



COMPENDIUM OF STANDARDS ON REFRIGERATION AND AIR CONDITIONING



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INTRODUCTION

Bureau of Indian Standards (BIS) is the National Standards Body of India, responsible for establishing standards for products to ensure quality, safety, and efficiency.

Mechanical Engineering Department (MED) of BIS formulates Indian Standards for varied products. The Refrigeration and Air Conditioning Sectional Committee, MED 03 under MED, formulates standards for refrigeration and air conditioning products.

This compendium aims at providing an overview of Indian Standards on Refrigeration and Air Conditioning sector, offering insights into their quality, safety and testing requirements. It is intended for use by common consumers, manufacturers, construction professionals, engineers, quality control personnel, academic professionals, and regulatory authorities to enhance understanding and compliance with industry standards.

By compiling relevant standards on Refrigeration and Air Conditioning in a single document, this compendium serves as a ready reference for professionals involved in production of Refrigeration and Air Conditioning appliances and equipment, and safety assessment, contributing to improved construction quality and safety.

LIST OF REFRIGERATION AND AIR CONDITIONING

The list of Indian Standards related to refrigeration and air conditioning, published by BIS under MED 03 and their short description is given as follows:

SECTION – 1 AIR CONDITIONERS

1) IS 1391 (Part 1) : 2023 Room Air Conditioners — Specification Part 1 Unitary Air Conditioners

This standard specifies the safety and performance requirements, as well as the test methods for determining the performance of non-ducted window air conditioners and heat pumps. It applies to units employing air-cooled condensers, and having a rated capacity up to and including 10,500 W (3 TR), for household and similar applications.

2) IS 1391 (Part 2) : 2023 Room Air Conditioners — Specification Part 2 Split Air Conditioners

This standard specifies the safety and performance requirements, along with test methods for determining the performance of non-ducted split air conditioners and heat pumps. It applies to units employing air-cooled condensers and operating at rated capacities up to and including 18,000 W (5 TR), for residential, commercial, and industrial settings.

3) IS 3315 : 2024 Evaporative air coolers (Desert Coolers) - Specification

This Standard specifies the constructional requirements, performance criteria, safety provisions, and test methods for direct evaporative air coolers (desert coolers) intended for household and similar applications. It applies to coolers with an air delivery capacity up to and including 1.67 m³/sec (6,000 CMH) for residential cooling purposes.

4) IS 8148 : 2018 Ducted and Package Air-Conditioners — Specification

This Standard specifies the performance testing requirements, and test methods for determining the cooling capacity and efficiency ratings of ducted air-conditioners and heat pumps. The standard covers systems having a nominal cooling capacity of 3,500 W (1 TR) and above, controlled by thermostat/controller, for residential and commercial use.

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

This standard specifies test methods for determining the capacity and efficiency ratings of non-ducted portable air conditioners and heat pumps. It is applicable to portable cooling and heating units intended for residential and similar applications.

6) IS 16590 : 2023 Liquid Chilling Package Units — Specification

This standard specifies the general requirements and test methods for measuring the performance and energy efficiency of liquid chilling package units. This standard is applicable to all positive temperature comfort cooling applications within the range of 5 °C to 10 °C, for commercial and industrial cooling needs.

7) IS 14618 : 2022 Automotive Vehicles — Air Conditioning and Heating Systems Thermal Performance — Method of Measurement

This standard specifies the performance requirements and methods of testing for automotive air conditioning and heating systems. It applies to light motor vehicles of M1, M2, N1, N2, and N3 categories for carrying passengers and goods. This standard does not apply to pure electric vehicles.

8) IS 18728 : 2024 Multiple Split-System Air Conditioners and Air-to-Air Heat Pumps (VRF Air Conditioners) — Specification

This standard specifies the requirements, and test methods for determining the capacity and efficiency ratings of air conditioners and heat pumps, commonly known as variable refrigerant flow (VRF) systems. It applies to multi-split systems for residential, commercial, and industrial systems.

9) IS 18794 : 2024 Air Handling Units - Specification

This standard specifies the general, performance, and rating requirements, along with methods of testing for air handling units (AHUs). It ensures consistency in design and performance across standardized and custom AHUs, including those with or without heat recovery, units supplying ventilation air such as DOAS, and site-assembled AHUs installed under factory supervision.

SECTION – 2 REFRIGERATION

10) IS 7872 : 2020 Deep Freezers - Specification

This standard specifies the safety, constructional, and performance requirements, including methods for determining the performance of top-access deep freezers, with storage volumes up to 1,000 litres. It ensures reliable, safe, and energy-efficient operation of deep freezers across various configurations—hard top and glass top (sliding, hinged, or curved).

11) IS 2370 : 2014 Walk - In cold rooms - Specification

This standard specifies the general constructional and performance requirements, along with test methods, for walk-in cold rooms with gross volume capacities ranging from 5 kilolitres to 200 kilolitres. It ensures uniformity, safety, and energy efficiency in the design and performance of walk-in cold rooms.

12) IS 2167 : 2025 Commercial Beverage Coolers - Classification, Requirements and Test Conditions

This standard specifies the classification, requirements, and test methods for commercial beverage coolers with integral refrigeration systems. It provides a standardized framework to ensure consistent performance, energy efficiency, and product reliability across various commercial beverage cooling applications.

13) IS 18801 : 2023 ISO 22041:2019 Refrigerated storage cabinets and counters for professional use Performance and energy consumption

This standard specifies the requirements, test conditions, and methods for verifying the performance and energy consumption of refrigerated storage cabinets and counters. It applies for usage in professional environments such as commercial kitchens, hospitals, canteens, bars, bakeries, gelaterias, and institutional catering.

14) IS 18802 : 2023/ ISO 22042:2021 Blast chiller and freezer cabinets for professional use Classification requirements and test conditions

This standard specifies the requirements and test methods for verifying the performance and energy consumption of blast cabinets—blast chillers, blast freezers, and multi-use units. It applies for usage in professional settings such as commercial kitchens, hospitals, canteens, and institutional catering, for rapidly cooling hot foodstuffs up to a load capacity of 300 kg.

15) IS 17773 : 2022 Closed-Circuit Ammonia Refrigeration System - Code of Practice for Design and Installation

This standard specifies the recommended practices for the safe design and installation of stationary closed-circuit vapour compression refrigeration systems using ammonia as the primary refrigerant. It applies to ammonia refrigeration systems used in industrial, commercial, public assembly, and large mercantile applications.

16) IS 17693 : 2022 Non-electric Cooling Cabinet Made of Clay

This standard specifies the construction and performance requirements for clay-based cooling cabinets, intended for use in areas without access to electrical power. It supports safe and effective storage of perishable foodstuffs in off-grid environments by providing guidelines for non-electric cooling solutions, promoting food preservation and sustainability.

17) IS 17681 : 2022 Specification for Bottled water dispensers

This standard specifies the safety and performance requirements for bottled water dispensers to dispense cold, hot, and room temperature water, with cooling and heating capacities up to 8 l/h and 5 l/h respectively. It covers bottom load, table-top, and freestanding types. It is used in domestic, commercial, and institutional settings.

18) IS 17550 (Part 1) : 2024 Household Refrigerating Appliances Characteristics and Test Methods Part 1 General Requirements

This Indian Standard specifies the essential characteristics and test methods for household and similar refrigerating appliances. It ensures consistent design, safety, and performance evaluation

of refrigerating appliances by providing standardized testing methods, enabling reliable product assessment and comparison across models.

19) IS 16672 (Part 2) : 2024 Refrigerated display cabinets Part 2 Classification requirements and test conditions

This standard specifies the construction, characteristics, performance requirements and test methods for refrigerated display cabinets. It is used for the sale and display of foodstuffs.

20) IS 1475 : 2024 Drinking water coolers - Specification

This standard specifies the general construction, performance, safety requirements, and test methods for pressure and storage type drinking water coolers. It applies to drinking water coolers with cooling capacities up to 225 l/h and storage capacities up to 550 litres.

21) IS 11328 : 2022 Self-contained Automatic Ice Makers Specification

This standard prescribes the general construction, performance, rating, and test requirements for automatic ice makers. The icemaker is intended for commercial or similar use.

SECTION – 3 COMPONENTS

22) IS 10617 : 2018 Hermetic compressors - Specification

This standard specifies the safety and performance requirements for hermetic sealed standalone motor-compressors, for low, medium, and high temperature applications in household, industrial, and commercial equipment. It ensures the reliable, safe, and efficient operation of motor-compressors across diverse applications—including refrigeration, air conditioning, and heating.

23) 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

This standard outlines test procedures and general requirements for assessment of air filters used in general ventilation based on particulate matter (PM). It provides a standardized framework for facilitating informed selection and maintenance of filters to improve indoor air quality.

24) IS 16753 (Part 1) : 2022/ISO 29463-1 : 2017 High Efficiency Filters and Filter Media for removing Particles from Air Part 1 Classification Performance Testing and Marking

This standard specifies performance, test procedures and general assessment requirements of high efficiency air (sub-HEPA/HEPA/ULPA) filters. This high-efficiency air filter ensures improved air quality management.

25) IS 12249 : 2021 Specification for Desiccant Driers

This Indian Standard specifies the general requirements, performance rating, testing, and documentation for driers and filter driers using solid desiccants. It is intended for use in the liquid line of refrigeration systems operating with HFC and HCFC refrigerants.

26) IS 11951 : 2024 Pumpset for Desert Coolers – Specification

This standard specifies the performance and safety requirements for submersible and non-submersible water pumpsets used in evaporative air coolers for household and similar applications. It ensures safe operation of pumpsets in air coolers by providing user safety compliance requirements.

27) IS/ISO 11650 : 1999 Performance of refrigerant recovery and/or recycling equipment

This Standard specifies the test apparatus, gas mixtures, and analytical techniques used to evaluate the performance of refrigerant recovery and/or recycling equipment. It ensures consistent, accurate testing and reliable performance assessment of recovery and recycling equipment, and proper handling of halogenated hydrocarbon refrigerants.

28) IS 11330 : 2021 Refrigeration Oil Separator General Specification Construction Requirements and Testing

This standard specifies the requirements and measurement methods for evaluating the oil separation performance of refrigerant discharge line oil separators. It is applicable to systems using refrigerants in which the oils are partially or fully soluble.

29) IS 11329 : 2018 Finned type heat exchanger for room air conditioner

This standard specifies the general requirements and test methods for finned type heat exchangers used in the manufacturing of room air conditioners with capacities up to 18,000 W (5 TR). It ensures reliability, and safety of heat exchangers, contributing to the overall efficiency and quality of room air conditioners.

30) IS 10594 : 2021 Specification for Thermostatic Expansion Valves

This standard specifies the requirements, and test methods of thermostatic refrigerant expansion valves. This standard is applicable to the thermostatic expansion valves for refrigeration with refrigerants R22, R134a, R404A, R407C, R410A, R507, R290, R32 and R23.

31) IS 18932 : 2024 Electronic Expansion Valve - Specification

This standard specifies the performance, safety requirements, and test methods for electronic expansion valves with a nominal supply voltage not exceeding 36 V DC. It is used in refrigeration and air conditioning systems.

32) IS 655 : 2006 Air ducts - Specification

This standard specifies the materials and construction requirements for air ducts used in air conditioning, ventilation, and gas exhaust systems. It ensures safe, efficient, and durable ductwork performance for maintaining indoor air quality and system reliability.

33) IS 11561 : 2018 Code of practice for testing of water cooling towers

This standard specifies the code of practice for conducting performance testing of water cooling towers. It enables the verification of the cooling tower's functional and thermal performance including water flow rate, cooling range, approach, and inlet air conditions against the technical specifications agreed upon by the purchaser and supplier.

34) IS 11327 : 2022 Requirements for Refrigerants Condensing Units

This standard specifies the requirements for condensing units equipped with positive displacement compressors for commercial and industrial applications. It ensures reliable performance and safety compliance of condensing units operating on HFC, HCFC, natural, or A2L/A3 refrigerants, across various refrigeration systems.

35) IS/ISO 8066-2 : 2001 Rubber and Plastics Hoses and Hose Assemblies for Automotive Air Conditioning Specification Part 2 Refrigerant 134a

This standard specifies the requirements for rubber/thermoplastic hoses and hose assemblies used in automobile air-conditioning systems for circulating liquid/gaseous R134a refrigerant. It ensures minimal refrigerant loss and system contamination across a wide operating temperature range (-40 °C to +125 °C), and mandates compatibility testing with service couplings to maintain system integrity and performance.

36) IS/ISO 8066-3 :2020 Rubber and Plastics Hoses and Hose assemblies for Automotive Air Conditioning Specification Part 3 Refrigerant 1234yf

This standard specifies the requirements for rubber/thermoplastic hoses and hose assemblies used in automobile air-conditioning systems for circulating liquid and gaseous R1234yf refrigerants. It ensures minimal refrigerant loss and system contamination over a temperature range of -40 °C to +125 °C, with mandatory testing of service couplings to ensure reliable performance and system compatibility.

SECTION – 4 SAFETY STANDARDS

37) IS 302 (Part 2/Sec 24) : 1994 Safety of household and similar electrical appliances: Part 2 particular requirements: Sec 24 refrigerators, food - Freezers and ice - Makers

This standard specifies safety requirements for household and similar-use refrigerators, freezers, and their combinations, including those used in camping, caravans, and leisure boats. It focuses on safety aspects, excluding construction and operational features, to ensure safe usage across various applications.

38) IS/IEC 60335-2-40 : 2018 Household and similar electrical appliances safety : Particular requirements for electrical heat pumps air-conditioners and dehumidifiers

This standard specifies safety requirements for electric heat pumps, air conditioners, dehumidifiers, and fan coil units, which use flammable refrigerants. It addresses related hazards to enhance safety and support the use of alternative refrigerants (which have lower Ozone depletion potential and lower global warming potential) in HVAC systems.

39) IS 18689 : 2024 Household and Similar Electrical Appliances - Safety - Particular Requirements for Commercial Refrigerating Appliances and Ice-Makers with an Incorporated or Remote Refrigerant Unit or Motor-Compressor

This standard specifies the safety requirements for commercial refrigerating appliances and ice-makers. It addresses common safety hazards, including those associated with flammable refrigerants and ammonia (R-744), ensuring safe design and operation of equipment such as display cabinets, service counters, blast chillers, and ice-makers in commercial environments.

40) IS 16678 (Part 1) : 2018/ISO 5149-1: 2014 Refrigerating Systems and Heat Pumps - Safety and Environmental Requirements

This standard series (Parts 1 to 4) defines safety requirements for the operation, maintenance, and repair of refrigerating systems and heat pumps including household appliances. It promotes safe practices, environmental protection, and system reliability through standardized procedures including refrigerant recovery.

41) IS/ISO 13043 : 2011 Road Vehicles Refrigerant Systems used in Mobile Air Conditioning Systems MAC Safety Requirements

This Standard applies to refrigerant systems used for cooling or heating passenger compartments, batteries, and related components in passenger motor vehicles, specifically covering systems using R-134a, R-1234yf, and R-744 refrigerants. It establishes minimum design and safety requirements to protect end-users and service technicians from hazards such as high-pressure risks, toxic inhalation, and flame propagation during normal use, maintenance, repair, and disposal, ensuring safer operation of vehicle refrigerant systems.

42) IS 18847 : 2024/ISO 22712: 2023 Refrigerating systems and heat pumps Competence of personnel

This standard specifies the activities and associated competence criteria for personnel working on refrigerating systems, including service-related tasks. It ensures that individuals performing installation, maintenance, and service operations on refrigerating systems are properly qualified, thereby promoting safety, system reliability, and compliance with health and environmental regulations.