissioning and maintenance of HVAC System considering the conducive environment, safety, and human health’*

Chairperson’s suggestion to include circular economy and the end of the lifecycle of the product in the draft scope, may be deliberated and decided by the Committee.

The Committee may kindly **REVIEW** the 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**.

1. Electrical Research and Development Association, Vadodara has been requested to provide revised nomination as Shri Guatam Brahmbhatt is no longer associated with ERDA. – response is awaited.
2. Ingersoll Rand India Limited, Bengaluru was requested to provide revised nomination in the proforma along with update on the change in the organization name.- revised nomination is awaited.
3. MS has again written letter to the following organizations to seek nomination for participating in MED 03:
   1. Central Public Works Department (CPWD); and
   2. Ministry of Environment, Forest and Climate Change of India (MoEFCC)

The response is awaited.

1. Revised nomination has been received from Shri Chirag Gandhi, Honeywell International India Private Limited, Gurugram in place of its Principal member Shri Aaditya Pegallapati.
2. The Committee reviewed the composition of the Sectional Committee and decided to withdraw following organizations due to non-participation: Annapurna Electronics and Services Ltd, Hyderabad during 38th meeting; and National Thermal Power Corporation, Noida during 37th meeting – will be put to MEDC during its next meeting.

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

**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.



Committee members are kindly requested to provide the signed declaration as above to BIS.

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

1. Dr. Yash Shukla, CEPT, Ahmedabad has been co-opted as decided during the last meeting.
2. Engineers India Limited, New Delhi and Bharat Heavy Electricals Limited, Project Engineering Management, Noida have been sent the list of Panels under MED 03 to seek their interest of participation
3. The details of experts from various academia like IIT Delhi, IIT Bombay, IISC Bangalore, etc to be added in the mailing list, is awaited from Shri Chethan Tholpady and Shri V Manjunath.
4. Following new requests for **representation** in the MED 03 Sectional Committee has been received:
5. Dr Subrata Mondal in individual capacity;
6. Prof Rajesh Kumar, Delhi Technological University, Delhi;
7. Prof Akhilesh Arora, Delhi Technological University, Delhi;
8. Shri. Sunil C Panchbhai and Shri Rahul Kasture, AscenTrack Consulting, Pune; and
9. Shri Gaurav Choudhary, Haier Appliances India Pvt Ltd.

The committee may **REVIEW**the composition in order to have focused representation as per **2.2.1 to** **2.2.7** of the Agenda.

**2.3 Composition of the Sub-committee**

**2.3.1** Composition of the Sub-committee under the Committee, MED 03 is given below:

|  |  |  |  |
| --- | --- | --- | --- |
| Sl No | Title of the Subcommittee | Composition listed at | Date of last few meetings |
|  | Automotive Air-Conditioning and Mobile Air-Conditioning, MED 03:1 | **Annex 3**  (**P-49**) | 15 07 2022 |

The committee may **REVIEW**the composition in order to have focused representation as per **2.2.1 to 2.2.6** and **2.3.1** of the Agenda.

**Item 3** **REFORMS IN THE PROCESS OF STANDARDISATION**

1. A **presentation** has been prepared to showcase the process reforms that have taken place in the standardization process (Presentation enclosed).



1. The **Rolling Annual Action Plan** for 2023-2024.

Rolling annual action plan has been prepared and has been enclosed.



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

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| --- | --- | --- | --- | --- |
| **Technical Committee** | **1st Quarter** | **2nd Quarter** | **3rd Quarter** | **4th Quarter** |
| **MED 03** | **17th April 2023** | **17th July 2023** | **13th Dec 2023** | **5th Feb 2024** |

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.



*The Committee may please note.*

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.

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| --- | --- | --- | --- | --- |
| Sl No. | ISO/IEC TC | Doc No. & Title | Circulated on | Last date of comment |
|  | ISO/TC 86/SC 6 | ISO/NP 24280 Data from Air Conditioning and Heat Pumps for Energy Efficiency Simulation of Building Systems | 13 Oct 2023 | 01 Dec 2023 |
|  | ISO/TC 86 | ISO/NP 24111 Guidelines for the application of graphical symbols used on air conditioning equipment | 13 Sep 2023 | 10 Nov 2023 |

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.

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| --- | --- | --- |
| **Name of event** | **Tentative date** | **Type of event (National/International/ State level etc.)** |
| ACREX India 2023 | Feb 15-17, 2024 | Greater Noida, NCR, India |

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.

At present subscription has been taken for Air Conditioning and Refrigeration Journal of the Indian Society Heating, Refrigerating and Air Conditioning Engineers (ISHRAE).

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 38th meeting** | **Present Status** |
| **REFRIGERATION** | | | |
| 1 | 4.1 (1) | **Household refrigerating appliances Characteristics and Test Methods IS 17550 (Part 1 to 3)**  MS informed that Shri Mohinder Singh of M/s Whirlpool had confirmed regarding the adoption of IEC TR 63061:2017 ‘Adjusted volume calculation for refrigerating appliances’.  Shri Satish Kumar of UL requested the Committee for 10 more days to review IEC TR 63061:2017.  Shri P K Mukherjee informed that at present in IEC 62552 series the concept of adjusted volume is still not present. He further added that BEE star labelling program is still based on adjusted volume. So having an Indian Standard on the subject will be very useful. However, it needs to be further deliberated on how the standard can be used in IS 17550 series.  The Committee requested the Panel to provide recommendation in the next meeting and also requested the panel to dispose of the comments on WC drafts.  The Committee decided that the final draft received from the Panel shall be sent for printing.  **Background**  Committee requested the panel to consider sound requirement in the standard.  It was decided that a copy of IEC TR 63061:2017 ‘Adjusted volume calculation for refrigerating appliances’ will be circulated to the Panel and Committee for 1 week for feedback. If no response is received the document shall be wide circulated for 1 month.  It further decided to make a reference to IEC TR 63061 in the relevant part of IS 17550 (Part 1 to 3). | 5th Panel meeting was held on 8th August 2023 to dispose of the comments. The recommendation from the Panel and one additional recommendation on marking requirement on Household Refrigerators for finalization of MED 03 (22235), MED 03 (22236), and MED 03 (22237) was circulated to the Committee vide email dated 25th August 2023. No further comment has been received on the drafts.  Panel also recommended to directly adopt IEC TR 63061:2017 ‘Adjusted volume calculation for refrigerating appliances’ and wide circulate the draft for 2 months.  The Panel recommended that study would be required for considering sound requirement in the standard hence should be considered for next amendment/revision.  Comment has also been received from Shri Satish Kumar(*see* Annex 4).  The Committee may **CONSIDER** and **DECIDE**. |
| 2 | 4.1 (2) | **IS 17773 : 2022 Closed-Circuit Ammonia**  **Refrigeration System — Code of Practice for Design and Installation (ANSI/IIAR 2 : 2014, NEQ)**    The Committee requested Shri Kiran Kumar, Danfoss India (Co-convener) to Convene the Panel meeting in case the Convener is not available. It requested the Panel to provide recommendations on comments by the next meeting.  **Background**  The Committee appointed Shri Kiran Kumar, Danfoss India as the Co-convener  of the panel. It requested the Panel to dispose of the comments of IIAR and Shri Ramesh Paranjpey and to consider necessary amendment to the standard.  It further noted the information conveyed by IIAR. | Further update is awaited from the Panel.  The Committee may **ADVICE**. |
| 3 | 4.1 (3) | **IS 1474:1959 Commercial Refrigerators (ISO 23953-2 : 2015, MOD) and IS 2167/ ISO 22044 : 2021 Commercial Beverage Coolers**  The Committee finalized MED 03 (22552) ‘Commercial beverage coolers — Classification, requirements and test conditions’ for printing.  **Background**  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.  All comments in the agenda were agreed to be taken as fresh comments once ISO 22044 is adopted and implemented by the manufacturers based on experience gained during its implementation. | MED 03 (19252) ‘Refrigerated display cabinets Part 2 Classification requirements and test conditions’ document was finalized. The draft is under preparation as per Panel & Committee recommendation for printing.  MED 03 (22552) is under printing.    Considering the fourth revision of IS 2167, following National Deviation for ISO 22044 has been received from Shri Satish Kumar of UL and Shri P. K. Mukherjee.    The Committee may **CONSIDER** and **DECIDE**. |
| **AIR CONDITIONING** | | | |
| 4 | 4.1 (4) | i) **IS/IEC 60335-2-40: 2018 Household and similar electrical appliances – Safety : Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers**  Shri V Manjunath of UL informed that the WG is revising the comments on IEC 60335-2-40 to be submitted to IEC and shall be provided shortly.  The Committee requested the Panel to expedite the national deviation for IEC 60335-2-40: 2022.  The national deviation for IEC 60335-2-40: 2022 received from the Panel shall be wide circulated for 1 month.  **Background**  The members informed that the comments need to be reviewed again.    The Committee requested the WG to provide the proposal based on comments at the earliest. It also requested the Panel to provide national deviation for IEC 60335-2-40: 2022 within 2 months for modified adoption of IEC 60335-2-40: 2022. The Committee also agreed that once the standard is published the same will be referred to in IS 1391 (Part 1) and (Part 2).  ii) **Testing and calculating methods for seasonal performance factors of air-cooled air conditioners and air-to-air heat pumps: Part 1 Cooling seasonal performance factor**    MS will confirm from Convener of ISO/ TC 86/ SC6/ WG15 for limiting of experts to be registered in WG15 as additional nomination has been received from Shri V Manjunath of UL and Dr. Yash Shukla of CEPT. The Committee decided that if no limitation is there, the members will be added to the WG15.  **Background**  The Committee requested Dr Jyotirmay Mathur of ISHRAE and Shri Srinivasu M of Voltas to attend the next meeting of ISO/ TC 86/ SC6/ WG15 and provide the status report to the Committee. It was noted that there is no Indian viewpoint at present and the meeting will be attended for information so that the Indian industry can proactively take necessary steps for harmonization with ISO.  The Committee decided to ‘Approve’ the ballot on document ISO/NP 21280 'Testing and rating including seasonal performance of air-to-air air-conditioners and heat pumps considering the effect of native control' and nominate Dr. Jyotirmay Mathur of ISHRAE, Shri V Manjunath, and Shri Srinivasu M of Voltas in the development of this project. It decided to give additional comments once the outline of the draft is more elaborate. | 1. 11th Panel meeting was held on 17 August 2023. Draft Minutes is attached here and final minutes will be circulated to the Panel for confirmation of the minutes.     Following comments submitted on 61D/506/CDV IEC 60335-2-40 ED8 thru e ballot and Committee approved the same comments for India Viewpoint in IEC IEC/TC 61/SC 61D meeting held in November 2023:    Proposal on national deviation for IEC 60335-2-40: 2022 are awaited from the panel.  Following draft national deviation has been received from Shri Vikas Mehta dated 14 September 2023.    The Committee may **CONSIDER** and **ADVICE**.   1. Presently, following members have been registered to ISO/ TC 86/ SC6/ WG15 Advanced performance standards: 2. Dr. Jyotirmay Mathur of ISHRAE 3. Dr. Yash Shukla of CEPT University 4. Shri Srinivasu M of Voltas   The Committee may **ADVICE**. |
| 5 | 4.1 (5) | **Selection, operation and maintenance of room AC – Code of Practice**    The Committee requested the Panel to provide update in the next meeting.  **Background**  The Committee accepted the Panel recommendation as per Minutes of the panel meeting and requested the Panel to expedite the preparation of the draft. | Further update is awaited from the Panel.  The Committee may **ADVICE**. |
| 6 | 4.1 (6) | b) **IS 3615 Glossary of terms used in refrigeration and air conditioning**  The Committee noted the information.  **Background**  The Committee requested to expedite the preparation of the draft and wide circulate it for 1 month. If no comment is received the draft shall be sent for printing. | The draft amendment is under preparation based on the comments provided by Dr. Jyotirmay Mathur.    The Committee may **ADVISE**. |
| 7 | 4.1 (7) | **New standards on smart technology (IoT) in RAC**  The Committee noted the information.  **Background**  The Convener apprised that no further progress on the work has been made due to other priority ongoing works of the Committee. Last panel meeting was held on 28th May 2021. | Further update is awaited from the Panel.  The Committee may **NOTE**. |
| **RAC COMPONENTS** | | | |
| 8 | 4.1 (8) | **Panel on Compressors**  Regarding the Panel meeting held on 13th June 2023 it was informed that clarification was sought from CMD-III if a separate BIS certification would be required if IS/IEC 60335-2-34 is certified by IEC. CMD-III had clarified that separate licence would be required for IS/IEC 60335-2-34 for safety if performance and safety standards are separate.  The Committee noted the information and accepted the Panel recommendations based on meetings held on 18th April 2023, 9th May 2023, and 13th June 2023. | Panel meetings were held on 18th April 2023, 9th May 2023, and 13th June 2023.    Minutes of 3rd Panel meeting is under preparation and will be circulated to the Panel and Committee.    The Committee may **ADVICE**. |
| 9 | 4.1 (9) | **ISO 16890-2:2022 ‘Air filters for general ventilation — Part 2: Measurement of fractional efficiency and air flow resistance’**  **ISO 16890-4:2022 ‘Air filters for general ventilation — Part 4: Conditioning method to determine the minimum fractional test efficiency’**  The Committee requested the Panel to provide recommendation for adoption of ISO 16890-2:2022 ‘Air filters for general ventilation — Part 2: Measurement of fractional efficiency and air flow resistance’ along with the national deviation present in IS 17570 (Part 2) : 2021.  **Background**  Last Panel meeting was held on 17th Jan 2023 and following are the recommendation of the panel:  1. ISO 16890-2:2022 Air filters for general ventilation — Part 2: Measurement of fractional efficiency and air flow resistance  Panel noted that at present there is only 1 laboratory i.e, TEST MASTER for testing as per 17570 (Part 1): 2021/ISO 16890-1: 2016. Availability of more test facility needs to be ascertained for making recommendation on the direct/modified adoption of ISO 16892-2. Mr Anil Chopra, M/s Camfil Air Filtration India Pvt. Ltd and MS will write to various laboratories to get confirmation at the earliest.  2. ISO 16890-4:2022 Air filters for general ventilation — Part 4: Conditioning method to determine the minimum fractional test efficiency  The panel recommended for direct adoption of ISO 16890-4: 2022.  The minutes of the Panel is attached. | Update on recommendation along with the national deviation for adoption of ISO 16890-2:2022 is awaited from the panel.    Draft Indian standard for Wide circulation for direct adoption of ISO 16890-4: 2022 is under preparation by MS.  The Committee may **CONSIDER** and **ADVICE**. |
| 10 | 4.1 (10) | **MED 03 (17393): Air Handling Units ― General Requirements Performance Testing and Rating**  The Committee noted the information and requested the Panel to provide recommendation on health and hygiene aspect to be covered under AHU.  **Background**  The Committee approved the Panel recommendation and finalized the draft for printing. It further requested the panel to provide requirements on health and hygiene as recommended in the minutes of the Panel meeting. | The draft is under preparation as per Panel recommendation and IS 12 for printing.  The Panel recommendation on health and hygiene is awaited.  The Committee may **ADVISE**. |

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

**4.2** The summary of the action points of the 6th Automotive Air-Conditioning and Mobile Air-Conditioning Sub Committee, MED 03:1 meeting held on 15th July 2022 through WebEx are given below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S No** | **\*Item No.** | **Recommendation of the sub-committee in 5th meeting** | **Action taken on the Minutes of the previous meeting** | **Recommendation of the sub-committee in 6th meeting** |
| **1** | **1** | Shri Vishnu Suthar of M/s Subros apprised the sub-committee on the status of the draft. He informed that no further comment has been received on the draft.  Shri Noel Peters of M/s Denso put forward his comment on the **5.1.5.4** Corrosion of heater core where the leakage test has to be done on the specimen by holding pressurized N2 gas at 1.67 MPa. Heater core generally uses maximum pressure up to 140KPa hence the value mentioned in the draft is very high for leakage test. He proposed that the pressure should be around maximum 0.2MPa considering the real pressure situation.  Shri Kamal of M/s Maruti  Suzuki was in consensus with the proposal of Shri Noel Peters  Shri Suresh Tadigadapa of M/s Tata Motors Ltd informed the sub-committee that in last ad hoc group meeting it was decided that each and every member to the group will submit comments/observation specific to each clauses which could not be done due to various engagements. Hence he proposed the ad hoc group to review the document again.  Shri Vishnu Suthar of M/s Subros informed that such comments should be received beforehand for any meeting to be conducted.  Shri Kamlesh of Damler India expressed that for the leak test working pressure is 1.4 bar and leak test 2 bar is the proposal from M/s Denso, which is close to the working pressure. Generally the leak test/ check will be at least 5 or 10 time of working pressure. Also leak test cannot be done by the coolant but with N2. Therefore 1.67 MPa cannot be reduced as it will lead to coolant leak. The same was also the viewpoint of M/s Ashok Leyland.  Dr. Nitin Karwa of M/s Honeywell apprised the members that as per ASME B31.1 non-destructive test with N2 which permits the pressure to be reduced to the lower of 100 psig (690 kPa) or the design pressure during the examination for leakage. Hence it cannot be more than the working pressure.  After detailed deliberation as consensus could not be achieved the sub-committee decided that following panel will dispose of the comments and provide the revised draft within 1 week:   * Shri Roopak Agarwal of M/s Subros (Convener), * Shri Prasanna N of M/s TATA Motors, * Suresh T of M/s TATA Motors, * Shri Noel Peters of M/s Denso, * Shri Shriganesh Umbarkar of M/s Maruti Suzuki, * Shri Anil Kumar of Mahindra & Mahindra, * Shri Dharmarajan S M/s MAHLE Anand Thermal System, * Shri Kamal K Sharma M/s Sanden Vikas, * Shri Sonu Kumar S of ICAT, and * Representative of Ashok Leyland   The draft will be wide circulated for 2 months. Comments received in wide circulated draft will be disposed by the above panel. | |  | | --- | | The revised draft is awaited from the Panel.  The sub-committee may kindly consider and decide. | | The members of the Panel informed that consensus was not achieved on all the points on the working draft. Due to change in the role of members from M/s Subros further Panel meeting was not held.  The sub-committee revised the Panel as follows:   1. Shri Himanshu Bajpai of M/s Subros (Convener), 2. Shri Prasanna N of M/s TATA Motors, 3. Shri Suresh T of M/s TATA Motors, 4. Shri Noel Peters of M/s Denso, 5. Shri Shriganesh Umbarkar of M/s Maruti Suzuki, 6. Shri Anil Kumar of Mahindra & Mahindra, 7. Shri Dharmarajan S M/s MAHLE Anand Thermal System, 8. Shri Kamal K Sharma M/s Sanden Vikas, 9. Shri Sonu Kumar S of ICAT, 10. Shri VP Gautam of Ashok Leyland; and 11. Shri Parmod Kumar, Calsonic Kansei Motherson   The Committee in its 34th meeting had requested the panel to provide the revised draft by 1st week of Sept 2022.  The draft is awaited.  Due to paucity of time, the Committee had decided to discuss the item in the next meeting.  The Committee may **ADVICE**. |
|  | **Present Status:**  Further update is awaited from the Sub Committee.  The Committee may **ADVISE**. | | | |

The Committee may kindly **DECIDE**.

**ITEM 5 DRAFT STANDARDS/AMENDMENTS FOR FINALIZATION/ FINALIZED**

**5.1 MED 03 (20225) Room Air Conditioners Specification Part 1 Unitary Air Conditioners (Fourth Revision of IS 1391-1)**

IS 1391 (Part 1) : 2023 Room Air Conditioners Specification Part 1 Unitary Air Conditioners (Fourth Revision) has been published in August 2023.

**5.2 MED 03 (20226) Room Air Conditioners Specification Part 2 Split Air Conditioners (Fourth Revision of IS 1391-2)**

IS 1391 (Part 2) : 2023 Room Air Conditioners Specification Part 2 Split Air Conditioners (Fourth Revision) has been published in August 2023.

**5.3 MED 03 (22115) Refrigerants - Designation and safety classification Amendment – 2 to IS 16656/ISO 817**

The document is under print.

The Committee may **NOTE.**

**5.4 MED 03 (22116) Refrigerating Systems and Heat Pumps — Safety and Environmental Requirements Part 1 Definitions, Classification and Selection Criteria Amendment – 2 to IS 16678 (Part 1)/ISO 5149-1**

The document is under print.

The Committee may **NOTE.**

**5.5 MED 03 (22117) Refrigerating systems and heat pumps - Safety and environmental**

**requirements: Part 2 design, construction, testing, marking and documentation Amendment – 1 to**

**IS 16678 (Part 2)/ISO 5149-2**

The document is under print.

The Committee may **NOTE.**

**5.6 MED 03 (22118) Refrigerating systems and heat pumps - Safety and environmental requirements: Part 3 installation site Amendment - 1 to IS 16678 (Part 3)/ISO 5149-3**

The document is under print.

The Committee may **NOTE.**

**5.7 MED 03 (20172) Air-cooled air conditioners and air-to-air heat pumps — Testing and calculating methods for seasonal performance factors — Part 1: Cooling seasonal performance factor (ISO 16358-1 : 2013 MOD)**

IS 18154 (Part 1) : 2023 Air-cooled air conditioners and air-to-air heat pumps Testing and calculating methods for seasonal performance factors Part 1: Cooling seasonal performance factor (ISO 16358-1 : 2013 MOD), has been published in October 2023.

**5.8 MED 03 (20173) Air-cooled air conditioners and air-to-air heat pumps — Testing and**

**calculating methods for seasonal performance factors —Part 2: Heating seasonal performance**

**factor (Adoption of ISO 16358-2 : 2013)**

IS 18154 (Part 2) : 2023/ ISO 16358-2 Air-cooled air conditioners and air-to-air heat pumps Testing and calculating methods for seasonal performance factors Part 2: Heating seasonal performance factor, has been published in October 2023.

**5.9 MED 03 (20174) Air-cooled air conditioners and air-to-air heat pumps — Testing and**

**calculating methods for seasonal performance factors — Part 3: Annual performance factor**

**(Adoption of ISO 16358-3 : 2013)**

IS 18154 (Part 3) : 2023/ ISO 16358-3 Air-cooled air conditioners and air-to-air heat pumps Testing and calculating methods for seasonal performance factors Part 3: Annual performance factor, has been published in October 2023.

**5.10 MED 03 (21813) Refrigerating systems and heat pumps Safety and environmental requirements Part 4: Operation maintenance repair and recovery [Revision of IS 16678 (Part 4)/ISO 5149-4]**

The document is under print.

The Committee may **NOTE.**

**5.11 MED 03 (21814) Refrigerant properties (Revision of IS/ISO 17584)**

The document is under print.

The Committee may **NOTE.**

**5.12 MED 03 (21815) High-efficiency filters and filter media for removing particles in air Part 5:**

**Test method for filter elements [Revision of 16753 (Part 5)/ISO 29463-5]**

The document is under print.

The Committee may **NOTE.**

**5.13 MED 03 (17393): Air Handling Units ― General Requirements Performance Testing and Rating**

The document was finalized in the 36th meeting. The draft is under preparation as per Panel recommendation and IS 12 for printing.

The Committee may **NOTE.**

**5.14 MED 03 (19252) Refrigerated display cabinets Part 2 Classification requirements and test**

**conditions (ISO 23953-2 : 2015, MOD, First Revision) Superseding IS 1474**

The document was finalized in the 36th meeting. The draft is under preparation as per Panel recommendation and IS 12 for printing.

Also, vide Item 4.1 Sl no. 3.

The Committee may **NOTE.**

**5.15 MED 03 (19119) Non-Ducted Portable Air-Cooled Air Conditioners And Air-to-Air Heat Pumps Having A Single Exhaust Duct Testing And Rating For Performance (MOD Adoption of ISO 18326: 2018)**

The document was finalized in the 35th meeting. The draft is under preparation as per Panel recommendation and IS 12 for printing.

The Committee may **NOTE.**

**5.16 MED 03 (20281) Liquid Chilling Package Units — Specification (First Revision of IS 16590)**

IS 16590 : 2023 Liquid Chilling Package Units - Specification (First Revision) has been published in November 2023.

**5.17 MED 03 (18921) : Multiple split-system air conditioners and air-to-air heat pumps (VRF air conditioners) ― Specification**

The document is under print.

The Committee may **NOTE.**

**5.18 MED 03 (22550) Refrigerated storage cabinets and counters for professional use —Performance and energy consumption [Adoption of ISO 22041:2019]**

The document is under print.

The Committee may **NOTE.**

**5.19** **MED 03 (22551) Blast chiller and freezer cabinets for professional use — Classification requirements and test conditions [Adoption of ISO 22042:2021]**

The document is under print.

The Committee may **NOTE.**

**5.20 MED 03 (22552) Commercial beverage coolers — Classification, requirements and test conditions [Adoption of ISO 22044:2021]**

The document is under print.

The Committee may **NOTE.**

**ITEM 6 DRAFT STANDARDS/AMENDMENTS FOR FINALIZATION**

**6.1 MED 03 (21881) Pumpset for evaporative air coolers Specification (Revision of IS 11951)**

The Committee had requested the Panel to dispose of comments received on MED 03 (21881).

The final recommendation has been received from the panel during its 11th to 18th meetings held during 25th May 2023 to 24th August 2023. The minutes of 14th to 18th meetings are under preparation and will be circulated to the Panel and Committee for finalization and printing.

Comment has also been received from Shri L S Chauhan(*see* Annex 4).

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

**6.2 MED 03 (22387) Direct evaporative air cooler ― Specification (Revision of IS 3315)**

Comments received from Shri Falgun Shah of M/s Symphony Ltd. and Shri Socratees. C of M/s Bajaj Electricals Limited were put up to Panel for consideration. Committee requested the panel to dispose of the comments.

The final recommendation has been received from the panel during its 11th to 18th meetings held during 25th May 2023 to 24th August 2023. The minutes of 14th to 18th meetings are under preparation and will be circulated to the Panel and Committee for finalization and printing.

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

* + - 1. **6.3 MED 03 (22200) Drinking Water Coolers ― Specification [ First revision of IS 1475 (Part 1)]**

Comments had been received from M/s Blue Star Limited, M/s Emerson, M/s Usha International, and MS (BIS).Panel had disposed of the comments during its 5th and 6th panel meeting.

**** **** ****

The Committee finalized the document for printing during its 38th meeting. It approved MS to make editorial corrections if any and decided to send the draft for printing after the last date of comments on the minutes of the Panel meeting.

Considering addendum to the panel meeting minutes, finalized draft standard for printing is attached here.

****

Comment has also been received from Shri Chethan Tholpady (*see* Annex 4).

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

**6.4 MED 03 (22235) Household Refrigerating Appliances Characteristics and Test Methods Part 1 General Requirements [*First revision* of IS 17550 (Part 1): 2021]**

*Vide Item 4.1 Sl No.1.*

**6.5 MED 03 (22236) Household Refrigerating Appliances Characteristics and Test Methods Part 2 Performance Requirements [*First revision* of IS 17550 (Part 2): 2021]**

*Vide Item 4.1 Sl No.1.*

**6.6 MED 03 (22237) Household Refrigerating Appliances Characteristics and Test Methods Part 3 Energy Consumption and Volume [First revision of IS 17550 (Part 3): 2021]**

*Vide Item 4.1 Sl No.1.*

**6.7 MED 03 (24169) Household And Similar Electrical Appliances - Safety - Part 2-89: Particular Requirements For Commercial Refrigerating Appliances And Ice-Makers With An Incorporated Or Remote Refrigerant Unit Or Motor-Compressor (Modified Adoption of IEC 60335-2-89:2019)**

The draft national deviation for IS/IEC 60335-2-89 was provided by Shri Vikas Mehta of M/s Chemours and Shri V Manjunath of UL.

- The draft is under wide circulation. Last date of comments is 17 December 2023.

The Committee may **NOTE**.

**ITEM 7 DRAFT STANDARD/ AMENDMENTS FOR APPROVAL FOR WIDE CIRCULATION (WC)**

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

The Committee had requested Shri V Manjunath of UL to provide draft amendment no. 2 and decided to wide circulate it for 1 month.

The draft is awaited.

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

**7.2 MED 03 (22144) : Refrigerating systems and heat pumps Competence of personnel (Adoption of ISO 22712: 2023)**

Update on the standard was sought during the meeting of the Steering Committee to review progress of implementation of India Cooling Action Plan held under the Chairpersonship of Secretary, MoEF&CC on 15 May 2023 at New Delhi. As an action point concerned departments have been directed to report the progress within 6 months.

Committee had requested RAMA to provide a national annex for the competence of personnel for the room air conditioner to be added in the draft on priority. The Committee decided to wide circulate the draft for 2 months incorporating the recommendation of RAMA.

- The national annex for Wide circulation for the competence of personnel for the room air conditioner is awaited from RAMA.

Comment has also been received from Shri Chethan Tholpady (*see* Annex 4).

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

**7.3 MED 03 (22778) Electronic Expansion Valve — Specification**

The Committee decided to wide circulate the draft for 1 month after comments of M/s Danfoss has been addressed. If no comment is received during the wide circulation period, the draft shall be sent for printing. Comments received if any shall be disposed of by the Panel.

- Further update is awaited from the Panel.

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

**ITEM 8** **COMMENTS ON PUBLISHED STANDARDS**

**8.1 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**.

**8.2 IS 2370: 2014 ‘Walk-in Cold Rooms — Specification’**

The present composition of the Panel is as follows:

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.

The recommendation on the amendment and revision is awaited from the Panel.

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

**8.3 IS 17681 : 2022 Bottled Water Dispensers ― Specification**

The recommendation on sound level as per the method of IS 1391 is awaited from Shri Srinivasu M of M/s Voltas.

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

**8.4 IS/IEC 60335-2-89 Household and similar electrical appliances - Safety: Part 2 - 89: particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant unit or compressor**

The draft national deviation for IS/IEC 60335-2-89 was provided by Shri Vikas Mehta of M/s Chemours and Shri V Manjunath of UL.

- The draft is under wide circulation. Last date of comments is 17 December 2023.

The Committee may **NOTE**.

**ITEM 9 NEW SUBJECTS**

**9.1** Following NWIP has been submitted byRamajayan Pandiayan of CSIR-Indian Institute of Integrative Medicine, Jammyu:

****

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

**9.2** 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.



MS had proposed the development of new standards for Precision Air Conditioning (PAC) Units, Blast chillers and freezers, Display-cum-cold rooms, and Pre-Coolers in the last meeting. Shri Satish of UL had also suggested the development of standards on PAC Units and Panel cooling systems and shared information about some manufacturers. The Committee requested members to provide input on these proposals and decided to discuss the item in the next meeting

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

**9.3** 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, 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.

The recommendation is awaited.

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

**9.4** **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**.

**9.5 India Cooling Action Plan of** **Ministry of Environment, Forest and Climate Change**

The recommendation is awaited from the Panel.

The present composition of the Panel is as follows:

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; and
11. Representative from ISHRAE.

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

**9.6** **HPMP III (HCFC phaseout management plan) work under the supervision of Ozone Cell, Ministry of Environment, Forest and Climate Change**

The recommendation is awaited from the Panel.

The present composition of the Panel is as follows:

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; and
11. Representative from ISHRAE.

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

**ITEM 10 TECHNICAL COMMENTS AND PROPOSALS**

**10.1 CMD-3 Query on IS 16678 (Part 2)/ ISO 5149-2 Refrigerating Systems and Heat Pumps — Safety And Environmental Requirements Part 2 Design, Construction, Testing, Marking And Documentation**

Committee has been requested to inform whether IS 16678-2 is a product specification standard or just a code of practice or methods of tests only by CMD-3.

- Clarification was sought from the MED 03 Committee dated 14 August 2023 and comments have been received from the following members (comments attached).

1. Shri Satish Kumar of UL India Private Limited

2. Shri Vikas Mehta of The Chemours India Private Limited

3. Shri Kiran Kumar MNSV of Danfoss Industries Pvt Ltd.

4. Shri S. Chethan Tholpady of Copeland India Private Limited   
5. Shri H. S. Wadhwa of M/s VOICE



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

**10.2 Query on IS 17550 (PART 1): 2021 Household Refrigerating Appliances Characteristics And Test Methods Part 1General Requirements**

The query on IS 17550 (Part 1): 2021, received from Koduri Nagaraj of Synchro Impex Pvt. Ltd. Was circulated dated 05 December 2023.

- Following clarification has been received.



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

**10.3 Proposal by Steering Committee for finalising the Action Points relating to Implementation of The Recommendations of The Thematic Areas of ICAP**

A meeting of the steering committee under the Chairmanship of Secretary MoEFCC, was held on 06th September 2023. Following is the action pertaining to MED 03 Committee:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sl No. | Recommendations on  Domestic Manufacturing and Production Sector and R&D as per ICAP | Synergies to be made  with existing  governmental schemes/  programmes | Proposed Action | Action to be taken |
| 1. | Develop safety standards for  flammable refrigerants  considering IEC60335-2-40  and IEC60335-2-89 | Existing standards of  BIS:   * 1. IEC 60335-2-40   2. IS 16656:2017/ ISO 817: 2014   3. IS 16678 (part 2): 2018/ ISO 5149 Pt 2: 2014   4. IS 16678 (Part 3): 2018/ ISO 5149-3: 2014   5. IS 16678 (Part 4): 2018/ ISO 5149-4: 2014   6. IEC 60335-2-89: 2010   7. IS 17773:2022 | Bureau of Indian  Standards (BIS) to  Periodically update IEC 60335-2-40 and IEC 60335-2-89 w.r.t. safe use of A3, A2 and A2L flammable refrigerants BIS to develop standards  for specifications (for quality assurance of refrigerants in line with AHRI 700, 700C and 700E.  Ministry of Consumer Affairs to issue an advisory for mandatory adoption of purity check of refrigerants available  in the market in order to prevent spurious  refrigerants. Standardization of testing and calibration of equipment for checking purity of refrigerants by CSIR. | An action plan with timelines to be worked out for the following:  1. Standard for IEC 60335-2-40 to be modified as per Indian Conditions.  2. Regarding quality assurance of refrigerants inline with AHRI 700, 700c and 700E.  A meeting is to be facilitated by Ozone Cell between BIS, REGMA and AC manufacturers. |

**10.4 Actionable Points and Recommendations by MOEFCC pertaining to Kigali Amendment to the Montreal Protocol in 2021**

A half day workshop on " Indigenous capacity development including research on low GWP chemicals to be used as alternatives to HFCs during implementation of the Kigali Amendment" was organised by MoEFCC on 4th August, 2023 vide email dated 05 September 2023.

The deliberations from the workshop resulted in actionable points and recommendations pertaining to Bureau of Indian Standards are as follows-

**(A) Short term (up to 3 years)**

* Development and mandatory adoption of Indian Standards(Quality standard) for purity of refrigerants.
* Development of Infrastructure for testing of cooling equipment using low-GWP inflammable refrigerants to facilitate manufacturing by MSMEs.

**(B) Medium term (3-5 years)**

* Standards for low energy consuming and low-cost cooling systems like evaporative coolers.
* Performance safety standards for foam products using inflammable blowing agents.
* Development of calibration standards to check the quality of refrigerants including blends.

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

**10.5 STATUS OF INDIAN STANDARDS UNDER BIS CERTIFICATION**

The Committee may note that the following standards prepared by MED 03 are under certification:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sl. No. | IS No. | No. of Domestic Licences | No. of Domestic Licences | Total |
|  | IS 1391 (Part 1): 2017 Room air conditioners - Specification: Part 1 Unitary air conditioners | 4 | 1 | 5 |
|  | IS 1391 (Part 2): 2018 Room air conditioners - Specification: Part 1 Split air conditioners | 28 | 3 | 31 |
|  | IS 1475(Part 1): 2001 Self-contained drinking water coolers-specification, Part 1: Energy consumption and Performance | 10 | 0 | 10 |
|  | IS 8148 : 2018 Ducted and package air - Conditioners - Specification | 8 | 0 | 8 |
|  | 10617: 2018 Hermetic Compressors | 7 | 23 | 30 |
|  | IS 11329: 2018 Finned type heat exchanger for room air conditioner | 32 | 2 | 34 |

**10.6 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 | 1st Oct 2023 |
|  | IS 1391 (Part 2): 2018 Room air conditioners - Specification: Part 1 Split air conditioners | 1st Oct 2023 |
|  | IS 7872: 2020 Deep Freezers - Specification ( Second Revision ) | 1st Jan 2024 |
|  | IS 8148 : 2018 Ducted and package air - Conditioners - Specification | 1st Oct 2023 |
|  | IS 10617: 2018 Hermetic Compressors - Specification | 1st Oct 2023 |
|  | IS 11329: 2018 Finned type heat exchanger for room air conditioner | 1st Oct 2023 |
|  | IS 17550 (Part 1) : 2021 Household Refrigerating Appliances — Characteristics and Test Methods Part 1 General Requirements | 1st Jan 2024 |
|  | IS 1475 (Part 1) : 2001 Self- Contained Drinking Water Coolers – Energy Consumption and Performance | 25th March 2024 |

The Committee may **NOTE**.

**10.7 Draft** **Quality Control Order**

The Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry, GoI has issued Draft Quality Control Order on the following Indian Standards:

|  |  |
| --- | --- |
| Sl. No. | IS No. |
|  | IS 3315: 2019 Evaporative air coolers (Desert Coolers) ― Specification |
|  | IS 17681 : 2022 Bottled Water Dispensers ― Specification |
|  | 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 |

The Committee may **NOTE**.

**ITEM 11 INTERNATIONAL ACTIVITIES**

**11.1** India is having membership on following ISO/IEC committees related to MED 03:

**ISO Committees:**

TC 86 Refrigeration & Air-Conditioning P Member

SC 1 Safety of Refrigeration Systems P Member

SC 4 Testing and rating of Refrigerant Compressors P Member

SC 6 Testing and rating of Air-Conditioners and Heat Pump P Member

SC 7 Testing and rating of Commercial Refrigerated Display P Member

Cabinets

SC 8 Refrigerants and Refrigeration Lubricants P Member

TC 142 Cleaning equipment for air and other gases P Member

**IEC Committees:**

TC 59/SC 59M Performance of Electrical Household and Similar Cooling P Member

and Freezing Appliances.

TC 61/SC 61C Safety of Refrigeration Appliances for Household and P Member Commercial Use.

TC 61/SC 61D Appliances for Air-conditioning for Household and P Member Similar Purposes.

The committee may **REVIEW**.

**11.2** The list of ISO Standards published by ISO/TC 86 and its sub-committees & IEC Committees are given in the website of ISO and IEC , **Annex 4** or following link:

|  |  |
| --- | --- |
| ISO/ TC 86 | <https://www.iso.org/committee/50356/x/catalogue/p/1/u/0/w/0/d/0> |
| ISO/ TC 142 | <https://www.iso.org/committee/52624/x/catalogue/p/1/u/0/w/0/d/0> |
| IEC/ TC 59/SC 59M | <https://www.iec.ch/dyn/www/f?p=103:22:512539040975774::::FSP_ORG_ID,FSP_LANG_ID:4248,25> |
| IEC/ TC 61/SC 61C | <https://www.iec.ch/dyn/www/f?p=103:22:512539040975774::::FSP_ORG_ID,FSP_LANG_ID:1349,25> |
| IEC/ TC 61/SC 61D | <https://www.iec.ch/dyn/www/f?p=103:22:512539040975774::::FSP_ORG_ID,FSP_LANG_ID:1351,25> |

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**.

**11.3** 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.

Committee may **NOTE**.

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

**11.4** List of the Sub Committees and Working Groups of ISO/TC 86

**ISO/TC 86 Refrigeration and air-conditioning (*new WG/AHG/TF highlighted in red*)**

ISO/TC 86/SC 1 Safety and environmental requirements for refrigerating systems

ISO/TC 86/SC 1/WG 1 Safety and environmental requirements for refrigerating systems and heat pumps

ISO/TC 86/SC 4 Testing and rating of refrigerant compressors

ISO/TC 86/SC 4/AHG Work programmes of refrigerant compressor standards

ISO/TC 86/SC 4/WG 2 Positive displacement refrigerant compressor

ISO/TC 86/SC 4/WG 3 Centrifugal refrigerant compressor

ISO/TC 86/SC 6 Testing and rating of air-conditioners and heat pumps

ISO/TC 86/SC 6/AHG Ad Hoc Group on definitions of terms for different types of products

ISO/TC 86/SC 6/TG 13 Next generation of performance standards

ISO/TC 86/SC 6/WG 1 Air-source air-conditioners and heat pumps

ISO/TC 86/SC 6/WG 3 Water and brine source heat pumps and air-conditioners

ISO/TC 86/SC 6/WG 10 Energy recovery ventilators

ISO/TC 86/SC 6/WG 12 Heat pump water heaters

ISO/TC 86/SC 6/WG 13 Update of measuring technologies

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 7/WG 3 Commercial refrigerated display cabinets

ISO/TC 86/SC 8 Refrigerants and refrigeration lubricants

ISO/TC 86/SC 8/TF 1 ISO 817 Technical Alignment

ISO/TC 86/SC 8/TF 2 Toxicity safety classification

ISO/TC 86/SC 8/MA ISO 817 Maintenance agency

ISO/TC 86/SC 8/WG 5 Refrigerants - Designation and safety classification

ISO/TC 86/SC 8/WG 7 Refrigerant properties

ISO/TC 86/SC 8/WG 8 Burning Velocity Test Methods

The committee may **NOTE**.

**11.5 List of the Working Groups of IEC/TC 59/ SC 59M ‘Performance of electrical household and similar cooling and freezing appliances’**

Working Groups

WG 4 Electrical household and similar cooling and freezing appliances, food preservation and storage

WG 6 Test standard for refrigerated appliances for use with off grid or weak grid

Maintenance Teams

MT 2 Electrical household and similar cooling and freezing appliances, maintenance of performance standard

Joint Working Groups

JWG 2 Acoustical noise of household and similar electrical appliances Managed by TC 59

The committee may **NOTE**.

**11.6 List of the Working Groups of IEC/TC 61/SC 61 C ‘Safety of refrigeration appliances for household and commercial use’**

Working Groups

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 –

Maintenance Teams

MT 1 Safety of motor-compressors

MT 5 Maintenance Team for IEC 60335-2-24 - Particular requirements for refrigerating appliances, ice-cream appliances and ice-makers

MT 7 Maintenance Team for IEC 60335-2-118 - Particular requirements for professional ice-cream makers

Joint Working Groups

JWG 3 TC 55/SC61C: Resistance to refrigerants of winding wires Managed by TC 55

Editing Group

EG 6 Editing Committee

The committee may **NOTE**.

**11.7 List of the Working Groups of IEC/TC 61/SC 61 D ‘Appliances for air-conditioning for household and similar purposes’**

Working Groups

WG 21 Address A2L, A2 and A3 refrigerants and maintenance of 60335-2-40

WG 22 Alignment of IEC 60335-2-40 with IEC 60335-1

Maintenance Teams

MT 19 Revision of 60335-2-104 work

Ad-Hoc Groups

ahG 24 Air conditioners for cooling driver and passenger compartments when the vehicle is stationar

The committee may **NOTE**.

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

Proposal for registration of MS as an expert to various TCs/SCs/WGs/MTs of ISO and IEC was sent dated 07 December 2023. Accordingly, Committee may confirm the following list of experts for ISO and IECs.

|  |  |  |
| --- | --- | --- |
| **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  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 Emerson  Miss Neha Thakur, BIS |
| ISO/TC 86/SC 4/WG 1 | Testing and rating of refrigerant compressors | Shri Chetan Tholpady of Emerson  Miss Neha Thakur, BIS |
| ISO/TC 86/SC 4/WG 2 | Positive displacement refrigerant compressor | Shri Chetan Tholpady of Emerson |
| 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 |
| 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 | - |
| **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 | Emerson / 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 | - |

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

**11.9 Participation in ISO/IEC meetings**

**11.9.1 Upcoming meetings of ISO/IEC**

| **Date** | **Month** | **Location** | **TC/SC** | **Nomination Received** |
| --- | --- | --- | --- | --- |
| 12 | December 2023 | Virtual only | TC 61/SC 61D/MT 28 Maintenance of IEC 60335-2-40 | - |

The Committee may **NOTE.**

**11.9.2 ISO/IEC meetings participated**

| **Date** | **Month** | **Location** | **TC/SC** | **Nomination Received** | **Status** |
| --- | --- | --- | --- | --- | --- |
| 24-26 | October 2023 | Berlin (Germany) | ISO/TC 86/SC 8  ‘Refrigerants and refrigeration lubricants’ along with WG5 and TF 1 meetings | Shri Vikas Mehta of Chemours | Shri Vikas Mehta of Chemours participated in the meetings. The report of the meeting was circulated through email dated 12 Dec 2023.  The report of the meeting from ISO is attached here. |
| 6-7 | November 2023 | Italy (Face-to-face and Virtual: Mogliano Veneto) | IEC/TC 61/SC 61 C/WG 4 ‘IEC 60335-2-89 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 | Shri Vikas Mehta of Chemours participated in the meetings. The report of the meeting was circulated through email dated 12 Dec 2023.  The report of the meeting from IEC is awaited. |
| 10 | November 2023 | Italy (Face-to-face and Virtual: Mogliano Veneto) | IEC/TC 61/SC 61 C ‘Safety of refrigeration appliances for household and commercial use’ | Shri Vikas Mehta of Chemours | Shri Vikas Mehta of Chemours participated in the meetings. The report of the meeting was circulated through email dated 12 Dec 2023.  The report of the meeting from IEC is awaited. |
| 11 | November 2023 | Italy (Face-to-face and Virtual: Mogliano Veneto) | IEC/TC 61/SC 61D/MT 28 Maintenance of IEC 60335-2-40 | Shri Vikas Mehta of Chemours | Shri Vikas Mehta of Chemours participated in the meetings. The report of the meeting was circulated through email dated 12 Dec 2023.  The report of the meeting from IEC is awaited. |
| 12 | November 2023 | Italy (Face-to-face and Virtual: Mogliano Veneto) | IEC/TC 61/SC 61D Appliances for air-conditioning for household and similar purposes | Shri Vikas Mehta of Chemours | Shri Vikas Mehta of Chemours participated in the meetings. The report of the meeting was circulated through email dated 12 Dec 2023.  The report of the meeting from IEC is awaited. |

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

11. 9.3 **New subject proposal to ISO/ IEC**

The Committee had decided to discuss regarding IS 17681 : 2022 Bottled water dispensers – Specification to be proposed to ISO as a new subject in the next meeting.

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

**ITEM 12 PROGRAMME OF WORK (INCLUDING PERIODIC REVIEW OF INDIAN STANDARDS)**

**12.1** The present position of work programme under the Committee MED 03 is attached.



The Committee may **NOTE**.

**12.2** 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.

The Committee had reviewed the following Indian Standards due for review in the year **2023-2024** and decided as follows in the last meeting:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl No.** | **IS Number** | **Title** | **Due Date** | **Committee Decision** |
| 1. | IS 4831: 2018 | Recommendation on units and symbols for refrigeration | Dec 2023 | The Committee had decided to reaffirm the standard in its present form in the last meeting. |
| 2. | IS 2167: 2019 | Specification for bottle coolers | May 2024 | The Committee had decided to reaffirm and revise the standard in line with the Panel recommendation to adopt ISO 22044. |
| 3. | IS 3315: 2019 | Evaporative air coolers (Desert Coolers) - Specification | May 2024 | The Committee had decided to reaffirm and revise in line with the Panel recommendation and ongoing process of revision of standard. |
| 4. | [IS/IEC 60335 : Part 2 : Sec 89 : 2010](https://www.services.bis.gov.in/php/BIS_2.0/MembershipManagement/CRef.php?ID=MjMwNDE%3D) | Household and similar electrical appliances - Safety: Part 2 - 89: particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant unit or compressor | May 2023 | The Committee decided to reaffirm the standard and take up its revision. |

Shri V Manjunath of UL had informed that ISHRAE had started working on the standard on ‘Air ducts’. The update may kindly be informed to the Committee.

Committee may critically review the standards due for review and any other standard felt necessary so as to ascertain the need for revision/updation/withdrawal/ declaring obsolescence of these standards in light of emerging technologies, experience in use, feedback received, etc.

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

**12.3 Review of A5 and pre-2000 Indian 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.** | **IS Number** | **Title** | **Present Status** |
|  | IS 1474 : 1959 | Specification for commercial refrigerators | *See* Item 4.1, Sl no. 3 |
|  | IS 5111 : 1993/ISO 917 : 1999 | Testing of refrigerant compressors | Reaffirmed by the Committee. |

The Committee may **NOTE**.

**12.4** Also, the Committee may also **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).

As a 1st priority the Committee had decided to complete work on the following:

* 1. MED 03 (20281) Liquid Chilling Package Units — Specification (Revision of IS 16590) -4th revision Published
  2. Electronic Expansion Valve (EXV)
  3. MED 03 (18921) : Multiple split-system air conditioners and air-to-air heat pumps (VRF air conditioners) ― Specification - under printing
  4. MED 03 (17393): Air Handling Units ― General Requirements Performance Testing and Rating
  5. Revision of IS 3315: 2019 Evaporative air coolers (Desert Coolers) ― Specification and
  6. Revision of IS 11951: 2009 Pumpset for desert coolers ― Specification

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 13 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 14 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 15 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 16 DATE AND PLACE FOR THE NEXT MEETING**

**ITEM 17 ANY OTHER BUSINESS**

**17.1 Off-grid and weak-grid refrigerators**

The Committee had requested M/s Godrej to share information with the Committee regarding off-grid and weak-grid medical refrigerators and home & small business fridges in the next meeting.

The committee may **DELIBERATE and DECIDE**.

**Annex 1**

(Item**2.2.1**)

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

|  |  |  |
| --- | --- | --- |
| **Meeting** | **Date** | **Place** |
| 35th | 22 12 2022 | WebEx |
| 36th | 22 03 2023 | WebEx |
| 37th | 17 04 2023 | BIS HQ |
| 38th | 17 July 2023 | WebEx |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sl No** | **Organisation Represented** | **Principal Member/**  **Alternate Member** | **36th** | **37th** | **38th** | **Total** |
|  | Indian Institute of Technology, Roorkee | Prof..(Dr.) Ravi Kumar  (*Chairman*) | Y | Y | Y | 3/3 |
|  | BSH Household Appliances Manufacturing Pvt Ltd., Chennai | Shri V.K. Loganathan  Shri A. Balasubramanian (Alt) | Y | Y | Y | 3/3 |
|  | [Bharat Heavy Electricals Limited, Project Engineering Management, Noida](javascript:;) | Shri Lalit Jindal  Shri Subhashish Gupta (Alt) | NA | NA | Y | 1/1 |
|  | Blue Star Limited, Mumbai | Shri Jitendra Bhambure  Shri Sunil Kumar Jain (Alt)  Ms. Sneha Harsora (YP) | Y | Y | Y | 3/3 |
|  | Bureau of Energy Efficiency, New Delhi | Ms P. Samal  Shri Kamran Shaikh (Alt)  Ms D. Wadhwa (Alt)  Shri Dheeraj Pandey | N | N | Y | 1/3 |
|  | CEPT University | Dr Yash Shukla | NA | NA | NA | NA |
|  | [Carrier Air Conditioning and Refrigeration Limited, Gurugram](javascript:;) | Shri Bimal Tandon  Shri Manmohan Kulashri (Alt)  Shri Jatinder Sharma (Alt) | Y | Y | Y | 3/3 |
|  | Central Power Research  Institute, Bengaluru | Dr P. Chandra Sekhar  Shri Gujjala B.Balaraja (Alt) | N | Y | Y | 2/3 |
|  | Daikin Air Conditioning India Private Limited, Gurugram | Shri Gaurav Mehtani | Y | Y | Y | 3/3 |
|  | Danfoss Industries Pvt Ltd, Gurugram | Shri Madhur Sehgal  Shri K.L. Nagahari (Alt)  Shri M.N.S.V Kiran Kumar (Alt) | Y | Y | Y | 3/3 |
|  | Directorate General of Quality Assurance, Ministry of Defence, New Delhi | Lt. Col. Deepak Sharma  Shri S.S. Nikam (Alt) | N | Y | Y | 2/3 |
|  | Electrical Research and Development Association., Vadodara | Shri Guatam Brahmbhatt  Shri Rakesh Patel (Alt) | Y | N | Y | 2/3 |
|  | Emerson Climate Technologies (India) Pvt Ltd, New Delhi | Shri Chetan Tholpady  Shri D.P. Deshpande (Alt) | Y | Y | Y | 3/3 |
|  | [Frigoglass India Private Limited, Gurugram](javascript:;) | Shri Mahesh Kumar Mawai  Shri Mandeep Singh (Alt)  Ms. Ritu Chouhan (Alt) | NA | NA | Y | 1/1 |
|  | Godrej & Boyce Mfg. Co. Ltd (Appliance Division) | Shri Burzin J. Wadia  Shri Jasvir Singh (Alt)  Shri Narendra Shedge (Alt) | N | Y | Y | 2/3 |
| 1. h | Honeywell International India Pvt Ltd | Shri Aaditya Pegallapati  Shri Avinash Kumar (Alt) | N | Y | Y | 2/3 |
|  | In Personal Capacity | Shri J. K. Agrawal | Y | Y | Y | 3/3 |
|  | In Personal Capacity | Shri P.K. Mukherjee | Y | Y | Y | 3/3 |
|  | Indian Institute of Chemical Engineering, Kolkata | Dr D Sathiyamoorthy  Prof Sudip K Das (Alt) | N | N | Y | 1/3 |
|  | Indian Institute of Technology Madras | Dr. G. Venkatarathnam | N | N | Y | 1/3 |
|  | Indian Society of Heating, Refrigerating And Air Conditioning Engineers (ISHRAE) | Dr Jyotirmay Mathur  Shri Ashish Rakheja (Alt)  Shri V. Manjunath (Alt) | Y | Y | Y | 3/3 |
|  | [Ingersoll Rand India Limited, Bengaluru](javascript:;) | Shri M. Venkanna  Shri J. Gurusamy (Alt) | N | Y | Y | 2/3 |
|  | International Copper Association India, Mumbai | Shri Mayur Karmakar  Shri Shankar Sapaliga (Alt) | Y | Y | Y | 3/3 |
|  | Intertek India Pvt Ltd, New Delhi | Shri C.M. Pathak | Y | Y | Y | 2/3 |
|  | Johnson Controls-Hitachi, Ahmedabad | Shri Rahul Ramtekkar  Ms. Heena Ramsinghani (YP) | Y | Y | Y | 3/3 |
|  | LG Electronics India Pvt Ltd , New Delhi | Shri Aditya Anil | N | Y | Y | 2/3 |
|  | Refrigeration & Air-conditioning Manufacturers Association , New Delhi | Shri Kanwaljeet Jawa  Shri Harsh Vardhan Pant (Alt) | Y | Y | Y | 2/3 |
|  | Samsung India Electronics Ltd., Noida | Shri Kalicharan Sahu  Shri Amit Kumar Jha (Alt) | N | Y | Y | 2/3 |
|  | Sierra Aircon Pvt Ltd | Shri D.K. Mudgal  Shri S. Dhiman (Alt) | Y | Y | Y | 3/3 |
|  | The Chemours India Pvt Ltd., Gurgaon | Shri Vikas Mehta  Shri Nishit Shah (Alt) | Y | Y | Y | 3/3 |
|  | UL India Pvt Ltd, Bengaluru | Shri V. Manjunath  Shri Satish Kumar (Alt) | Y | Y | Y | 3/3 |
|  | Voltas Ltd, Mumbai | Shri Srinivasu Moturi  Shri A.D. Kumbhar (Alt) | Y | Y | Y | 3/3 |
|  | Voluntary Orgn In Interest of Cons Education New Delhi | Shri H. S. Wadhwa  Shri B.K. Mukhopadhyay (Alt) | N | Y | Y | 2/3 |

**ANNEX 2**

(Item **2.2.2**)

**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 **2.3.1**)

**COMPOSITION OF AUTOMOTIVE AIR CONDITIONING AND MOBILE AIR-CONDITIONING SUB-COMMITTEE, MED 03:1**

|  |  |  |
| --- | --- | --- |
| Meeting | Date | Place |
| Fourth  Fifth  Sixth | 31 07 2020  18 03 2021  15 07 2022 | WebEx  WebEx  WebEx |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| SL NO | ORGANISATION REPRESENTED | CAT. | PRINCIPAL MEMBER/  ALTERNATE MEMBER | 4th | 5th | 6th | Total |
|  | INTERNATIONAL CENTRE FOR AUTOMOTIVE TECHNOLOGY | R&D | DR MADHUSUDAN JOSHI (CONVENER)  SH SONU KUMAR SUDRANIA | Y | Y | Y | 3/3 |
|  | AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA | A | - | NA | NA | Y | 0/1 |
|  | ASHOK LEYLAND | M | SH VED PRAKASH GAUTAM  SH FAUSTINO V (ALT) | Y | Y | Y | 3/3 |
|  | CALSONIC KANSEI MOTHERSON | M | SH G. KARUNAKARAN  SH DIXIT UMANG (ALT) | N | N | Y | 1/3 |
|  | CARRIER AIRCON LTD ,  GURGAON | M | SH BIMAL TANDON | N | N | N | 0/3 |
|  | DENSO INTERNATIONAL INDIA PVT LTD | M | SH NOEL A. PETERS  SH ALKA SHARMA (ALT) | Y | Y | N | 2/3 |
|  | HANON AUTOMOTIVE SYSTEMS INDIA PVT LTD | M | SH M. SURESH KUMAR | N | N | N | 0/3 |
|  | HONDA CARS INDIA LTD. | M | KOJI TAMENORI  S. MUTHU KUMAR (ALT) | NA | NA | N | NA |
|  | HONEYWELL | M | SH NITIN KARWA | N | Y | N | 1/3 |
|  | INDIAN INSTITUTE OF TECHNOLOGY, NEW DELHI |  | PROF. SANJEEV JAIN | NA | NA | N | NA |
|  | INGERSOLL RAND | M | SHRI J. GURUSAMY | N | Y | N | 1/3 |
|  | IN PERSONAL CAPACITY | P | LT COL SANTANU ROY | N | N | Y | 1/3 |
|  | IN PERSONAL CAPACITY | P | SH P.K. MUKHERJEE | N | N | N | 0/3 |
|  | MAHINDRA & MAHINDRA LTD | M | SH A. PRABHAKARAN  SH ANIL KUMAR ANUGU  SH JATIN MEHTA (YP) | Y | Y | Y | 3/3 |
|  | MAHLE ANAND THERMAL SYSTEMS PVT LTD | M | SH SACHIN CHITNIS  SH S. SATHYANARAYAN (ALT) | Y | Y | Y | 3/3 |
|  | MARUTI SUZUKI INDIA LTD | M | SH MANISH KHANDELWAL  SH GURURAJ RAVI (ALT)  SH SHRIGANESH UMBARKAR (ALT)  SMT BUVANESWARI (YPP) | Y | Y | Y | 3/3 |
|  | MG MOTOR INDIA PRIVATE LIMITED | M | VAIBHAV UTPAT  T. VISWANATHAN (ALT) | NA | Y | N | 1/2 |
|  | REFRIGERATION & AIRCONDITIONING MFR ASSOCIATION, NEW DELHI | M | SH GURMEET SINGH  SH R.K. MEHTA (ALT) | N | N | N | 0/3 |
|  | RENAULT NISSAN TECHNOLOGY & BUSINESS CENTRE INDIA. | M | SH. GNANASEKARAN | Y | Y | Y | 3/3 |
|  | SUBROS LTD., NEW DELHI | M | SH ROOPAK AGARWAL  SH VISHNU SUTHAR | Y | Y | N | 2/3 |
|  | SANDEN VIKAS INDIA LIMITED | M | SH PRABHAKAR BHARDWAJ  SH KAMAL KISHORE SHARMA (ALT) | N | Y | Y | 2/3 |
|  | THE CHEMOURS INDIA PVT LTD., GURGAON | M | SH VIKAS MEHTA  SH NISHIT SHAH (ALT) | Y | Y | Y | 3/3 |
|  | TATA MOTORS LTD | M | SH SANGEET HARI KAPOOR | Y | Y | Y | 3/3 |
|  | TRANSPORT ENGINEERING DEPARTMENT, BIS |  |  | N | N | N | 0/3 |
|  | VOLKSWAGON | M | SH TOUHID SHAIKH | N | N | N | 0/3 |

**ANNEX 4**

(Item 4.1, 6.1, 6.3, 7.2)

**Comments on P-drafts and WC drafts**

* 1. Comments on P-draft MED 3 (22144) Refrigerating systems and heat pumps Competence of personnel

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl No.** | **Basic Details** | **Clause/Subclause No.& Attachment** | **Paragraph No./Figure No./Table No.** | **Type of Comment** | **Comments/Suggestions along with Justification for the Proposed Change** | **Proposed Change/Modified Wordings** | **Remarks** |
| 1 | Name: SH CHETHAN THOLPADY | A.2 | B2.3.5 | Technical | 1. System Flushing Need to be added under tasks prior to Vacumization. .System flushing by dry air/ nitrogen / flushing fluids is a critical operation to ensure any system is free of contaminatns | 1. Add system flushing Under tasks after strength test |  |
| Organisation: N/A | N/A |  |  |
| Email: chetan.tholpady@emerson.com |  | Economizer function need to be added as it is a critical feature in the system to boost capacity under low / high ambient |  |
| Mobile: 9850602426 |  |  |  |
| Comment ID #: MED\_2023-04-111111 |  |  | 2. Add Economizer under task list |

* 1. Comments on WC-draft MED 3 (22200) Drinking Water Coolers Specification

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SNo.** | **Basic Details** | **Clause/Subclause No.& Attachment** | **Paragraph No./Figure No./Table No.** | **Type of Comment** | **Comments/Suggestions along with Justification for the Proposed Change** | **Proposed Change/Modified Wordings** | **Remarks** |
| 1 | Name: SH CHETHAN THOLPADY | 5 | 5.1 thro; 5.18 | Technical | material or lay our relatd guidelines not required considering technology changes nor they ar ementioned in international standard | remove such guidelines which are not required to be evaluated |  |
| Organisation: N/A | N/A |
| Email: chetan.tholpady@emerson.com |  |
| Mobile: 9850602426 |  |
| Comment ID #: MED\_2023-04-117181 |  |

* 1. Comments on WC-draft MED 3 (22236) Household Refrigerating Appliances Characteristics and Test Methods Part 2 Performance Requirements

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SNo.** | **Basic Details** | **Clause/Subclause No.& Attachment** | **Paragraph No./Figure No./Table No.** | **Type of Comment** | **Comments/Suggestions along with Justification for the Proposed Change** | **Proposed Change/Modified Wordings** | **Remarks** |
| 1 | Name: Shri Satish Kumar | 11.1.1.2 | 2 | Technical | The comment is on IS 17550 Part 1 , Clause 11 for Door Hinge ( Opening/Closing Test). The number of cycles per minute given is 20-25 which is too frequent. Also the free movement during opening is not feasible after 5 deg | The number of cycles should be between 10-15 and there should be no restriction on opening and closing angle |  |
| Organisation: N/A | N/A |
| Email: satish.kumar@ul.com |  |
| Mobile: 8130427334 |  |
| Comment ID #: MED\_2023-04-209080 | Annex A | NA | Technical | The Pull Down compliance criteria is not defined | The max time required should be mentioned for all temperatures |  |
|  | N/A |

* 1. Comments on WC-draft MED 3 (21881) Pumpset for evaporative air coolers Specification

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SNo.** | **Basic Details** | **Clause/Subclause No.& Attachment** | **Paragraph No./Figure No./Table No.** | **Type of Comment** | **Comments/Suggestions along with Justification for the Proposed Change** | **Proposed Change/Modified Wordings** | **Remarks** |
| 1 | Name: L S CHAUHAN | 9.3 | 1st | Technical | Characteristics of clear cold water (Cl.3.4) needs to be linked with Water Requirements (Cl.9.3) | Second sentence needs to changed as : |  |
| Organisation: N/A | N/A |  |
| Email: lschauhan2007@rediffmail.com |  | Clear cold water (Cl.3.4) shall be used for testing untill unless no specifically mentioned by the manufacturer. |
| Mobile: 9716453521 |  |  |
| Comment ID #: MED\_2023-02-255727 |  |  |
| 2 | Name: L S CHAUHAN | 9.6.1 | 1st | Technical | a) Size of sample / quantity of smple for Type tests needs to be clearly mentioned. b) List of Type tests needs to be clearly mentioned . | All type tests shall be carried out on one sample of pumpset as given below: |  |
| Organisation: N/A | N/A |  |
| Email: lschauhan2007@rediffmail.com |  | a) Classification (Cl.4), |
| Mobile: 9716453521 |  |  |
| Comment ID #: MED\_2023-02-250091 |  | b) Marking (Cl.10), |
|  |  |  |
|  |  | c) Performance Requirements (Cl.9.1), |
|  |  |  |
|  |  | d) Tests on Motor (Cl.9.2) : |
|  |  |  |
|  |  | (i) Motor output (Cl.7.3), |
|  |  |  |
|  |  | (ii) Temperature rise |
|  |  |  |
|  |  | (Cl.12.2 of IS 996), |
|  |  |  |
|  |  | (iii) Insulation Resistance |
|  |  |  |
|  |  | (Cl.12.7 of IS 996)e) |
|  |  |  |
|  |  | e) Reliability tests (Cl.9.4) : |
|  |  |  |
|  |  | (i) Continiously Run                           test (Cl.9.4.1), |
|  |  |  |
|  |  | (ii) Ingress Protection test                   (Cl.9.4.3) , |
|  |  |  |
|  |  | (iii) Dry Run test (Cl.9.4.5), |
|  |  |  |
|  |  | f) Safety Requirements (Cl.9.7): |
|  |  |  |
|  |  | (i) Leakage current and Electric        Strength at operating                     temperature(Cl.13 of IS302-1),(ii) Moisture Resistance                      (Cl.15 of IS 302-1), |
|  |  |  |
|  |  | (iii) Leakage current and                      Electric Strength |
|  |  |  |
|  |  | (Cl.16 of IS302-1). |
| 3 | Name: L S CHAUHAN | 10, 10.1 | 1st | Editorial | Clause No. of Safety requirements | '**9.7**   **Safety Requirements** ' |  |
| Organisation: N/A | N/A |  |  |
| Email: lschauhan2007@rediffmail.com |  | (Cl.**10** and Cl.**10.1**) need to be corrected as **Cl.9.7** and **9.7.1** because Cl.**10** is assigned to '**Marking**'  in this standard. | '**9.7.1**  The pumpset shall meet all the safety requirements specified in **13,15** and **16** of IS 302-1' |
| Mobile: 9716453521 |  |  |  |
| Comment ID #: MED\_2023-02-252235 |  | Safety requirement as per Cl.**31** of IS 302-1 (Resistance to Rusting) may be deleted because test method of 'Resistance to Rusting' is not defined under Cl.**31** of IS 302-1:2008 |  |