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BUREAU OF INDIAN STANDARDS

स्टैंडर्ड्स इंडिया
Standards India

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Standards India in its new shape is presented before you. We have tried to make it more informative, and user friendly. Keeping the global focus on standardization in view, an attempt had been made to emphasize on the rationale and science behind standards with insights from our experts. As India witnesses rapid advancements in technology and trade, BIS has to be more active and responsive than ever before for ensuring quality of products and safety of consumers. Standards India, is a source of information for industries and consumers. It highlights the importance of marks that is representative of BIS. We have also introduced new columns on "Consumer News" and from "BIS Archives" to highlight the historical connect with present day relevance.

This issue focuses on standardization for prefabricated construction technology, which is proving to be the answer to large-scale construction at fast pace. The facts and perspectives from BIS specialists contained herein focus on the issues related to this sector. It is important to note that in-depth features highlight the importance of sustainability in our developing world. We trust you will find this issue informative and useful. We look forward to your feedback. Please feel free to send your feedback to us at dg@bis.gov.in.

Smt. Surina Rajan
Director General, (BIS)

स्टैंडर्ड्स इंडिया पत्रिका को उसके नए स्वरुप में आपके सामने प्रस्तुत किया जा रहा है। हमने इसे अधिक जानकारीपूर्ण और उपयोगकर्ता के अनुकूल बनाने का प्रयास किया है। मानकीकरण पर वैश्विक ध्यान में रखते हुए, हमारे विशेषज्ञों की अंतर्दृष्टि के साथ मानकों के पीछे तर्क और विज्ञान पर ज़ोर देने का प्रयास किया गया है। चूंकि भारत ने प्रौद्योगिकी और व्यापार में तेज़ी से प्रगति देखी है, बीआईएस को उत्पादों की गुणवत्ता और उपभोक्ताओं की सुरक्षा सुनिश्चित करने के लिए पहले से अधिक सक्रिय और उत्तरदायी होना चाहिए। स्टैंडर्ड्स इंडिया उद्योगों और उपभोक्ताओं के लिए जानकारी का एक स्रोत है। यह उन चिन्हों के महत्व पर प्रकाश डालता है जो बीआईएस का प्रतिनिधित्व करतें हैं। हमने "उपभोक्ता समाचार" और "बीआईएस अभिलेखागार" से वर्तमान समय की प्रासंगिकता के साथ ऐतिहासिक जुड़ाव को उजागर करने के लिए नए कॉलम भी पेश किए हैं।

पत्रिका का यह अंक पूर्वनिर्मित निर्माण प्रौद्योगिकी के लिए मानकीकरण पर केंद्रित है, जो तेज़ गति से बड़े पैमाने पर निर्माण में कारगर साबित हो रहा है। बीआईएस विशेषज्ञों के तथ्यों और दृष्टिकोणों में इस क्षेत्र से संबंधित मुद्दों पर ध्यान केंद्रित किया गया है। यह ध्यान रखना महत्वपूर्ण है कि गहन विशेषताएं हमारी विकासशील दुनिया में स्थिरता के महत्व को उजागर करती हैं। हमें विश्वास है कि आप इस अंक को जानकारीपूर्ण और उपयोगी पाएंगे। हमें इंतज़ार है आपके फीडबैक का। कृपया अपनी प्रतिक्रिया हमें dg@bis.gov.in पर भेजें।

श्रीमती सुरीना राजन
महानिदेशक (बी आई एस)

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HOT OFF THE BLOCK

A NEW EDITION OF ISO/IEC 17025 IS OUT

ISO/IEC 17025:2017, General requirements for the competence of testing and calibration laboratories, is the international reference for laboratories carrying out calibration and testing activities around the world.

Producing valid results that are widely trusted is at the heart of laboratory activities. ISO/IEC 17025:2017 allows laboratories to implement a sound quality system. ISO/IEC 17025 helps facilitate cooperation between laboratories and other bodies by generating wider acceptance of results between countries. In turn, it improves international trade.

The standard for the competence of testing and calibration laboratories has been updated, taking into account the changes in laboratory environment and work practices

In order to reflect the latest changes in market conditions and technology, the new edition of the standard covers technical changes, vocabulary and developments in IT techniques, and takes into consideration the latest version of ISO 9001 on quality management.

Laboratories already accredited to ISO/IEC 17025:2005 will need to transition their processes to the new version within a three-year period from the publication date of the new standard. The Joint ILAC-ISO Communiqué explains this time frame transition.

ISO/IEC 17025:2017 was developed by the joint cooperation of ISO and the International Electrotechnical Commission (IEC) under the responsibility of the ISO Committee on conformity assessment.

ABOUT GOOD HEALTH

HEALTH IN THE ABSENCE OF SEWERS

ISO 30500, Non-sewered sanitation systems—Prefabricated integrated treatment units—General safety and performance requirements for design and testing, seeks to provide general safety and performance requirements for the product design and performance testing of non-sewered sanitation systems. It will apply to any integrated sanitation system not attached to a sewer.

In an integrated system like the ones covered by ISO 30500, the front-end collects, conveys and fully treats the specific input within the non-sewered sanitation system to allow for safe reuse or disposal of the generated solid, liquid and gaseous output.

ISO 30500 holds the criteria for the safety and reliability and maintainability of non-sewer sanitation systems in sync with environment-protection goals

ISO 30500 will contain criteria for the safety, functionality, usability, reliability and maintainability of non-sewered sanitation systems, as well as the system's compatibility with environment-protection goals. Non-sewered sanitation systems can be used in urban and rural communities that do not have access to sewer systems and urban communities pursuing sustainable sanitation solutions. They are apt for use in temporary or permanent settlements and suited for public or private use in isolated locations.

WHAT IS NATURAL?

A NEW DEFINITION FOR FOOD

Despite enormous consumer interest for all things 'natural,' what actually constitutes a natural food ingredient has long been a debate. Except for the attempts by the Codex Alimentarius Commission in the 1990s, there have been no internationally agreed upon requirements in terms of natural food ingredients and food processes—until the advent of technical specification ISO/TS 19657:2017. The new ISO/TS 19657 proposes criteria for business-to-business communications on food ingredients that are considered as natural, helping to level the playing field and secure fair business practices within the food and beverage industry. ISO/TS 19657 addresses the needs of all food and beverage companies and manufacturers regardless of their size and complexity.

A GRADE HIGHER

A NEW STANDARD FOR THE SECOND-HAND MARKET

They say forewarned is forearmed. This is particularly true of the second-hand goods market, where a consumer is more likely to make safer purchases if informed beforehand. It is important to be aware of the potential risk of buying used items, and simple precautions can help ensure you don't get caught out.

Rae Dulmage, Chair of ISO project committee ISO/PC 245, Cross-border trade of second-hand goods, explains that a few smart questions can help you decide whether a product is worth buying. "What am I going to use it for? How long do I expect it to last? Don't just blindly take someone's word for it," he says, "you have to remember to check under the hood. Most importantly, be sure to buy from a reputable dealer who knows exactly what he is selling, and apply the principles of ISO 20245."

Purchasing used products can bring its share of surprises, but a new International Standard helps make sure those hand-me-down treasures are not putting your family in danger

The newly published ISO 20245:2017, Cross-border trade of second-hand goods, provides a valuable point of reference for governments as they intensify their efforts to establish a minimum screening criteria for the trade of second-hand goods across borders. It is the world's first International Standard on goods that are traded, sold, donated or exchanged between countries. The new ISO 20245 specifies how to evaluate and classify these products on a ranking based on their condition: A (very good), B (good), C (fair), and D (poor). These measurable criteria are especially designed to be used by importing or exporting parties or governments for in-transit and port-of-entry screening of second-hand goods, and will aim to ensure that both the consumer and the environment are completely protected.

Dulmage hopes that the second-hand goods practices contained in ISO 20245 will become universally applicable and available. According to him, ISO 20245 will help ensure that consumers get safe and serviceable second-hand goods that provide value for money, and follow the safety guidelines. The Chair is currently held by SCC, ISO member for Canada, under a twinning arrangement with SAC, ISO member for China, which holds the secretariat.

HOT AS COCOA

A QUALITY CHECK FOR THE GODLY BEAN

We all know that chocolate is good for the heart and soul, but did you know that it all starts with the humble cocoa bean? Largely cultivated by some 14 million hard-working cocoa workers in countries near the equator, typically on smallholder farms, cocoa is difficult to grow and most farms experience low yields.

It is one of the world's favourite ingredients, particularly during the festive season, yet no two cocoa beans are the same. ISO's International Standard for cocoa quality has recently been updated

ISO 2451, Cocoa beans—Specification and quality requirements, is used for specifying the requirements, classification, sampling, test methods, packing and marking of cocoa beans, with recommendations related to storage and disinfestation. It covers everything from size and colour to preparation and classification of the beans.

The new standard was developed by ISO's technical committee for cocoa, ISO/TC 34, Food products, subcommittee SC 18, Cocoa.

MacMillan Prentice, Co-Secretary of ISO/TC 34/SC 18, says ISO 2451 was updated to harmonize the language, requirements and grading of cocoa bean quality across the world. "It was developed by a group of stakeholders, including representatives from the private sector and governments, with the objective that it will help facilitate international trade."

ISO/TC 34/SC 18, in cooperation with CEN/TC 415, Sustainable and traceable cocoa, of the European Committee for Standardization (CEN), is responsible for the development of the series ISO 34101, Sustainable and traceable cocoa, which consists of four parts on sustainability management systems, performance, traceability and certification schemes.

SAFE MINING

NEW INTERNATIONAL STANDARD TO REDUCE MINING ACCIDENTS

When an incident does occur in a mine, it can be hard to understand precisely what's happened. Because many factors are at play, a wide range of accidents can occur. A key step in preventing these accidents is to classify them by type and by cause, and that's where ISO 19434 comes in.

With the entire industry working to further improve the safety of their operations, there are clear advantages of a unified system to understand the main types of accidents. Using the classification given in ISO 19434, one can identify whether accidents have occurred due to human error or other causes. With the publication of ISO 19434, a long-standing need has been addressed for a comprehensive mine accidents classification system that could present a standard scheme for all factors associated with the accidents. That will enable full analysis based on both software systems or manual assessment. By presenting a common understandable language for communication between all parts involved in safety, health and environment issues in mines, the hope is that working conditions can continue to improve across all operations in the mining sector.

Using the classification given in ISO 19434, one can identify whether accidents have occurred due to human error or other causes

BEYOND AGE & BAR

AGEING SOCIETIES ON CHANGE-MODE

In 2017, the number of people aged 60 years or over worldwide was more than twice as big as it was in 1980, and it is expected to double again by 2050 to reach nearly 2.1 billion. The changing demographics of our society brings with it pressures and challenges ranging from healthcare to the local bus.

But opportunities, too, are rife. The recently formed ISO technical committee ISO/TC 314, Ageing societies, aims to develop standards and solutions across a wide range of areas in order to tackle the challenges posed—as well as to harness the opportunities that a country's ageing populations bring.

Governments and service providers need to effectively cater to the needs of their populations as they age for the benefit of society as a whole. There is a crucial need for standards to support this to provide high-quality level of service

ISO/TC 314 Secretary Nele Zgavc from BSI, ISO's member for the UK, said dementia, preventative care, ageing workforces, technologies and accessibility are just some of the areas of standardization that the committee proposes to work on. "Ageing societies have global implications," she said. "Governments and service providers need to effectively cater to the needs of their population as they age for the benefit of society as a whole. There is a crucial need for standards to support this in order to provide a high-quality level of service and harness the opportunities that ageing societies hold."

ISO/TC 314 comes as a result of extensive work in this area by ISO, including the development of International Workshop Agreement (IWA) 18, Framework for integrated community-based life-long health and care services in aged societies, which led to the creation of the ISO Strategic Advisory Group (SAG) on Ageing Societies.

GROUND RULES

NEW ISO STANDARD TO COMBAT LAND DEGRADATION

A new ISO standard will help land managers at global and national scales put in place best practices to combat land degradation. The recently published ISO 14055-1:2017, Environmental management – Guidelines for establishing good practices for combating land degradation and desertification – Part 1: Good practices framework, provides guidelines for developing good practices to combat land degradation and desertification in arid and non-arid regions.

The standard refers to actions or interventions undertaken with the purpose of preventing or minimizing land degradation or, where land is already degraded, aiding its recovery to improve productivity and ecosystem health.

ISO 14055-1 will serve as a useful tool for land managers, land users, technical experts, and private and public organizations, as well as for policy makers involved in the management of land resources for ecological, productivity, economic or social purposes. It advocates a fundamental shift in behaviour towards a more sustainable use of land and is intended to complement and support the activities of the United Nations Convention to Combat Desertification (UNCCD).

GREEN BUILDINGS

Architecture for a sustainable India

NISHA KAPIL

"We must continue to search for sustainable solutions to our business needs."
– Michael Kollman, Architect

Sustainable or 'green' building design and construction is a method of wisely using resources to create high-quality, healthier and more energy-efficient homes and commercial buildings. A green building is more than the sum of its parts —its process and impact matter, too. Embracing green buildings can be a smart move forward, as these have the capacity to preserve resources, cut down pollutants and ensure long-term payback.

Across the world, there has been a lot of talk about green buildings as a means to meet our environmental goals with minimum use of energy by following certain guidelines. During a time, when climate change and high energy prices pose some of the greatest challenges, it is critical that construction of buildings be done taking into account a systems-based approach to meet energy efficiency and healthy environment goals. India, too, has risen to the challenge, and this movement has gained momentum in recent times. With an aim of encouraging the green building sector in the country, the Ministry of New and Renewable Energy (MNRE) has adopted Green Rating for Integrated Habitat Assessment (GRIHA) as the national rating system and is offering incentives for public and private sector developments that abide by these guidelines.

THE BENEFITS

The construction phase of green buildings ideally incorporates plans to reduce the wastage of material and resources. Green buildings can save at least 20 percent of the materials used. In addition, many of the materials used for green building constructions can either be recycled or biologically disposed, like hempcrete, bamboo, wood, straw bales, recycled plastic and so on. Lesser construction waste improves air quality and reduces carbon emissions as well. According to the Indian Green Building Council (IGBC), "Green buildings are capable of reducing 30 to 50 percent water consumption. Further intangible benefits include highly improved indoor air quality, optimal lighting during the day, safety and all-in-all a healthy way of living for the occupants."

WHAT CONSTITUTES GREEN BUILDINGS

Green construction is the result of an overall design approach that holistically addresses various environmental, financial and aesthetic parameters. More importantly, it addresses the comfort and well-being of the occupants of the building without pulling any additional investments going forward.

The GRIHA Council tells us that there is a lot of emphasis on initial construction material management—how much material is being used and in what manner it is being used. There are specific choices of materials.

From top:
The CII-Godrej Green Business Centre in Hyderabad;
The Covestro building at Greater Noida

There's an urgent need for energy efficient and sustainable construction amid concerns of power crisis and climate change

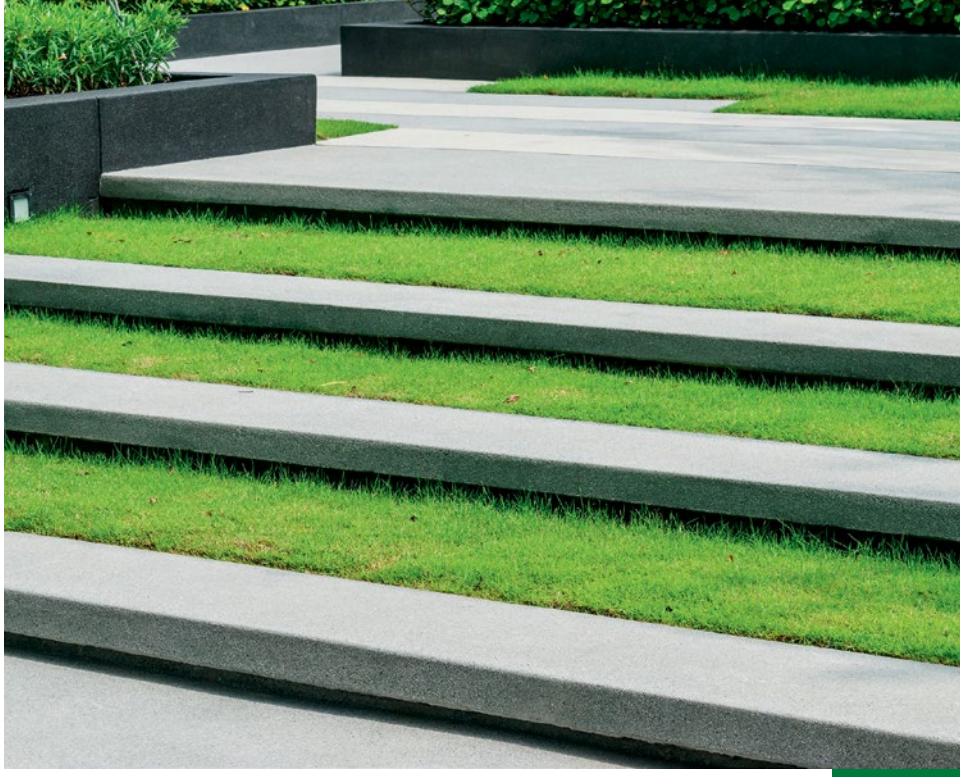
- For example, hollow bricks for walls can be used instead of regular bricks, as these are lighter and are good insulators of external heat therefore keeping the indoors cool.
- Solar panels are quite popular for using renewable energy and cutting down grid energy usage. These save the cost of electricity in the long run for the user. Collateral benefits include a reduced carbon footprint.
- Water fixtures in green buildings use faucet aerators, which mix a little air in the water stream to create perceived high pressure. This cuts the water usage down by almost one-third of what is normally consumed.
- Sensorized water taps in commercial and public buildings can prevent unmonitored open taps.
- Thermal-regulated materials such as polycarbonates and hollow bricks help keep indoors cool and comfortable. This improves the living conditions as well as reduces the use of appliances like air-conditioners, thereby minimizing total energy costs and carbon emissions.
- More energy-efficient heating, ventilation and air-conditioning (HVAC) systems like variable resistant volume (VRV) or variable resistant flow (VRF) technologies are also being applied to save energy.
- The concept of radiant cooling is becoming popular to maintain comfortable indoor temperature conditions.

Many such solutions can also be retrofitted in existing buildings, that were initially not constructed to fit in the green architecture. With some upfront investment, these can be made environment-friendly with reduced operational costs.

NEED OF THE HOUR

Buildings are amongst the major pollutants that affect urban air quality, and over 80 percent of the environmentally harmful emissions from buildings are due to energy consumption while the buildings are in use. The design, construction and maintenance of buildings have a tremendous impact on our environment and natural resources. "We really need to bring about a major improvement in energy efficiency by orders of magnitude that would make it possible for the projected nine billion people who are going to inhabit this planet by the middle of the century to live on a sustainable basis," opines a leading expert in environmental protection and sustainability.

At the moment, India is witnessing a building boom that is only going to accelerate in the times to come. Besides, India's economic development over the past three decades has led to an increased consumption of energy in the country. People have doubled



the use of lighting systems, ACs and other electronic gadgets. Thus, there's an urgent need for energy-efficient and sustainable construction techniques, amid concerns of power crisis and climate change.

Traditional construction methods require maximum use of basic resources like ground cover, forests, water and energy, raising major concerns for environmental conservation. Hence arises the concept of green buildings with an aim to address all these issues in an integrated and scientific manner.

FINANCIAL VIABILITY OF GREEN BUILDINGS

As with all business decisions, the 'build or not to build' decision depends on a cost-benefit analysis: a particular construction project or installation is executed if it is expected to generate monetary value that exceeds its cost. If, on the other hand, perceived costs outweigh benefits, the project is shelved.

The same basic rule applies to the construction of green buildings. However, there are important additional considerations that influence this particular analysis—specifically, the price of going green and the value it will impart. But there is growing recognition that 'green' should not be considered a discreet 'add-on' feature, grafted on to an otherwise normal project and evaluated independently with respect to its relative financial burdens and benefits. Rather, it is becoming clearer that sustainable building requires changes of both paradigm and process that, when embraced and applied to the entire building process, can make green building an attractive option without being an expensive one.

EVALUATING GREEN BUILDINGS: CERTIFYING BODIES

India has several councils and agencies that evaluate green buildings from their construction phase to the point where these are being used. Each council has its own process of registration, fee structure, evaluation parameters and rating system, all of which can be explored from their respective websites.

The usual process flow includes online registration, parameter assignment for various evaluations, document submission and on-site evaluation. Ratings can be based on stars or given as platinum, gold, silver, etc. The major agencies are:

- Leadership in Energy and Environmental Design (LEED) Council's prestigious certification is internationally-recognised and provides a benchmark for high-performance buildings.
- **IGBC** is a division of the Confederation of Indian Industry (CII), and works with the government to promote green building construction. It provides national-level ratings to registered projects. IGBC has an evaluation basis for existing buildings' maintenance as well.
- **GRIHA** is a council jointly formed by the Ministry of New and Renewable Energy and The Energy and Resources Institute (TERI). It provides in-depth, phase-wise assessments of green building projects that are registered. GRIHA has also created a free-to-refer catalogue on its website that verifies various products available in the market claiming to be green materials. This is to help consumers identify materials that are authentically environment friendly and suitable for green constructions, and make informed purchases.

As per IGBC reports, India already has more than three billion square feet (68,871 acres) of registered green building footprint, which is expected to reach 10 billion by 2022. The costs of green buildings are expected to further drop in this duration, which could lead to mainstream green construction adaptation in the near future. These are necessary times for adopting such measures, and active cooperation can lead us to a greener tomorrow.

– The writer is an architect and works with Architecture+ Design magazine.

Information courtesy: Energy Next and subject-specific research papers

MOVING TOWARDS THE

India is on the path of rapid development and urbanization. The Government of India has decided to provide housing for all citizens by the 75th year of India's independence, through its Housing for All by 2022 mission. This requires construction of around two crore houses. The prefabricated building construction provides a unique opportunity for the erection of buildings in a substantially reduced time frame while maintaining the quality of construction. This paper discusses various dimensions of prefabricated construction technology that will help meet the above objectives while taking care of any safety-related concerns that have often been addressed regarding this technology.

PREFAB WAY

The Government is working towards the mission of Housing for All by 2022—the technology of prefabricated and mixed composite concrete building has proved to be the answer for speedier, large-scale construction.

BY SANJAY PANT &
MADHURIMA MADHAV

A prefabricated building is a partly/fully assembled and erected building, of which the structural parts consist of prefabricated individual units, or assemblies, using ordinary or controlled materials, and it includes service facilities. Prefabrication, though desirable for large-scale building activities, is now gaining importance in the country.

Two aspects of prefabrication specifically to be borne in mind are the system to be adopted for the different categories of buildings, and the sizes of their components. Here, the principle of modular coordination is of value and its use is recommended. Since the aim of prefabrication is to effect economy and improve quality and speed of construction, the selection of proper materials for prefabrication is also an important factor in the popularization of this technique. The use of locally available materials with required characteristics—and the materials that, due to their innate characteristics, such as lightweight, easy workability, thermal insulation, non-combustibility, etc.,—that effect economy and improve quality should be tried.

India was introduced to prefabrication technology long back in the1950s, however, the urban local bodies in the country have still not been able to leverage the several benefits of this technology in view of misnomers associated with the adoption of this relatively new technology, than conventional construction technologies. The above is mainly attributed to lack of knowledge and limited expertise in this field. The Bureau of Indian Standards (BIS), the National Standards Body of India, has formulated a series of Indian Standards—the National Building Code of India 2016 (NBC 2016)—to provide detailed guidance on design and construction of prefabricated concrete buildings.

Prefabrication technology involves modular planning, component sizes, selection of prefabrication systems, design considerations, joints and manufacture, storage, transportation and erection of prefabricated

concrete elements for use in buildings and related requirements for prefabricated concrete. The design of prefabricated buildings also demands extensive pre-planning for ensuring provision for installations of all services and required piping, wiring and accessories in the building. The selection of building components, adoption of right prefabrication system, proper design, jointing, testing of joints, erection, storage and handling etc., has an important role to play in the success of prefabricated construction. The paper therefore illustrates how the NBC 2016 and the concerned Indian Standard guide us through the various provisions to ensure safe prefabricated construction.

MATERIALS

While selecting the materials for prefabrication, the following characteristics are to be taken into consideration: easy availability; light weight for easy handling and transport; strength; thermal insulation property; easy workability; water absorption; serviceability along with durability; non-combustibility/fire resistance rating; sound insulation; easy assembly and compatibility to form a complete unit; economy; and any other special requirement in a particular application.

MODULAR COORDINATION

Prefabricated construction is based on the principles of modular coordination. The basic module is of the fundamental module used in modular coordination, the size of which is selected for general application to a building and its components. The value of the basic module selected in concerned Indian Standards and NBC is 100 mm, for the maximum flexibility and convenience. The symbol for the basic module is M. After adopting the basic module, further work is necessary to outline a suitable range of multi-modules with greater increments, often referred to as preferred increments. A set of rules as detailed below is considered to be adequate for meeting the requirements of conventional and prefabricated construction. These rules relate to the following basic elements: The planning grid in both directions of the horizontal plan should be 15M for industrial buildings, and 3M for other buildings; the centre lines of load-bearing walls should preferably coincide with the grid lines; the planning module in the vertical direction should be 2M for industrial buildings and 1M for other buildings; preferred increments for sill heights, doors, windows and other fenestration should be 1M. In the case of internal columns, the grid lines should coincide with the centre lines of columns. In the case of external columns, and columns near the lift and stair wells, the grid lines should coincide with centre lines of the column in the topmost storey.

In the case of prefabricated concrete construction, materials for plain and reinforced concrete and pre-stressed concrete should be in accordance with IS 456 and IS 1343. Connections and jointing materials should also be selected in complete accordance with the prescriptions in NBC 2016 and the concerned Indian Standard.

PREFABRICATION SYSTEMS AND STRUCTURAL SCHEMES

The word 'system' refers to a particular method of construction of buildings using prefabricated components that are inter-related in functions, and are produced by following a set of instructions. With certain constraints, several plans are possible using the same set of components. The degree of flexibility varies from system to system. However, in all the systems there is a certain order and discipline. The following aspects, among others, are to be considered while devising a system:

Effective utilization of spaces; straight and simple walling scheme; limited sizes and numbers of components; limited opening in bearing walls; regulated locations of partitions; standardized service and stair units; limited sizes of doors and windows with regulated positions; structural clarity and efficiency; suitability for adoption in low-rise and high-rise building; ease of manufacturing, storing and transporting; speed and ease of erection; effective utilization of available equipment, plant and machinery; and simple jointing system.

The system of prefabricated construction depends on the extent of use of prefabricated components—their materials, sizes and the technique adopted for their manufacture and use in building.

The system of prefabricated construction depends on the extent of use of prefabricated components, their materials, sizes, and the technique adopted for their manufacture and use in building

COMPONENTS OF PREFABRICATION SYSTEM

The prefabricated concrete components given below are used in prefabricated construction: reinforced/pre-stressed concrete channel unit, reinforced/pre-stressed concrete slab unit, reinforced/pre-stressed concrete beams, reinforced/pre-stressed concrete columns, reinforced/pre-stressed concrete hollow core slab, reinforced concrete waffle slab/shells, reinforced/pre-stressed concrete wall elements, hollow/solid concrete blocks and battens; pre-cast planks and joists for flooring and roofing; pre-cast joists and trussed girders; light weight/cellular concrete slabs/wall panels; pre-cast lintel and parapets; large panel prefabricates, reinforced/pre-stressed concrete trusses; reinforced/pre-stressed roof purlins; pre-cast concrete L-panel unit, prefabricated concrete double-t unit; prefabricated brick panel unit; prefabricated sandwich concrete panels; pre-cast concrete foundation, and pre-cast concrete staircase.

These should be in accordance with relevant Indian Standards, when possible. There may be other types of components that can be used with the approval of the authority/engineer-in-charge.

Further, the dimensions of precast elements should meet the design requirements. However, the actual dimensions should be the preferred dimensions, as given in NBC 2016 for flooring and roofing scheme, beams, columns, walls, staircase, lintels, sunshades/parapet projections. The pre-cast components should also meet the requirements of casting tolerance as given in the concerned Indian Standard.

TYPES OF PREFABRICATION SYSTEM

Open Prefabrication System: There are two categories of open prefab system depending on the extent of prefabrication used in the construction, as given below:

a) Partial prefabrication system: This system basically uses pre-cast roofing and flooring components, and other minor elements like lintels, parapets, kitchen sills, in conventional building construction. The structural

system could be in the form of in-situ framework or load bearing walls.
b) Full prefabrication system: In this system, almost all the structural components are prefabricated. The filler walls may be of brick/block masonry or of any other locally available material.
Large Panel Prefabrication System: This system is based on the use of large prefab components. The components used are pre-cast concrete large panels for walls, floors, roofs, balconies, staircases, etc. The casting of the components could be at the site or off the site. Depending upon the extent of prefabrication, this system can also work for the partial prefab system and full prefab system.
Box Type Construction: In this system, room size units are prefabricated and erected at site. Toilet and kitchen blocks may also be similarly prefabricated and erected at site. This system derives its stability and stiffness from the box units that are formed by four adjacent walls. Walls are jointed to make rigid connections among themselves. The box unit rests on foundation—conventional or pre-cast.

PLANS AND SPECIFICATIONS

For any prefabricated construction, the detailed plans and specifications should include the description of the elements and the structure and assembly including all required data of physical properties of component materials, material specification, strength of concrete for de-moulding, casting/erection tolerance and type of curing to be followed. These should also include details of connecting joints of prefabricates on an enlarged scale, site or shop, location of services, such as installation of piping, wiring or other accessories, integral with the total scheme shown separately, a data sheet indicating the location of the inserts and acceptable tolerances for supporting the prefabricate during erection, location and position of doors/windows/ventilators, etc., if any. The drawings should also clearly indicate the location of handling arrangements for lifting and handling the prefabricated elements. The sequence of erection with critical check points and measures to avoid stability failure during the construction stage of a building should also be included.

DESIGN CONSIDERATIONS AND REQUIREMENTS

Pre-cast structures can be analyzed either as an emulative system or as a jointed system. However, emulative analysis is typically preferred where the structure is detailed such that the overall behaviour of the building in its service life will be similar to a RCC building constructed in-situ. In an emulative approach, the pre-cast structure is analyzed as a monolithic one and its joints are designed to take the forces of an equivalent discrete system. Recommendations made in the concerned Indian Standard, for adequate buttressing of external wall panels, should be kept in mind for ensuring stability in such structures.

It is equally important to provide restraint to all load-bearing elements in the corners of the building. These elements and the external ends of cross-wall units should be stiffened either by introducing columns as connecting units, or by jointing them to non-structural wall units, which may support the load during an emergency. Jointing of these units should be done bearing in mind the need for load support in an emergency. In prefabricated construction, the

In an emulative approach, the precast structure is analyzed as a monolithic one, and its joints are designed to take the forces of an equivalent discrete system

possibility of gas or other explosions, that can destroy the primary structural elements, leading to a progressive collapse (pack-of-cards collapse) of the structure should be taken into account. Provisions in the design to reduce the probability of progressive collapse is essential in buildings of over six storeys, and is of relatively higher priority than for buildings of lower height.

JOINTS

The design of joints should be made after an assessment with respect to feasibility, practicability, serviceability, fire rating, appearance, water tightness of joints. The following are the requirements of a structural joint to be considered while designing it: capable of being designed to transfer the imposed load and moments with a known margin of safety; occur at logical locations in the structure and at points which may be most readily analyzed and easily reinforced; accept the loads without marked displacement or rotation, and avoid high local stresses; accommodate tolerances in elements; require little temporary support, permit adjustment and demand only a few distinct operation to make; permit effective inspection and rectification; reliable in service with other parts of the building; and enable the structure to absorb sufficient energy during earthquakes, so as to avoid sudden failure of the structure. If required, tests may be carried out on prototypes to assess them for the above requirements. The joint should also be ductile.

TESTS FOR COMPONENTS/STRUCTURES

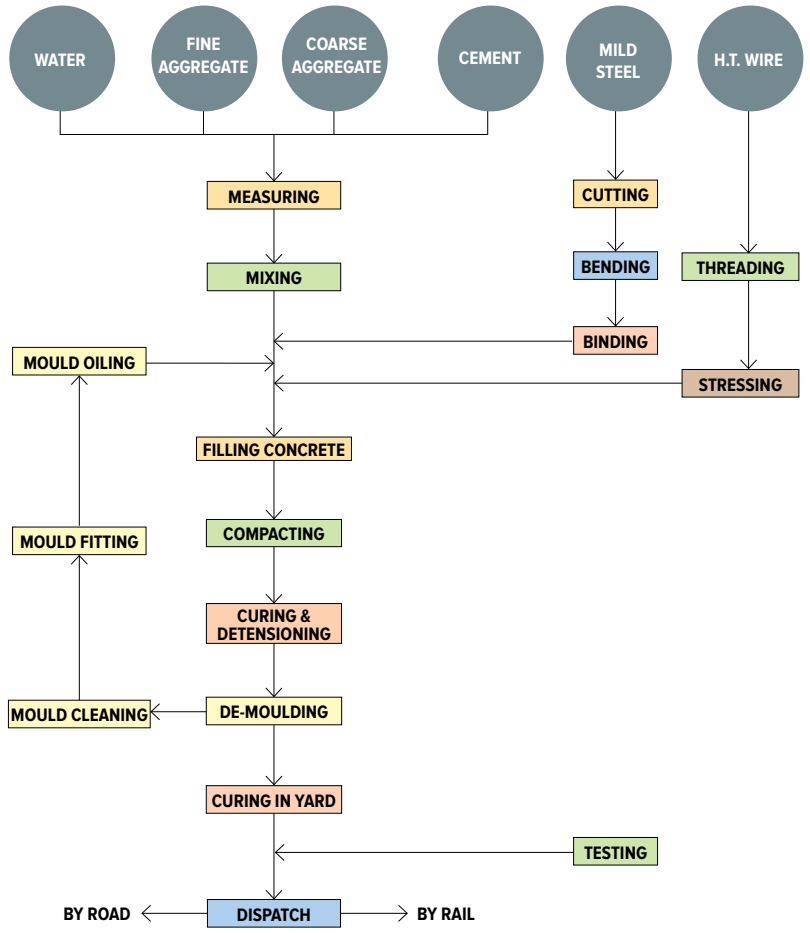
In order to ensure quality, all the pre-cast units of the same size, manufactured from the same material, under similar conditions of production, should be grouped together to constitute a lot and should be tested as per the concerned Indian Standard before accepting the lot. Individual components should also be loaded and then tested to rule out any sign of weakness, faulty construction or excessive deflection, as per the concerned Indian Standards. Loading test on a completed structure should be made if required by the specification, or if there is a reasonable doubt as to the adequacy of strength in the structure. The external pre-cast wall/facade panels should also be tested for water tightness.

PROCESSES IN MANUFACTURE OF PRE-CAST ELEMENTS

A judicious location of pre-casting yard with concreting, initial curing (required for de-moulding), storage facilities, suitable transporting and erection equipment and availability of raw materials, are crucial factors that should be carefully planned and provided for effective and economic use of pre-cast concrete components in constructions. The manufacture of the components can be done in a factory for the commercial production established at the focal point based on the market potential or in a site pre-casting yard set up at or near the site of work. The various processes involved in the manufacture of pre-cast elements may be classified as follows.

a) Main Process: Providing and assembling the moulds, placing a

THE VARIOUS STAGES OF PRE-CASTING



reinforcement cage in position for reinforced concrete work, and stressing the wires in the case of pre-stressed elements; putting concealed service conduits/pipes; fixing of inserts and tubes, where necessary (for handling); pouring the concrete (designed properly under strict quality control) into the moulds; vibrating the concrete and finishing; curing (steam curing, if necessary); and de-moulding the forms and stacking the pre-cast products.

b) Auxiliary Process: Processes, such as the following, that are necessary for the successful completion of the processes covered by the main process: mixing and manufacture of fresh concrete (done in a mixing station or by a batching plant); prefabrication of reinforcement cage (done in a steel yard or workshop); manufacture of inserts and other finishing items to be incorporated in the main pre-cast products; finishing the pre-cast products; and testing of products.

c) Subsidiary Process: All other work, such as the following, is involved in keeping the main production work working in a cycle: storage of materials; transport of cement and aggregates; transport of green concrete and reinforcement cages; transport of and stacking the pre-cast elements; repairs and maintenance of tools, shackles and machines; repairs and maintenance of moulds; maintenance of curing yards; and generation of steam, etc.

For the manufacture of pre-cast elements, all the above processes should be planned in a systematic way to achieve the following: a cyclic technological method of working to bring in speed and economy in manufacture; mechanization of the process to increase productivity and to improve quality; optimum production to satisfy quality control requirements and to keep up with the expected speed of construction; better working conditions for people on the job; and minimizing the effect of weather during the manufacturing schedule.

PREPARATION AND STORAGE OF MATERIALS

Storage of materials is of considerable importance in the pre-casting industry. From experience in construction, it is clear that there will be very high percentages of loss of materials as well as poor quality due to improper storage and transport. So, in a pre-cast factory where everything is produced with special emphasis on quality, proper storage and preservation of building materials, especially cement, coarse and fine aggregates, is of prime importance. Also, pre-cast elements will be subjected to 'first-in first-out' to minimize and avoid issues relating to shrinkage, creep, etc.

STACKING DURING TRANSPORT AND STORAGE

Precaution should be taken against overstress or damage, by the provision of suitable packings at agreed points of support. Particular attention is directed

to the inherent dangers of breakage and damage caused by supporting other than at two positions, and also by the careless placing of packings.

Ribs, corners and intricate projections from solid section should be adequately protected. Packing pieces should not discolour, disfigure or otherwise permanently cause mark on units or members. Stacking should be arranged or the precast units should be protected, so as to prevent the accumulation of trapped water or rubbish, and if necessary, to reduce the risk of efflorescence.

HANDLING ARRANGEMENTS

Lifting and handling positions should be clearly defined particularly where these sections are critical. Where necessary, special facilities, such as bolt holes or projecting loops, should be provided in the units and full instructions supplied for handling. For the purpose of testing the bolts/hooks, bond strength should be the criteria for embedded bolts, and bearing strength for through bolts. For bond strength, the pull out test of concrete should be carried out.

TRANSPORT

Transport of pre-cast elements inside the factory and to the site of erection is of considerable importance not only from the point of view of economy but also from the point of view of design and efficiency management. Transport of pre-cast elements should be carried out with extreme care to avoid any jerks and distresses in elements, and handled as far as possible in the same orientation as it is to be placed in final position.

ERECTION

In the erection of pre-cast elements, all the following items of work are meant to be included: slinging of the pre-cast element; tying up erection ropes connecting to the erection hooks; cleaning of the elements and the site of erection; cleaning of the steel inserts before incorporation in the joints, lifting up of the elements, setting them down into the correct envisaged position; adjustment to get the stipulated level, line and plumb; welding of cleats; changing of the erection tackles; putting up and removing of the necessary scaffolding or supports; welding of the inserts, laying of reinforcements in joints and grouting the joints; and finishing the joints to bring the whole work to a workmanlike finished product.

It is of prime importance that in a pre-cast factory, special emphasis is placed on quality, proper storage and preservation of building materials, especially cement, coarse and fine aggregates

CONCLUSION

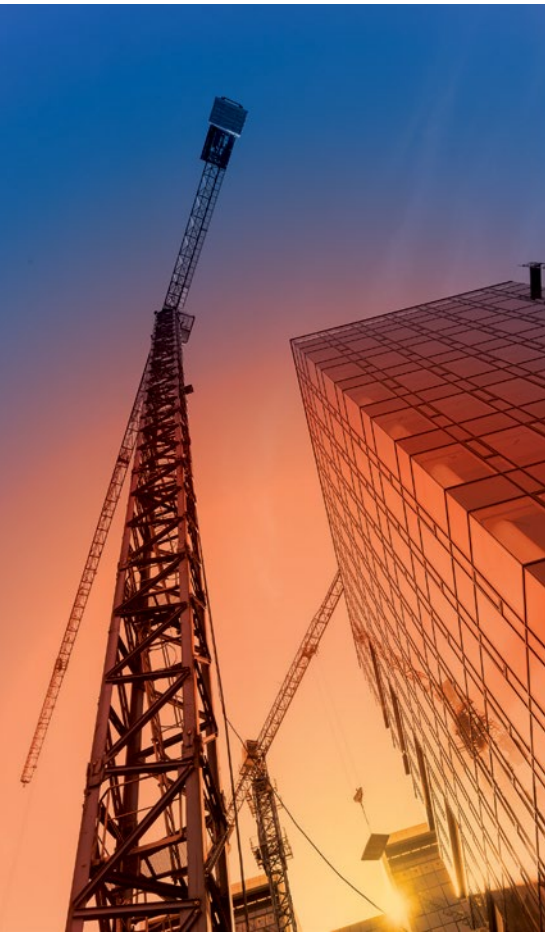
Considering the enormous demand of construction of houses and other types of buildings in the country, the prefabricated concrete construction system needs to be promoted and employed. Standards provide the solution for such recurring requirements. BIS has formulated not only a series of Indian Standards pertaining to various partial prefab concrete components and design and construction codes, but also the comprehensive National Building Code of India 2016. As we go ahead with the erection of a large number of structures using prefab technologies in different parts of the country, a lot of experience will also be gathered that in turn would be helpful in making the standards and their implementation more comprehensive and robust as part of the continual process of standards development.

DESIGN RULES

THE CODES OF PRACTICE APPLICABLE IN PREFABRICATED AND MIXED COMPOSITED CONCRETE CONSTRUCTION

STANDARDS FOR DESIGN AND CONSTRUCTION OF PREFABRICATED STRUCTURES

Design and construction of composite structures made up of prefabricated structural units and cast in-situ concrete	**IS 3935** Code of practice for composite construction
Design and construction of precast reinforced and prestressed concrete triangulated trusses	**IS 3201** Criteria for design and construction of precast trusses and purlins (first revision)
Design and construction of floors and roofs using various precast units	**IS 6332** Code of practice for construction of floor and roofs using precast doubly-curved shell units (first revision)
	IS 10297 Code of practice for design and construction of floors and roofs using precast reinforced/prestressed concrete ribbed or cored slab units
	IS 10505 Code of practice for construction of floors and roofs using precast reinforced concrete waffle units
	IS 13994 Code of practice for design and construction of floor and roof with precast reinforced concrete planks and RC joists
	IS 14142 Code of practice for design and construction of floors and roofs with prefabricated brick panel
	IS 14215 Code of practice for construction of floor and roof with RC channel units
	IS 14242 Code of practice for design and construction of roof with L-panel units
Construction of floors and roofs with joists and filler blocks	**IS 6061** Code of practice for construction of floor and roof with joists and filler blocks **(Part 1)** Part 1 With hollow concrete filler blocks **(Part 2)** Part 2 With hollow clay filler blocks (first revision) **(Part 3)** Part 3 With precast hollow clay block joists and hollow clay filler blocks **(Part 4)** Part 4 With precast hollow clay block slab panels
Construction with large panel prefabricates	**IS 11447:** Code of practice for construction with large panel prefabricates



STANDARDS FOR PREFABRICATED COMPONENTS

IS 2185	Specification for concrete masonry units
(Part 1)	Part 1 Hollow and solid concrete blocks (third revision)
(Part 2)	Part 2 Hollow and solid lightweight concrete blocks (first revision)
(Part 3)	Part 3 Autoclaved cellular (aerated) concrete blocks (first revision)
(Part 4)	Part 4 Cellular concrete blocks using preformed foam
IS 6072	Specification for autoclaved reinforced cellular concrete wall slabs
IS 6073	Autoclaved reinforced cellular concrete floor and roof slabs- Specification (first revision)
IS 9893	Specification for precast concrete blocks for lintels and sills
IS 12440	Specification for precast concrete stone masonry blocks
IS 13990	Specification for precast reinforced concrete planks and joists for flooring and roofing
IS 14143	Specification for prefabricated brick panel and partially precast concrete joist for flooring and roofing
IS 14201	Specification for precast reinforced concrete channel unit for construction of floors and roofs
IS 14241	Specification for precast L-panel units for roofing

– The writers are from Civil Engineering Department, Bureau of Indian Standards

PREFABRICATED CONSTRUCTION: **WHAT THE EXPERT SAYS**

Optimum, intense and efficient use of all resources, be it land, building materials, water and energy together with reduction of carbon footprint are essential features of sustainable development, says **V Suresh**

How would you define standardisation. What role does standardisation play in the arena of 'Prefabricated and Mixed Composited Concrete Construction'?
Standardisation plays crucial role in the area of Prefabricated Concrete Construction, in terms of dimension control options for mass production, quality assurance for selection of materials, ensuring quality assurance in production and safe transportation and erection options. The waste minimisation and productivity, efficiency and quality compliance are ensured in a controlled environment.

Does standardisation of prefabricated products help the construction industry in terms of building a better connect between the producer and the consumer?
With huge demographic growth and massive urbanisation, the demand for housing and other building construction is growing fast. There is urgent need for speedy delivery on time and ensuring quality and also resulting in cost control. The Ministry of Housing and Urban Affairs, Government of India, has launched a major initiative to bring in solutions under Global Housing Technology Challenge. India is primarily meant to deal with speedier delivery and assured quality for the building products and also provide solutions to massive needs of housing for the consumers. The Housing for All agenda by 2022 need the induction of modern innovative construction processes than the conventional in situ construction. The National Building Code of India has rightly recognised the

importance and has given comprehensive guidance for the planning, design, production, transportation and safe erection of prefabricated construction options.

What is the origin of 'Prefabricated and Mixed Composite Concrete Construction'. What are the advantages of this method of construction?

The post world war situation necessitated reconstruction in many countries for the housing and other building construction. With industrial climate well entrenched in the developed countries and with labour shortage, prefabricated construction came in as industrialised building component and assembly system production opportunity. European countries took a big lead in the forties and through sixties and over the years the production and construction processes underwent major changes to take care of the need for variety aesthetics and different choices. Since production is in a controlled environment, the quality is always ensured and 30 to 40 percent time saving is ensured at the least. Less dependence on large labour force is another factor. Also, with working period getting affected due to extreme cold and monsoon months, the delivery of products in controlled conditions will ensure continuous operations. The scaffolding and form work aspects in in situ construction will also be obviated with superior faster cycle-based applications in factory environment. The construction sites are also cleaner and tidier with minimal amount of construction debris and waste products being generated.

Will prefabricated structures help the construction industry create a multiplier effect and help drive the industry on a fast-forward mode?

Yes. It is said that double of all that we have built over centuries would need to be built in the next three decades for the additional population of over 700 million. With the massive demand for housing and other buildings, the requirement of over 275 building materials and components will increase and there will be a revival of all those industries. The equipment and machinery manufacturers needed for construction industry will receive a boost. This will also bring in the need for quality transportation and improvement in road quality.

Is it right to say that Prefabricated Construction will help fulfill the government's objective of Housing for All by 2022 besides helping to reorient the economy towards smarter cities, energy efficient processes and a cost-efficient methodology in the long run?

Yes. Positively. As indicated earlier, the Government of India Ministry of Housing and Urban Affairs has launched Global Housing Technology Challenge - India initiative primarily to take care of the construction of over 20 million housing units and other supportive buildings needed for the 100 Smart cities, 500 AMRUT cities and needs of small and medium towns. There are over 50 technology options that have emerged from the exhibition and conference deliberations from the GHTC-India initiative. With the thrust for developing sustainable green buildings, the processes and material selection will lead to carbon footprint reduction, savings in use of water and water efficiency and savings and energy efficiency as well.

The speedier construction delivery process can help reduce construction delivery by more than half the period. At present most of the housing and building construction delivery take 2 to 4 years under traditional and conventional construction practices with all the site related problems.

Can we say that Prefabricated method is in sync with the goals of sustainable development?

Yes. Optimum, intense and efficient use of all resources, be it land, building materials, water and energy together with reduction of carbon footprint are essential features of sustainable development. Prefabricated construction using innovative built environment options would lead to development and use of environment-friendly, ecologically appropriate and energy saving Greenpro products and processes. The declaration of 2019-20 as "Year of Construction Technology" by the Honourable Prime Minister is a clear indication of the importance attached to this important theme of speedier and quality delivery of construction for the massive housing and building delivery challenges.

– V Suresh is Chairman, BIS Technical Committee on Housing, Planning and Prefabricated Construction

"The Ministry of Housing and Urban Affairs, Government of India, has launched a major initiative to bring in solutions under Global Housing Technology Challenge"

BIS—THE GLORIOUS PAST

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1 King of Saudi Arabia visits the ISI stall at the Indian Industries Fair in 1955

2 Measuring the flag to check the length to height ratio in 1959

3 Air Chief Marshall P.C. Lal gives away the 1st Prize to Dr. L.C. Verman for his seminal book, *Standardization: A New Discipline*

4 Shri C.D. Deshmukh, Finance Minister, Govt. of India on a visit to ISI in 1951. Dr. Verman shows him a sample of the national flag in khadi under consideration for standardization by the ISI committee

5 Shri G.S. Pathak, Vice President of India, being received by Dr. Bharat Ram, Chairman Silver Jubilee Reception, with Shri Moinul Haque Choudhury and Prof. Siddheshwar Prasad, Union Minister and Deputy Minister of Industrial Development

6 Shri Pathak with Shri Moinul Haque Choudhury and Shri D.C. Kothari, President of ISI

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7 Shri C. Rajagopalachari, President of ISI (1947–1948), addressing the Calcutta conference on Standardization and Quality Control, held on 4–8 February, 1947

8 Goods bearing the ISI Certification Mark on display in 1958

9 Dr. Verman, recipient of the first K.L. Moudgil Award from Pt. Jawahar Lal Nehru, former Prime Minister of India, in 1958. Dr. Moudgil and Prof. M.S. Thacker witness the ceremony

10 Dr. S.P. Mookerjee, the then-Minister of Industry and Supply, inaugurates the Chemical Division Council (CDC) of the Indian Standards Institution on 30 September, 1948. The CDC Secretariat was also secretariat for the ISO committee for Shellac

GETTING SMART

The way forward for adoption of standards in smart cities

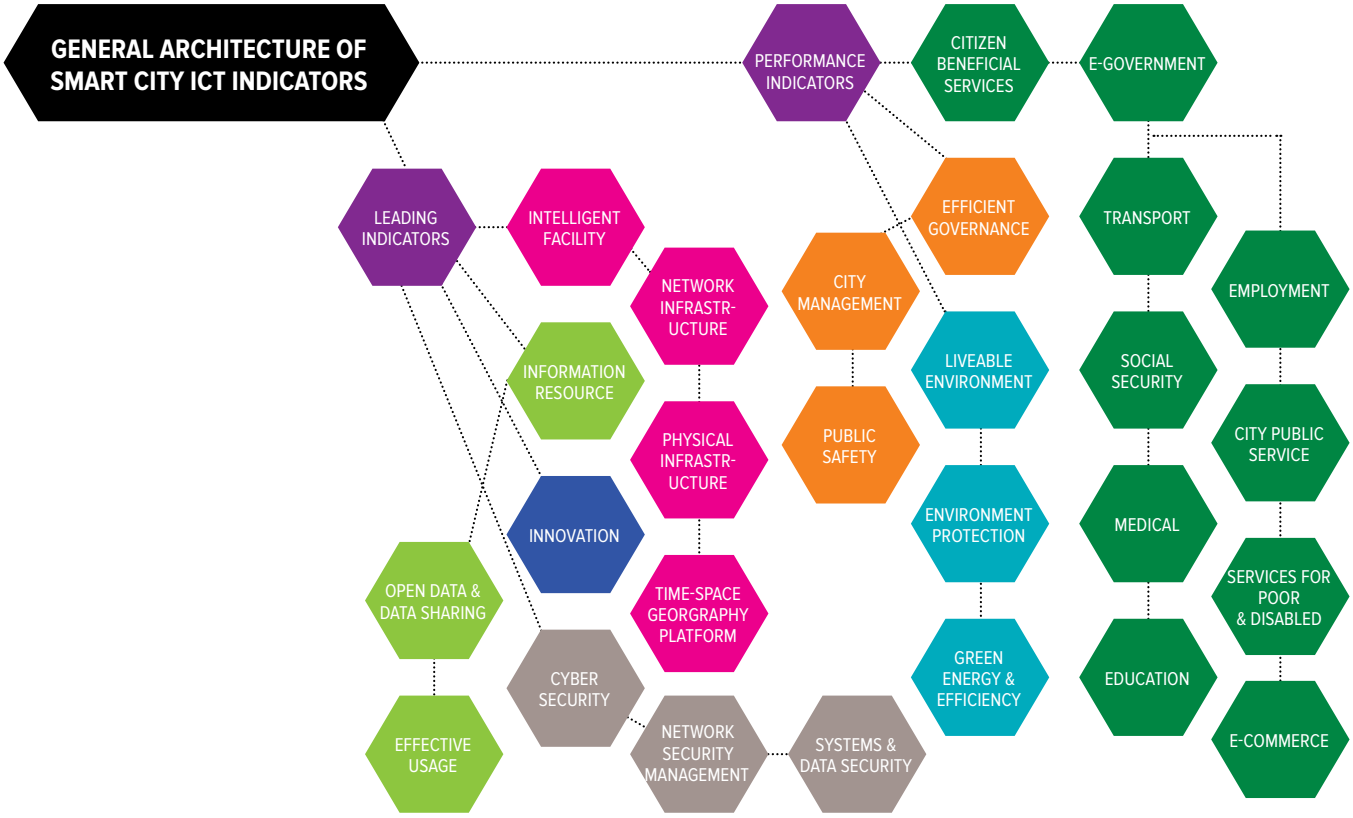
BY SHREYA BHAGAT

The world's urban population is projected to rise from 3.6 billion to 6.3 billion between 2011 and 2050, and a solution to this urbanization has been the development of sustainable cities by improving efficiency and integrating infrastructure and services. In the past two decades, megacities (accepted as those with a population in excess of 10 million) have mushroomed all over the world. The sheer size and scale of these cities place huge pressure on infrastructure development, public services provision and environmental sustainability. If we add economic, social and ethnic stratification, as well as health and security risks to the list of challenges, the task facing the leader of any megacity would be overwhelming and one that cannot be solved by technology alone. A smart city needs smart governance, smart businesses and smart citizens. The Smart Cities Mission of the Ministry of Urban Development was announced in 2014, followed by the selection of 100 cities in the year 2015. Twenty of them were selected for the first phase of the project in 2016.

'Smart Cities' have been defined by several international standardization bodies and countries, but there is no uniform global definition. Requirements of different cities may depend upon local factors and objectives. Standardization forms a critical part of the evolution that cities and communities need to make in the coming years. In response to the needs of citizens and cities, standards will facilitate the sustainable development of 'smarter' cities by underpinning common understanding among all actors involved; enabling integration between systems; seamlessly merging the physical and the digital; accelerating smart city solutions; and providing confidence in the market.

The envisioned modern and smart city promises delivery of high-quality services to its citizens that will harness data capture and communication management technology. Performance of such cities would be monitored on the basis of physical as well as social structure, that will comprise smart approaches and solutions to utilities and transport. The glue that allows infrastructures to link and operate efficiently is standards, as they make technologies interoperable and efficient. Interoperability is essential, and to ensure smart integration of various systems in a smart city, internationally agreed upon standards that include technical specifications and classifications must be adhered to.

As the price of technology falls and data analytics become more widespread across the globe, what will increasingly differentiate cities is not how 'smart' they are in terms of technology penetration, but the extent to which they leverage technology to bring about innovation, sustainability and inclusiveness. Better information leads to an enhanced understanding of the behaviour of infrastructure. The impact of this will lead to transformations in the approaches to design and construction, as well as step changes in health and productivity, greater efficiency in design and performance, a low-carbon society, and sustainable urban planning and management.



For smart cities, a defined process already exists for how standards are created. It's similar to the development process for technical standards in other fields, and places the publication of the standard at its centre, while there is generally an ecosystem of stakeholders who fit into the process at different times.

Though NASSCOM is working closely with the Ministry of Urban Development to create a sustainable model for smart cities, due to lack of regulatory standards for smart cities, the Bureau of Indian Standards (BIS) has undertaken the task to formulate standardized guidelines for smart cities. A technical committee under the Civil Engineering Department (CED) of the Bureau has been set up to undertake the standardisation issue.

The benefits of using the standards in smart cities include:

- Effective governance and delivery of services
- International benchmarks and targets
- Local benchmarking and planning
- Informed decision making for policymakers and city managers
- Learning across cities
- Leverage for funding and recognition in international entities
- Framework for sustainability planning
- Transparency and open data for investment attractiveness
- Comparable data for city decision making, insight and global benchmarking.

In the wake of Prime Minister Narendra Modi calling for the setting up of 100 smart cities in the country, the standards will act as guidelines for central and state authorities in planning, design and construction of smart cities. The standards prepared by BIS are based on Indian social and economic conditions for smart cities. Also, after the initiation of the 'Make in India' campaign, standards and related measures have become more significant, and the Indian industries need to prepare themselves for challenges of high standards. BIS has been providing traceability and tangibility benefits to the national economy in several ways—providing safe and reliable goods; minimizing health hazards; promoting exports and imports substitute; control over proliferation of varieties and much more, through standardization, certification and testing.

All smart city programmes and projects pursue many common goals including sustainable development, better efficiency, resilience, safety and wider support for citizen's engagement and participation. However, each individual city tends to follow its own approach for the smart city programmes and projects. It is not surprising that the numerous technology activists are very vocal on various smart cities forums even though cities cannot be reduced to just 'Big Data' and 'IoT.' The most crucial imperative in the standardization initiatives in the smart city paradigm shall be to harmonize the standards amongst the multiple stakeholders of the smart city ecosystem: namely the standards in smart homes, smart buildings, smart grids, smart mobility etc., shall need to be made interoperable at various

levels to make the city ICT (Information and Communication Technologies) infra-structure work in a homogeneous fashion in spite of addressing a whole spectrum of applications.

There are various aims that have been set in place: By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters; and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels. By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all; improve road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations.

Other Standards Development Organizations (SDOs) are busy mapping the imperatives for standardization in the smart cities and smart infrastructure domain including IEC, ISO, ITU, IEEE, IETF along with The 3rd Generation Partnership Project (3gpp), oneM2M and other regional and national Standards Developing Organisation (SDOs) like ETSI, CEN, CENELEC, NIST, BSI, DKE, DIN, JSA. Furthermore, many standardization bodies and industries from the ICT and infrastructure industry consider the development of smart cities to be a priority issue. Global SDOs and industry consortia are addressing the development of reference frameworks, architectures and standards in the domain.

The International Electrotechnical Commission (IEC) has come up with a new approach to standardization—systems-level standardisation that provides the context for traditional product-level standardization. The systems-level standardization aims to achieve synergy between uniformity (availability of standard products) and diversity (the ability to combine standard and customized products to address the unique needs for development).

Any smart city is an urban-complex, socio-technical system of cyber-physical systems (e.g. IoT devices and applications). The smart cities' reference architecture provides a common methodology for making systems, thus enabling different people in similar situations to find similar solutions, or propose innovations that can benefit many cities. ISO/IEC 30146 – Smart city ICT indicators define a comprehensive set of evaluation indicators specially related to ICT adoption and usage in smart cities.

In fact, governments throughout the world are driving smart cities in order to achieve their policies on energy efficiency, sustainable development, reliable and cost-effective infrastructure, and citizen services for the whole community. With regard to the adoption of international standards, or developing national standards in line with these global standards, it is suggested that India should carefully consider global efforts for the creation of smart cities standards to develop interoperable standards as they provide guidance, a common language, frameworks and specifications enabling planning, management and development. Due to increasing complexity and mounting challenges that cities will inevitably face in the future, the need for a common solutions ability to share best practices will only grow.

– The writer has pursued Computer Science Engineering from Delhi and is an MBA in Communication Management

STANDARDS FIRST

THE LIST OF INDIAN STANDARDS PUBLISHED/REVISED

No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 3470 : 2017 Hexane, Food Grade – Specification (Second Revision)	आई एस 3470: 2017 हेक्सेन, फूड ग्रेड – विशिष्टता (दूसरा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	26 Aug 2017	26 सितम्बर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	IS 3470 : 2002 Hexane, Food Grade – Specification (First Revision)	आई एस 3470: 2002 हेक्सेन, फूड ग्रेड – विशिष्टता (प्रथम संशोधन)
Date of Cancellation रद्द होने की तिथि	As on date	आज की तारीख़ में
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 4923 : 2017 Hollow Steel Sections for Structural Use – Specification (Third Revision)	आई एस 4923: 2017 खोखले स्टील संरचनात्मक उपयोग के लिए अनुभाग – विशिष्टता (तीसरा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	26 Aug 2017	26 अगस्त 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	IS 4923 : 1997 Hollow Steel Sections for Structural Use – Specification (Second Revision)	आई एस 4923: 1997 खोखला स्टील संरचनात्मक उपयोग के लिए अनुभाग – विशिष्टता (दूसरा संशोधन)
Date of Cancellation रद्द होने की तिथि	As on date	आज की तारीख़ में
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 5430 : 2017 Ammonia Preserved Concentrated Natural Rubber Latex (Second Revision)	आई एस 5430: 2017 अमोनिया संरक्षित किया हुआ प्राकृतिक रबर लेटेक्स (दूसरा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	26 Aug 2017	26 अगस्त 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	IS 5430 : 1981 Ammonia Preserved Concentrated Natural Rubber Latex (First Revision)	आई एस 5430: 1981 अमोनिया संरक्षित किया हुआ प्राकृतिक रबर लेटेक्स (पहला संशोधन)
Date of Cancellation रद्द होने की तिथि	As on date	आज की तारीख़ में
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS/ISO 13485 : 2016 Medical Devices – Quality Management Systems – Requirements for Regulatory Purposes (First Revision)	आई एस/आई एस ओ 13485: 2016 चिकित्सा उपकरण – गुणवत्ता प्रबंधन प्रणाली – विनियामक के लिए आवश्यकताएँ उद्देश्य (पहला संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	26 August 2017	26 अगस्त 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	IS/ISO 13485 : 2003 Medical Devices – Quality Management Systems – Requirements for Regulatory Purposes	आई एस/आई एस ओ 13485: 2003 चिकित्सा उपकरण – गुणवत्ता प्रबंधन प्रणाली – विनियामक के लिए आवश्यकताएँ प्रयोजनों
Date of Cancellation रद्द होने की तिथि	As on date	आज की तारीख़ में

No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 1673 : 1984 Specification for Mild Steel Wire, Cold Heading Quality (Second Revision)	आई एस 9573 (भाग 2): 2017 द्रवित पेटोलियम गैस (एल.पी.जी.) के लिए रबड़-हौज-विशिष्ट भाग 2 घरेलू एवं व्यवसायिक उपयोग (चौथा पुनरीक्षण)
Date of Establishment संशोधन की सख्या और तिथि	5 Sept 2017	5 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date of Cancellation रद्द होने की तिथि	5 Sept 2017	5 सितंबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 7814 : 2005 Phosphor Bronze Sheet, Strip and Foil (Second Revision)	आई एस 7814: 2005 फॉस्फर कांस्य शीट, पट्टी और पन्नी (दूसरा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	5 Sept 2017	5 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date of Cancellation रद्द होने की तिथि	As on date	आज की तारीख़ में
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 12572 (Part 4) : 2016/ISO 10993-4 : 2002 Biological Evaluation of Medical Devices Part 4 Selection of Tests for Interactions with Blood (First Revision)	आई एस 12572 (भाग 4): 2016/आईएसओ 10993-4: 2002 जैविक चिकित्सा उपकरणों का मूल्यांकन भाग 4 टेस्ट के लिए चयन रक्त के साथ सहभागिता (प्रथम संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	5 Sept 2017	5 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date of Cancellation रद्द होने की तिथि	5 Sept 2017	5 सितंबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 12572 (Part 4) : 2016/ISO 10993-4 : 2002 Biological Evaluation of Medical Devices Part 4 Selection of Tests for Interactions with Blood (First Revision)	आई एस 12572 (भाग 4): 2016/आई एस ओ 10993-4: 2002 जैविक चिकित्सा उपकरणों का मूल्यांकन भाग 4 टेस्ट के लिए चयन रक्त के साथ सहभागिता (प्रथम संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	5 Sept 2017	5 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 2 September 2017	संशोधन नंबर 2 सितंबर 2017
Date of Cancellation रद्द होने की तिथि	5 Sept 2017	5 सितंबर 2017

No.,Year & Title of the Indian Standards Established भारतीय मानकोंकी संख्या, वर्ष एवं शीर्षक	IS/IEC 61730-1 : 2004 Photovoltaic (PV) Module Safety Qualification Part 1 Requirements for Construction	आई एस/आई ई सी 61730-1: 2004 फोटोवोल्टिक (पीवी) मॉड्यूल सुरक्षा योग्यता भाग 1 आवश्यकताएं निर्माण
Date of Establishment संशोधन की सख्या और तिथि	5 Sept 2017	5 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date of Cancellation रद्द होने की तिथि	5 Sept 2017	5 सितंबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS/IEC 61730-1 : 2004 Photovoltaic (PV) Module Safety Qualification Part 1 Requirements for Construction	आई एस/आई ई सी 61730-1: 2004 फोटोवोल्टिक (पीवी) मॉड्यूल सुरक्षा योग्यता भाग 1 आवश्यकताएं निर्माण
Date of Establishment संशोधन की सख्या और तिथि	5 Sept 2017	5 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 2 September 2017	संशोधन नंबर 2 सितंबर 2017
Date of Cancellation रद्द होने की तिथि	5 Sept 2017	5 सितंबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकोंकी संख्या, वर्ष एवं शीर्षक	IS/IEC 61730-2 : 2004 Photovoltaic (PV) Module Safety Qualification Part 2 Requirements for Testing	आई एस/आई ई सी 61730-2: 2004 फोटोवोल्टिक (पी वी) मॉड्यूल सुरक्षा योग्यता भाग 2 परीक्षण के लिए आवश्यकताएँ
Date of Establishment संशोधन की सख्या और तिथि	5 Sept 2017	14 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date of Cancellation रद्द होने की तिथि	5 Sept 2017	14 सितंबर 2017

No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 1254 : 2007 Corrugated Aluminium Sheet (Fourth Revision)	आई एस 1254: 2007 नालीदार एल्यूमीनियम शीट (चौथा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	14 Sept 2017	14 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 August 2017	संशोधन नंबर 1 अगस्त 2017
Date of Cancellation रद्द होने की तिथि	14 Sept 2017	14 सितंबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 4447 : 1994 Sodium Benzoate, Food Grade – Specification (First Revision)	आई एस 4447: 1994 सोडियम बेंजोएट, खाद्य ग्रेड – विशिष्टता (पहला संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	14 Sept 2017	14 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 3 August 2017	संशोधन नंबर 3 अगस्त 2017
Date of Cancellation रद्द होने की तिथि	13 Dec 2017	13 दिसंबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	277 : 2003 Galvanised Steel Sheets (Plain and Corrugated)—Specification (Sixth Revision)	277: 2003 जस्ती स्टील शीट्स (सादा और नालीदार) – विशिष्टता (छठा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	7 Sept 2017	7 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 5 August 2017	संशोधन नंबर 5 अगस्त 2017
Date of Cancellation रद्द होने की तिथि	7 Sept 2017	7 सितंबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकोंकी संख्या, वर्ष एवं शीर्षक	IS 9550 : 2001 Bright Steel Bars—Specification (First Revision)	आई एस 9550: 2001 ब्राइट स्टील बार्स- विशिष्टता (प्रथम संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	7 Sept 2017	7 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 August 2017	संशोधन नंबर 1 अगस्त 2017
Date of Cancellation रद्द होने की तिथि	7 Sept 2017	7 सितंबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 10748 : 2004 Hot-Rolled Steel Strip for Welded Tubes and Pipes– Specification (Second Revision)	आई एस 10748: 2004 हॉट-रोल्ड वेल्डेड ट्यूबों के लिए स्टील स्ट्रिप और पाइप्स विशिष्टता (दूसरा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	7 Sept 2017	7 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 2 August 2017	संशोधन संख्या 2 अगस्त 2017
Date of Cancellation रद्द होने की तिथि	6 Dec 2017	6 दिसंबर 2017

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THE NUMBERS

In December 2017, BIS held 31 sectional committee meetings, 100 new standards were formulated and 23 standards were revised. Besides, 53 draft standards were issued for wide circulation and 4 draft standards were finalized. A total of 170 standards were reviewed and 169 standards were reaffirmed. At the end of December 2017, a total of 19,145 standards were in force.

No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 9573 (Part 1) : 2017 Rubber Hose for Liquefied Petroleum Gas (LPG) – Specification Part 1 Industrial Application (Fourth Revision)	आई एस 9573 (भाग 1): 2017 रबर तरलीकृत पेट्रोलियम के लिए नली गैस (एलपीजी) – विशिष्टता भाग 1 औद्योगिक अनुप्रयोग (चौथा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	26 Sep 2017	26 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date of Cancellation रद्द होने की तिथि	26 Sep 2017	26 सितंबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 9573 (Part 2) : 2017 Rubber Hose for Liquefied Petroleum Gas (LPG) – Specification Part 2 Domestic and Commercial Application (Fourth Revision)	आईएस 9573 (भाग 2): 2017 रबर तरलीकृत पेट्रोलियम के लिए नली गैस (एलपीजी) – विशिष्टता भाग 2 घरेलू और वाणिज्यिक आवेदन (चौथा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	26 Sep 2017	26 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date of Cancellation रद्द होने की तिथि	27 Sep 2017	27 सितंबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 7285 (Part 2) : 2017 Refillable Seamless Steel Gas Cylinders – Specification Part 2 Quenched and Tempered Steel Cylinders with Tensile Strength Less Than 1100 MPa (112kgf/mm2) (Fourth Revision)	आई एस 7285 (भाग 2): 2017 रिफिल करने योग्य सीमलेस स्टील गैस सिलेंडर – विशिष्टता भाग 2 बुझा हुआ और टेम्पर्ड तन्यता के साथ स्टील सिलेंडर 1100 एम पी ए से कम ताकत (112 किग्रा/2 मिमी) (चौथा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	26 Sep 2017	26 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	IS 7285 (Part 2) : 2004 Refillable Seamless Steel Gas Cylinders – Specification Part 2 Quenched and Tempered Steel Cylinders with Tensile Strength Less Than 1100 MPa (112kgf/mm2) Third Revision)	आई एस 7285 (भाग 2): 2004 रिफिल करने योग्य सीमलेस स्टील गैस सिलेंडर – विशिष्टता भाग 2 बुझा हुआ और टेम्पर्ड तन्यता के साथ स्टील सिलेंडर शक्ति कम से कम 1100 एम पी ए (112 किग्रा/2 मिमी) तीसरा संशोधन)
Date of Cancellation रद्द होने की तिथि	As on date	आज की तारीख़ में
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 8737 : 2017 Valve Fittings for Use with Liquefied Petroleum Gas (LPG) Cylinders for More than 5 Litre Water Capacity – Specification (Second Revision)	आई एस 8737: 2017 वाल्व फिटिंग तरलीकृत के साथ उपयोग के लिए पेट्रोलियम गैस (एलपीजी) सिलेंडर 5 से अधिक लीटर पानी के लिए क्षमता – विशिष्टता (दूसरा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	26 Sep 2017	26 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	IS 8737 : 1995 Valve Fittings for use with Liquefied Petroleum Gas (LPG) Cylinders of More Than 5 Litre Water Capacity – Specification (First Revision)	आई एसै 8737: 1995 वाल्व फिटिंग तरलीकृत के साथ उपयोग के लिए पेट्रोलियम गैस (एलपीजी) सिलेंडर 5 लीटर पानी से अधिक क्षमता – विशिष्टता (पहली संशोधन)
Date of Cancellation रद्द होने की तिथि	As on date	आज की तारीख़ में

No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 383 : 2016 Coarse and Fine Aggregate for Concrete – Specification (Third Revision)	आई एस 383: 2016 मोटे और ललित कंक्रीट के लिए एकत्र – विशिष्टता (तीसरा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	26 Sep 2017	26 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 August 2017	संशोधन नंबर 1 अगस्त 2017
Date of Cancellation रद्द होने की तिथि	26 Sep 2017	26 सितंबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 1237 : 2012 Cement Concrete Flooring Tiles – Specification (Second Revision)	आई एस 1237: 2012 सीमेंट कंक्रीट फ्लोरिंग टाइलें – विशिष्टता (दूसरा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	26 Sep 2017	26 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 August 2017	संशोधन नंबर 1 अगस्त 2017
Date of Cancellation रद्द होने की तिथि	25 Dec 2017	25 दिसंबर, 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 11188 (Part 1) : 2014 Vault (Strong Room) Doors Part 1 Specification (Second Revision)	आई एस 11188 (भाग 1): 2014 तिजोरी (स्ट्रांग रूम) दरवाजे का हिस्सा 1 विशिष्टता (दूसरा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	26 Sep 2017	26 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 2 August 2017	संशोधन संख्या 2 अगस्त 2017
Date of Cancellation रद्द होने की तिथि	26 Sep 2017	26 सितंबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानको की संख्या, वर्ष एवं शीर्षक	IS 14429 : 1997 Braille Shorthand Machine – Specification	आई एस 14429: 1997 ब्रेल शॉर्टहैंड मशीन – विशिष्टता
Date of Establishment संशोधन की सख्या और तिथि	26 Sep 2017	26 सितंबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date of Cancellation रद्द होने की तिथि	25 Dec 2017	25 दिसंबर, 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 1893 (Part 1) : 2016 Criteria for Earthquake Resistant Design of Structures Part 1 General Provisions and Buildings (Sixth Revision)	आई एस 1893 (भाग 1): 2016 मानदंड भूकंप प्रतिरोधी के लिए संरचनाओं का डिज़ाइन भाग 1 सामान्य प्रावधान और इमारतें (छठा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017

No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 13920 : 2016 Ductile Design and Detailing of Reinforced – Concrete Structures Subjected to Seismic Forces – Code of Practice (First Revision)	आई एस 13920: 2016 डक्टाइल का डिज़ाइन और विवरण प्रबलित कंक्रीट संरचनाओं के अधीन भूकंपीय बल – संहिता अभ्यास (पहला संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 1734 (Part 1) : 1983 Method of Test for Plywood Part 1 Determination of Density and Moisture Content (Second Revision)	आई एस 1734 (भाग 1): 1983 विधि प्लाइवुड भाग 1 की परीक्षा घनत्व का निर्धारण और नमी सामग्री (दूसरा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 1734 (Part 9) : 1983 Method of Test for Plywood Part 9 Determination of Tensile Strength (Second Revision)	आई एस 1734 (भाग 9): 1983 विधि प्लाइवुड भाग 9 के लिए टेस्ट तन्यता का निर्धारण शक्ति (दूसरा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 9755 : 2016 Textiles – High Density Polyethylene (HDPE)/ Polypropylene (PP) Woven Sacks for Packing Fertilizers – Specification (Fifth Revision)	आई एस 9755: 2016 कपड़ा – उच्च घनत्व पॉलीथीन (एचडीपीई)/ पॉलीप्रोपाइलीन (पीपी) बुना उर्वरक पैकिंग के लिए बोरे – विशिष्टता (पांचवां संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS/ISO 105-B06 : 1998 Textiles – Tests for Colour Fastness Part B06 Colour Fastness and Ageing to Artificial Light at High Temperatures : Xenon ARC Fading Lamp Test	आई एस/आई एस ओ 105–बी 06: 1998 कपड़ा – रंग स्थिरता के लिए परीक्षण भाग बी06 रंग स्थिरता और उम्र बढ़ने पर कृत्रिम प्रकाश उच्च तापमानरू क्सीनन एआरसी फेडिंग लैंप टेस्ट
Date of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	IS 15203 : 2002 Textiles – Method of Test for Determination of Colour Fastness of Textile Materials to Artificial Light at High Temperatures – Xenon ARC Fading Lamp Test	आई एस 15203: 2002 कपड़ा – टेस्ट की विधि रंग का निर्धारण कपड़ा सामग्री का तेजी उच्च करने के लिए कृत्रिम प्रकाश तापमान – क्सीनन एआरसी लुप्त होती लैंप टेस्ट
Date of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS/ISO 10018 : 2012 Quality Management – Guidelines on People Involvement and Competence	आई एस/आई एस ओ 10018: 2012 गुणवत्ता प्रबंधन – दिशानिर्देश लोगों को शामिल करने पर और क्षमता
Date of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	NA	लागू नहीं
Date of Cancellation रद्द होने की तिथि	NA	लागू नहीं
No.,Year & Title of the Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 10633 : 2017 Vanaspati – Specification (Third Revision)	आई एस 10633: 2017 वनस्पति – विशिष्टता (तीसरा संशोधन)
Date of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. & Year of the Amendment संशोधन की तिथि एवं वर्ष	IS 10633 : 1999 Vanaspati – Specification (Second Revision)	आई एस 10633: 1999 वनस्पति – विशिष्टता (दूसरा संशोधन)
Date of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017

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THE PARTNERSHIPS

At the end of December 2017, BIS is a "P" member (Participating) in 436 technical committees of ISO and 87 technical committees of IEC. BIS is an "O" member (Observer) in 217 technical committees of ISO and 73 technical committees of IEC.

No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 10959 : 2017/ISO 6927 : 2012 Glossary of Terms for Sealants for Building Purposes (First Revision)	आई एस 10959: 2017/ आई एस ओ 6927: 2012 शब्दावली शर्तें बिल्डिंग के लिए सीलेंट के लिए उद्देश्य (पहला संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 10959 : 1984/ISO 6927 : 1981 Glossary of Terms for Sealants for Building Purposes	आई एस 10959: 1984/ आई एस ओ 6927: 1981 की शब्दावली बिल्डिंग के लिए सीलेंट के लिए प्रयोजनों
Date Of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS/ISO 10993-17 : 2002 Biological Evaluation of Medical Devices Part 17 Establishment of Allowable Limits for Leachable Substances	आई एस/आई एस ओ 10993-17: 2002 जैविक मूल्यांकन चिकित्सा उपकरण भाग 17 स्वीकार्य की स्थापना छोड़ देने की सीमा पदार्थ
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	NA	लागू नहीं
Date Of Cancellation रद्द होने की तिथि	NA	लागू नहीं
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 15171 : 2017 Guidelines for Establishing and Implementing 5-S Concept (First Revision)	आई एस 15171: 2017 दिशानिर्देश स्थापना के लिए और 5-एस कॉन्सेप्ट को लागू करना (प्रथम संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 15171 : 2002 Guidelines for Establishing and Implementing 5-S Concept	आई एस 15171: 2002 दिशानिर्देश स्थापना के लिए और 5-एस कॉन्सेप्ट लागू करना
Date Of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 16205 (Part 1) : 2017 Conduit System for Cable Management Part 1 General Requirements	आई एस 16205 (भाग 1): 2017 केबल के लिए नाली प्रणाली प्रबंधन भाग 1 सामान्य आवश्यकताएँ
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 14930 (Part 1) : 2001 Conduit Systems for Electrical Installations Part 1 General Requirements	आई एस 14930 (भाग 1): 2001 विद्युत के लिए नाली सिस्टम प्रति ठान भाग 1 सामान्य आवश्यकताएँ
Date Of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 16206 : 2017 Safety for Gas Fired Furnaces	आई एस 16206: 2017 गैस के लिए सुरक्षा निकाल दिया फर्नेस
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	NA	लागू नहीं
Date Of Cancellation रद्द होने की तिथि	NA	लागू नहीं

No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 16563 (Part 3) : 2017/ISO 9355-3 : 2006 Ergonomic Requirements for the Design of Displays and Control Actuators Part 3 Control Actuators	आई एस 16563 (भाग 3): 2017/आई एस ओ 9355-3: 2006 एर्गोनोमिक डिज़ाइन के लिए आवश्यकताएँ प्रदर्शन और नियंत्रण के भाग 3 नियंत्रण एक्चुएटर
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	NA	लागू नहीं
Date Of Cancellation रद्द होने की तिथि	NA	लागू नहीं
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 16570 : 2017/ ISO 11428 : 1996 Ergonomics – Visual Danger Signals – General Requirements, Design and Testing	आई एस 16570: 2017/ आई एस ओ 11428: 1996 एर्गोनॉमिक्स – विजुअल खतरे के संकेत – सामान्य आवश्यकताएँ, डिज़ाइन और परिक्षण
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	NA	लागू नहीं
Date Of Cancellation रद्द होने की तिथि	NA	लागू नहीं
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 16635 : 2017/ ISO 10319 : 2015 Geosynthetics – Wide-Width Tensile Test	आई एस 16635: 2017/ आईएसओ 10319: 2015 जियोसिंथेटिक्स – वाइड – चौड़ाई तन्यता परीक्षण
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 13162 (Part 5) : 1992 Geotextiles – Methods of Test Part 5 Determination of Tensile Properties Using a Wide Width Strip	आई एस 13162 (भाग 5): 1992 भू टेक्सटाइल – के तरीके टेस्ट भाग 5 का निर्धारण एक का उपयोग कर तन्यता गुण चौड़ी चौड़ाई पट्टी
Date Of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017

NEWS YOU CAN USE

THE PROCESSES

ISO 2017-1:2005 establishes requirements to ensure the appropriate exchange of information among users, manufacturers and suppliers of vibration sources and receivers regarding the application of isolation systems. The sources and the receivers can be machines, structures, people or sensitive equipment subjected to vibrations and shocks generated by machines, railways, road traffic etc., where the vibrations are usually transmitted through the ground to a building. ISO 2017-1:2005 is applicable to the use of new products (source or receiver) and can also be applied to previously installed products.

No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS/IEC 60079-2 : 2014 Explosive Atmospheres Part 2 Equipment Protection by Pressurized Enclosure "p" (First Revision)	आई एस/आई ई सी 60079-2: 2014 विस्फोटक वायुमंडल भाग द्वारा 2 उपकरण संरक्षण दबाव डाला "पी"(प्रथम संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS/IEC 60079-2 : 2007 Explosive Atmospheres Part 2 Equipment Protection by Pressurized Enclosure "p"	आई एस/आई ई सी 60079-2: 2007 विस्फोटक वायुमंडल भाग द्वारा 2 उपकरण संरक्षण दबाव डाला
Date Of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 109 : 2017 Specification for Ready Mixed Paint, Finishing, Priming, Plaster to Indian Standard Colour No. 361 Light Stone and No.631 Light Grey, White and Off-White (Second Revision)	आई एस 109: 2017 के लिए विशिष्टता तैयार मिश्रित पेंट, फिनिशिंग, प्राइमिंग, प्लास्टर टू इंडियन मानक रंग संख्या 361 लाइट स्टोन और छव.631 लाइट ग्रे, सफेद और बंद- सफेद (दूसरा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 109 : 1968 Specification for Ready Mixed Paint, Finishing, Priming, Plaster to Indian Standard Colour No. 361 Light Stone and No.631 Light Grey, White and Off- White (First Revision)	आई एस 109: 1968 के लिए विशिष्टता तैयार मिश्रित पेंट, फिनिशिंग, प्राइमिंग, प्लास्टर टू इंडियन मानक रंग संख्या 361 लाइट स्टोन और संख्या 631 लाइट ग्रे, सफेद और बंद- सफेद (प्रथम संशोधन)
Date Of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 142 : 2017 Specification for Ready Mixed Paint, Exterior, Petrol Resisting, Stoving (Second Revision)	आई एस 142: 2017 के लिए विशिष्टता तैयार मिश्रित पेंट, बाहरी, पेट्रोल रेसिस्टिंग, स्टोविंग (दूसरा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 142 : 1980 Specification for Ready Mixed Paint, Exterior, Petrol Resisting, Stoving (First Revision)	आई एस 142: 1980 के लिए विशिष्टता तैयार मिश्रित पेंट, बाहरी, पेट्रोल रेसिस्टिंग, स्टोविंग (प्रथम संशोधन)
Date Of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 151 : 2017 Ready Mixed Paint, Spraying, Finishing, Stoving, Enamel for General Purposes, Colour as Required—Specification (Second Revision)	आई एस 151: 2017 रेडी मिक्स्ड पेंट, छिड़काव, फिनिशिंग, स्टोविंग, सामान्य उपयोग के लिए तामचीनी, रंग में आवश्यक - विशिष्टता (दूसरा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 151 : 1985 Ready Mixed Paint, Spraying, Finishing, Stoving, Enamel for General Purposes, Colour as Required—Specification (First Revision)	आई एस 151: 1985 रेडी मिक्स्ड पेंट, छिड़काव, फिनिशिंग, स्टोविंग, सामान्य उपयोग के लिए तामचीनी, रंग में आवश्यक- विशिष्टता (पहला संशोधन)
Date Of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 1448 (Part 149) : 2017/ISO 12156-1 : 2006 Methods of Test for Petroleum and its Products (Part 149) Diesel Fuel—Assessment of Lubricity Using the High-Frequency Reciprocating Rig (HFRR)—Test Method (First Revision)	आई एस 1448 (भाग 149): 2017/आई एस ओ 12156-1: 2006 के तरीके पेट्रोलियम और इसके लिए परीक्षण उत्पाद (भाग 149) डीजल ईंधन- चिकनाई का आकलन हाई-फ्रीक्वेंसी का उपयोग करना घूमकर रिग (एच एफ आर आर) - टेस्ट विधि (पहला संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 1448 (Part 149) : 2004/ISO 12156-1 : 1997 Methods of Test for Petroleum and its Products (Part 149) Diesel Fuel— Assessment of Lubricity Using the High-Frequency Reciprocating Rig (HFRR)—Test Method	आई एस 1448 (भाग 149): 2004/आई एस ओ 12156-1: 1997 तरीके पेट्रोलियम के लिए और इसके उत्पाद (भाग 149) डीजल ईंधन- आकलन उच्च का उपयोग कर चिकनाई फ्रीक्वेंसी रेसिप्रोकेटिंग रिग (एच एफ आर आर) टेस्ट विधि
Date Of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 1448 (Part 160) : 2017/ISO 20846 : 2011 Methods of Test for Petroleum and its Products (Part 160) Determination of Sulphur Content of Automotive Fuels—Ultraviolet Fluorescence Method	आई एस 1448 (भाग 160): 2017/आई एस ओ 20846: 2011 टेस्ट के तरीके पेट्रोलियम और उसके उत्पादों के लिए (भाग 160) निर्धारण सल्फर की सामग्री मोटर वाहन ईंधन - पराबैंगनी प्रतिदीप्ति विधि
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	NA	लागू नहीं
Date Of Cancellation रद्द होने की तिथि	NA	लागू नहीं
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 3537 : 2017 Ready Mixed Paint, Finishing, Interior, for General Purposes, to Indian Standard Colours—Specification (First Revision)	आई एस 3537: 2017 रेडी मिक्स्ड पेंट, फिनिशिंग, इंटीरियर, सामान्य उद्देश्यों के लिए, को भारतीय मानक क्षेत्र- विशिष्टता (प्रथम संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 3537 : 1996 Ready Mixed Paint, Finishing, Interior, for General Purposes, to Indian Standard Colours—Specification	आई एस 3537: 1996 रेडी मिक्स्ड पेंट, फिनिशिंग, इंटीरियर, सामान्य उद्देश्यों के लिए, भारतीय मानक के रंगो में आवश्यक - विशिष्टता
Date Of Cancellation रद्द होने की तिथि	4 Oct 2017	4 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS/ISO 6480 : 1983 Conditions of Acceptance for Horizontal Internal Broaching Machines—Testing of Accuracy	आई एस/आई एस ओ 6480: 1983 के लिए स्वीकृति की शर्तें क्षैतिज आंतरिक कोचिंग मशीनें - शुद्धता का परीक्षण
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	NA	लागू नहीं
Date Of Cancellation रद्द होने की तिथि	NA	लागू नहीं

No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 10322 (Part 5/Sec 9) : 2017/IEC 60598-2-21 : 2014 Luminaries Part 5 Particular Requirements Section 9 Rope Lights	आई एस 10322 (भाग 5/सेक 9): 2017/60598-2-21: 2014 ल्यूमिनेयर भाग 5 विशेष आवश्यकताएँ धारा 9 रस्सी दीपक
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	NA	लागू नहीं
Date Of Cancellation रद्द होने की तिथि	NA	लागू नहीं
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 13234 (Part 4) : 2017/IEC/TR 60909-4 : 2000 Short-Circuit Currents in Three-Phase a.c Systems Part 4 Examples for the Calculation of Short-Circuit Currents	आई एस 13234 (भाग 4): 2017 / आई ई सी / टी आर 60909-4: 2000 शॉर्ट-सर्किट तीन-चरण ब में धाराओं सिस्टम भाग 4 के उदाहरण लघु की गणना - सर्किट करंट
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	NA	लागू नहीं
Date Of Cancellation रद्द होने की तिथि	NA	लागू नहीं
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 16205 (Part 21) : 2017 Conduit Systems for Cable Management Part 21 Particular Requirements Rigid Conduit Systems	आई एस 16205 (भाग 21): 2017 केबल के लिए नाली सिस्टम प्रबंधन भाग 21 विशेष आवश्यकताओं कठोर नाली सिस्टम
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	NA	लागू नहीं
Date Of Cancellation रद्द होने की तिथि	NA	लागू नहीं
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 16205 (Part 22) : 2017 Conduit Systems for Cable Management Part 22 Particular Requirements—Pliable Conduit Systems	आई एस 16205 (भाग 22): 2017 केबल के लिए नाली सिस्टम प्रबंधन भाग 22 विशेष आवश्यकताएं - व्यवहार्य नाली प्रणाली
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	NA	लागू नहीं
Date Of Cancellation रद्द होने की तिथि	NA	लागू नहीं
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 16205 (Part 23) : 2017 Conduit Systems for Cable Management Part 23 Particular Requirements Flexible Conduit Systems	आई एस 16205 (भाग 23): 2017 केबल के लिए नाली सिस्टम प्रबंधन भाग 23 विशेष आवश्यकताओं लचीली नाली प्रणाली
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	NA	लागू नहीं
Date Of Cancellation रद्द होने की तिथि	NA	लागू नहीं
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 16244 : 2017/ IEC 62430: 2009 Environmentally Conscious Design for Electrical and Electronic Products	आई एस 16244: 2017/ आई इ सी 62430: 2009 पर्यावरण की दृष्टि से के लिए जागरूक डिज़ाइन इलेक्ट्रिकल और इलेक्ट्रॉनिक उत्पाद
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	NA	लागू नहीं
Date Of Cancellation रद्द होने की तिथि	NA	लागू नहीं
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 16508 : 2017 Swimming Pool for Public—Code of Safety	आई एस 16508: 2017 तैराकी पब्लिक के लिए पूल-का कोड सुरक्षा
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	NA	लागू नहीं
Date Of Cancellation रद्द होने की तिथि	NA	लागू नहीं
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 16573 : 2017 Intumescent Fire Retardant Paint (Water Based)—Specification	आई एस 16573: 2017 इंटमसेन्ट फायर रिटार्डेंट पेंट (पानी आधारित) - विशिष्टता
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	NA	लागू नहीं
Date Of Cancellation रद्द होने की तिथि	NA	लागू नहीं

NEWS YOU CAN USE

INTERACTIVE SESSION

An interactive Session on Technologies for Housing, organized by Ministry of Housing & Urban Affairs (MoH&UA) and Building Materials and Technology Promotion Council (BMTPC) was held on 18 January, at New Delhi. The session was chaired by Additional Secretary (MoH&UA). The bottlenecks in scaling up the existing new / alternative construction technologies were discussed with all stakeholders including technology providers for precast technology and monolithic construction technology. The availability of various Indian standards on precast technology and provisions in NBC 2016 for using any new/alternative technology after assessing their suitability was informed by BIS.

No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 191 : 2007 Copper – Specification (Fourth Revision)	191: 2007 कॉपर – विशिष्टता (चौथा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	14 Sept 2017	14 सितंबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date Of Cancellation रद्द होने की तिथि	As on date	आज की तारीख़ में
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 1660 : 2009 Wrought Aluminium Utensils – Specification (First Revision)	आई एस 1660: 2009 गढ़ा एल्युमीनियम के बर्तन – विशिष्टता (पहला संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 July 2017	संशोधन नंबर 1 जुलाई 2017
Date Of Cancellation रद्द होने की तिथि	3 Jan 2018	3 जनवरी 2018
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	Is 3196 (Part 1) : 2013 Welded Low Carbon Steel Gas Cylinders Exceeding 5 Litres Water Capacity for Low Pressure Liquefiable Gases Part 1 Cylinders for Liquefied Petroleum Gas (LPG) – Specification (Sixth Revision)	आई एस 3196 (भाग 1): 2013 है वेल्डेड कम कार्बन स्टील गैस सिलेंडर 5 से अधिक कम के लिए लीटर पानी की क्षमता दबाव द्रवीभूत गैसों भाग 1 लिक्विड के लिए सिलेंडर पेट्रोलियम गैस (एलपीजी) – विशिष्टता (छठा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	Amendment No. 2 July 2017	2 जुलाई 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	4 Oct 2017	संशोधन नंबर 4 अक्टूबर 2017
Date Of Cancellation रद्द होने की तिथि	3 Jan 2018	3 जनवरी 2018
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 3196 (Part 2) : 2006 Welded Low Carbon Steel Cylinders Exceeding 5 Litre Water Capacity for Low Pressure Liquefiable Gases Part 2 Cylinders for Liquefiable Non-Toxic Gases Other Than LPG – Specification (Fifth Revision)	आई एस 3196 (भाग 2): 2006 वेल्डेड कम कार्बन स्टील सिलेंडर 5 लीटर पानी से अधिक कम दबाव की क्षमता तरलीकृत गैसें भाग 2 तरलीकृत गैर के लिए सिलेंडर विषाक्त गैसों के अलावा अन्य एलपीजी – विशिष्टता (पांचवां संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	Amendment No. 3 July 2017	संशोधन संख्या 3 जुलाई 2017
Date Of Cancellation रद्द होने की तिथि	3 Jan 2018	3 जनवरी 2018

No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 3087 : 2005 Particle Boards of Wood and Other Lignocellulosic Materials (Medium Density) for General Purposes– Specification (Second Revision)	आई एस 3087: 2005 लकडी एवं पौध्य शुष्क पदार्थ के कण बोर्ड (मध्यम घनत्व) सामान्य के लिए प्रयोजनों–विशिष्टता (दूसरा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	Amendment No. 4 September 2017	संशोधन संख्या 4 सितंबर 2017
Date Of Cancellation रद्द होने की तिथि	As on date	आज की तारीख़ में
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	S 12406 : 2003 Medium Density Fibre Boards for General Purpose– Specification (First Revision)	आई एस 12406: 2003 मीडियम घनत्व फाइबर बोर्ड सामान्य प्रयोजन के लिए विशिष्टता (पहला संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	Amendment No. 4 September 2017	संशोधन संख्या 4 सितंबर 2017
Date Of Cancellation रद्द होने की तिथि	As on date	आज की तारीख़ में
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 14587 : 1998 Prelaminated Medium Density Fibre Board– Specification	आई एस 14587: 1998 प्रीलैमिनेटेड मध्यम सघनता वाला फायरबोर्ड – विशिष्टता
Date Of Establishment संशोधन की सख्या और तिथि	4 Oct 2017	4 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	Amendment No. 8 September 2017	संशोधन संख्या 8 सितंबर 2017
Date Of Cancellation रद्द होने की तिथि	As on date	आज की तारीख़ में
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 1893 (Part 4) : 2015 Criteria for Earthquake Resistant Design of Structures Part 4 Industrial Structures Including Stack-Like Structures (First Revision)	आई एस 1893 (भाग 4): 2015 मान-ड भूकंप प्रतिरोधी के लिए संरचनाओं का डिज़ाइन भाग 4 औद्योगिक संरचनाएं शामिल हैं स्टैक-लाइक स्ट्रक्चर्स (पहला संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	12 Oct 2017	12 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date Of Cancellation रद्द होने की तिथि	12 Oct 2017	12 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 15027 (Part 10) : 2001/ISO 6196-10 : 1996 Micrographics – Vocabulary Part 10 Index	आई एस 15027 (भाग 10): 2001 / आई एस ओ 6196-10: 1996 माइक्रोग्राफ – शब्दावली भाग 10 सूचकांक
Date Of Establishment संशोधन की सख्या और तिथि	12 Oct 2017	12 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	Amendment No. 1 September 2017	संशोधन नंबर 1 सितंबर 2017
Date Of Cancellation रद्द होने की तिथि	12 Oct 2017	12 अक्टूबर 2017

No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 14756 : 2017 Stainless Steel Cookware – Specification (First Revision)	आई एस 14756: 2017 स्टेनलेस स्टील खाना पकाने के बर्तन – विशिष्टता (प्रथम संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	12 Oct 2017	12 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 14756 : 2000 Stainless Steel Cooking Utensils – Specification	14756: 2000 स्टेनलेस स्टील खाना पकाने के बर्तन – विशिष्टता
Date Of Cancellation रद्द होने की तिथि	As on date	आज की तारीख़ में
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS/ISO 105-B04 : 1994 Textiles-Tests for Colour Fastness to Artificial Weathering: Xenon Arc Fading Lamp Test	आई एस/आई एस ओ 105-बी04: 1994 कपड़ा-रंग स्थिरता के लिए टेस्ट कृत्रिम मौसमः क्सीनन आर्क फेडिंग लैंप टेस्ट
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 6152 : 1985 Methods of Determination of Colour Fastness of Textile Materials to Weathering by Xenon Arc Lamp (First Revision)	आई एस 6152: 1985 के तरीके रंग का निर्धारण कपड़ा सामग्री का तेजी जेनन आर्क द्वारा अपक्षय के लिए लैंप (पहला संशोधन)
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 1350 (Part 2) : 2017/ ISO 1928 : 2009 Methods of Test for Coal and Coke Part 2 Determination of Gross Calorific Value by the Bomb Calorific Method and Calculation of Net Calorific Value (Second Revision)	आई एस 1350 (भाग 2): 2017 / आई एस ओ 1928: 2009 के तरीके कोयला और कोक के लिए टेस्ट भाग 2 का निर्धारण सकल कैलोरी मान द्वारा बम कैलोरी विधि और शुद्ध कैलोरी की गणना मान (दूसरा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 1350 (Part 2) : 1970 Methods of Test for Coal and Coke Part 2 Determination of Calorific Value (First Revision)	आई एस 1350 (भाग 2): 1970 कोयले के लिए टेस्ट के तरीके और कोक भाग 2 का निर्धारण कैलोरी मान (पहला संशोधन)
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकोंकी संख्या, वर्ष एवं शीर्षक	IS 1448 (Part 52) : 2017/ISO 2176 : 1995 Methods of Test for Petroleum and its Products [P : 52] Drop Point (Second Revision)	आई एस 1448 (भाग 52): 2017 / आई एस ओ 2176: 1995 के तरीके पेट्रोलियम और इसके लिए परीक्षण उत्पाद पीः 52, ड्रoप प्वाइंट (दूसरा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 1448 (Part 52) : 1971 Methods of Test for Petroleum and its Products [P : 52] Drop Point (First Revision)	आई एस 1448 (भाग 52): 1971 पेट्रोलियम के लिए टेस्ट के तरीके और उसके उत्पाद पीः 52, ड्रoप बिंदु (पहला संशोधन)
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 1448 (Part 54) : 2017 Methods of Test for Petroleum and its Products [P : 54] Determination of Phosphorus Content—Quinoline Phosphomolybdate Method (Third Revision)	आई एस 1448 (भाग 54): 2017 पेट्रोलियम के लिए टेस्ट के तरीके और उसके उत्पाद पीः 54, फास्फोरस का निर्धारण सामग्री-क्विनोलिन फास्फोमोलीबडेट विधि (तीसरा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 1448 (Part 54) : 2007/ISO 4265 : 1986 Methods of Test for Petroleum and its Products [P : 54] Petroleum Products—Lubricating Oils and Additives—Determination of Phosphorous Content—Quinoline Phosphomolybdate Method (Second Revision)	आई एस 1448 (भाग 54): 2007 / आई एस ओ 4265: 1986 के तरीके पेट्रोलियम और इसके लिए परीक्षण उत्पाद पीः 54, पेट्रोलियम उत्पाद-चिकनाई देने वाला तेल और उसके परिशिष्ट – निर्धारण फास्फोरस की मात्रा क्विनोलिन फoस्फोमोलीबडेट विधि (दूसरा संशोधन)
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 6792 : 2017/ IEC 60156 : 1995 Insulating Liquids—Determination of the Breakdown Voltage at Power Frequency—Test Method (Second Revision)	आई एस 6792: 2017 / आई इ सी 60156: 1995 तरल पदार्थ इन्सुलेट का निर्धारण पावर में ब्रेकडाउन वोल्टेज फ्रीक्वेंसी – टेस्ट विधि (दूसरा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 6792 : 1992 Method for Determination of Scouring Loss in Silk Textile Materials (First Revision)	आई एस 6792: 1992 विधि है दस्त का निर्धारण सिल्क वस्त्र सामग्री में नुकसान (प्रथम संशोधन)
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 7016 (Part 3/Sec 1) : 2017/ISO 4674-1 : 2003 Methods of Test for Coated and Treated Fabrics Part 3 Determination of Tear Resistance Section 1 Constant Rate of Tear Methods (Second Revision)	आई एस 7016 (भाग 3/ सेक 1): 2017/आई एस ओ 4674-1: 2003 के तरीके लेपित और इलाज के लिए परीक्षण कपड़े भाग 3 निर्धारण आंसू प्रतिरोध अनुभाग 1 आँसू की लगातार दर तरीके (दूसरा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 7016 (Part 3) : 1981 Methods of Test for Coated and Treated Fabrics Part 3 Determination of Tear Strength (First Revision)	आई एस 7016 (भाग 3): 1981 लेपित के लिए टेस्ट के तरीके और इलाज कपड़े हिस्सा है 3 आँसू का निर्धारण शक्ति (पहला संशोधन)
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017

No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 8383 : 2017/ISO 2942 : 2004 Hydraulic Fluid Power—Filter Elements—Verification of Fabrication Integrity and Determination of the First Bubble Point (Second Revision)	आई एस 8383: 2017/ आई एस ओ 2942: 2004 हाइड्रोलिक द्रव शक्ति- फिल्टर तत्व कृ सत्यापन निर्माण की वफादारी और का निर्धारण पहला बबल प्वाइंट (दूसरा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 6792 : 1992 Method for Determination of Scouring Loss in Silk Textile Materials (First Revision)	आई एस 6792: 1992 विधि दस्त का निर्धारण सिल्क वस्त्र सामग्री में नुकसान हेतु (प्रथम संशोधन)
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 7016 (Part 3/Sec 1) : 2017/ISO 4674-1 : 2003 Methods of Test for Coated and Treated Fabrics Part 3 Determination of Tear Resistance Section 1 Constant Rate of Tear Methods (Second Revision)	आई एस 7016 (भाग 3/ सेक 1): 2017/आई एस ओ 4674-1: 2003 के तरीके लेपित और इलाज के लिए परीक्षण कपड़े भाग 3 निर्धारण आंसू प्रतिरोध अनुभाग 1 आँसू की लगातार दर तरीके (दूसरा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 7016 (Part 3) : 1981 Methods of Test for Coated and Treated Fabrics Part 3 Determination of Tear Strength (First Revision)	आई एस 7016 (भाग 3): 1981 लेपित के लिए टेस्ट के तरीके और इलाज कपड़े हिस्सा है 3 आँसू का निर्धारण शक्ति (पहला संशोधन)
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 8383 : 2017/ISO 2942 : 2004 Hydraulic Fluid Power—Filter Elements—Verification of Fabrication Integrity and Determination of the First Bubble Point (Second Revision)	आई एस 8383: 2017/ आई एस ओ 2942: 2004 हाइड्रोलिक द्रव शक्ति- फिल्टर तत्व कृसत्यापन निर्माण की वफादारी और पहला बबल प्वाइंट का निर्धारण (दूसरा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 8383 : 2000 Hydraulic Fluid Power—Filter Elements— Verification of Fabrication Integrity and Determination of the First Bubble Point (First Revision)	आई एस 8383: 2000 हाइड्रोलिक द्रव शक्ति- फिल्टर तत्व- का सत्यापन निर्माण अखंडता और पहले बबल प्वाइंट का निर्धारण (पहला संशोधन)
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकोंकी संख्या, वर्ष एवं शीर्षक	IS 10069 : 2017/ISO 4409 : 2007 Hydraulic Fluid Power—Positive Displacement Pumps, Motors and Integral Transmission—Methods of Testing and Presenting Basic Steady State Performance (Second Revision)	आई एस 10069: 2017/ आई एस ओ 4409: 2007 हाइड्रोलिक द्रव बिजली- सकारात्मक विस्थापन पंप, मोटर्स और इंटीग्रल ट्रांसमिशन- के तरीके परीक्षण और प्रस्तुत करना मूल स्थिर राज्य प्रदर्शन (दूसरा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथी	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 10069 : 1992/ISO 4409 : 1986 Hydraulic Fluid Power— Positive Displacement Pumps, Motors and Integral Transmissions—Determination of Steady State Performance (First Revision)	आई एस 10069: 1992/ आई एस ओ 4409: 1986 हाइड्रोलिक द्रव शक्ति- सकारात्मक विस्थापन पंप, मोटर्स और इंटीग्रल प्रसारण-निर्धारण स्टेट स्टेट प्रदर्शन का (प्रथम संशोधन)
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकोंकी संख्या, वर्ष एवं शीर्षक	IS 11918 : 2017/ISO 5546 : 2010 Caseins and Caseinates—Determination of pH (Reference Method) (First Revision)	आई एस 11918: 2017/ आई एस ओ 5546: 2010 के मामले और मामले- का निर्धारण पीएच (संदर्भ विधि) (प्रथम संशोधन)
Date Of Establishment संशोधन की सख्या और तिथी	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 11918 : 1987/ISO 5546 : 1978 Method for Determination of pH in Caseins and Caseinates (Reference Method)	आई एस 11918: 1987/ आईएसओ 5546: 1978 के लिए विधि में पीएच का निर्धारण प्रकरण और मामले (संदर्भ विधि)
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017

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No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 11918 : 2017/ISO 5546 : 2010 Caseins and Caseinates—Determination of pH (Reference Method) (First Revision)	आई एस 11918: 2017: आई एस ओ 5546: 2010 मामले और मामले-पीएच का निर्धारण (संदर्भ विधि) (प्रथम संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 11918 : 1987/ISO 5546 : 1978 Method for Determination of pH in Caseins and Caseinates (Reference Method)	आई एस 11918: 1987 आई एस ओ 5546: 1978 मामलों और मामलों में पीएच के निर्धारण के लिए विधि (संदर्भ विधि)
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 12333 : 2017/ISO 6731 : 2010 Milk, Cream and Evaporated Milk–Determination of Total Solids Content (Reference Method) (Second Revision))	आई एस १२३३३: 2017 आई एस ओ ६३१३१: २०१० दूध, क्रीम और वाष्पित दूध-कुल ठोस पदार्थों का निर्धारण (संदर्भ विधि) (दूसरा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 12333 : 1997/ISO 6731 : 1989 Milk, Cream and Evaporated Determination of Total Solids Content (Reference Method) (First Revision)	आई एस 12333: 1997 आई एस ओ 6731: 1989 दूध, क्रीम और सुखाया हुआ कुल ठोस सामग्री का निर्धारण (संदर्भ विधि) (पहला संशोधन)
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 12422 : 2017/ IEC 61125 : 1992 Unused Hydrocarbon Based Insulating Liquids— Test Methods for—Evaluating the Oxidation Stability (First Revision)	आई एस 12422: 2017 आई एस ओ 61125: 1992 अप्रयुक्त हाइड्रोकार्बन आधारित इन्सुलेट तरल पदार्थ-परीक्षण विधियाँ- आक्सीकरण स्थिरता का मूल्यांकन (पहला संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 12422 : 1988 Test Method for Oxidation Stability of Inhibited Mineral Insulating Oils	आई एस 12422: 1988 टेस्टेड मेथड इंसुलेटिंग आयल्स के आक्सीकरण स्थिरता के लिए टेस्ट विधि
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 13360 (Part 5/ Sec 2) : 2017/ISO 527-2 : 2012 Plastics–Methods of Testing Part 5 Mechanical Properties Section 2 Determination of Tensile Properties–Test Conditions for Molding and Extrusion Plastics (First Revision)	आई एस 13360 (भाग 5 आई एस ओ 2): 2017 / आई एस ओ 527-2: 2012 प्लास्टिक-परीक्षण के तरीके भाग 5 यांत्रिक गुण खंड 2 मोल्डिंग और बाहर निकालना प्लास्टिक के लिए तन्य गुण-परीक्षण की स्थिति का निर्धारण (पहला संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 13360 (Part 5/ Sec 2) : 1996/ISO 527-2 : 1993 Plastics–Methods of Testing Part 5 Mechanical Properties Section 2 Determination of Tensile Properties–Test Conditions for Molding and Extrusion Plastics	आई एस 13360 (भाग 5 आई एस ओ 2): 1996 आई एस ओ 527-2: 1993 प्लास्टिक-परीक्षण के तरीके भाग 5 यांत्रिक गुण खंड 2 मोल्डिंग और बाहर निकालना प्लास्टिक के लिए तन्य गुण-परीक्षण की स्थिति का निर्धारण
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No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 13360 (Part 5/ Sec 5) : 2017/ISO 179-1 : 2010 Plastics–Methods of Testing Part 5 Mechanical Properties Section 5 Determination of Chirpy Impact Properties– Non-Instrumented Impact Test (First Revision)	आई एस 13360 (भाग 5 ६ आई एस ओ 5): 2017 आई एस ओ 179-1रू 2010 प्लास्टिक-परीक्षण के तरीके भाग 5 यांत्रिक गुण खंड 5 चिरकारी प्रभाव गुण का निर्धारण-गैर-साधन प्रभाव परीक्षण (प्रथम संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 13360 (Part 5/ Sec 5) : 1996/ISO 179 : 1993 Plastics–Methods of Testing Part 5 Mechanical Properties Section 5 Determination of Chirpy Impact Strength	आई एस 13360 (भाग 5 आई एस ओ 5): 1996 आई एस ओ 179: 1993 प्लास्टिक- परीक्षण के तरीके भाग 5 यांत्रिक गुण धारा 5 चिरकारी प्रभाव शक्ति का निर्धारण
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No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 13360 (Part 5/ Sec 12) : 2017/ISO 2039-1 : 2001 Plastics–Methods of Testing Part 5 Mechanical Properties Section 12 Determination of Hardness–Ball Indentation Method (First Revision)	आई एस 13360 (भाग 5 आई एस ओ 12): 2017आई एस ओ 2039-1- 2001 प्लास्टिक-परीक्षण के तरीके भाग 5 यांत्रिक गुण धारा 12 कठोरता का निर्धारण-गेंद संकेत विधि (पहला संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 13360 (Part 5/Sec 12) : 1992 Plastics–Methods of Testing Part 5 Mechanical Properties Section 12 Determination of Hardness-Ball Indentation Method	आई एस 13360 (भाग 5 आई एस ओ 12): 1992 प्लास्टिक-परीक्षण के तरीके भाग 5 यांत्रिक गुण धारा 12 कठोरता-गेंद प्रमाणीकरण विधि का निर्धारण
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 13360 (Part 5/ Sec 22) : 2017/ISO 9352 : 2012 Plastics–Methods of Testing Part 5 Mechanical Properties Section 22 Determination of Resistance to Wear by Abrasive Wheels (First Revision)	आई एस 13360 (भाग 5 आई एस ओ 22): 2017 आई एस ओ 9352: 2012 प्लास्टिक-परीक्षण के तरीके भाग 5 यांत्रिक गुण धारा 22 घर्षण पहियों द्वारा पहनने के लिए प्रतिरोध का निर्धारण (पहला संशोधन)
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No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 13360 (Part 5/ Sec 22) : 1999/ISO 9352 : 1995 Plastics–Methods of Testing Part 5 Mechanical Properties Section 22 Determination of Resistance to Wear by Abrasive Wheels	आई एस 13360 (भाग 5 आई एस ओ 22): 1999 आई एस ओ 9352:1995 प्लास्टिक- भाग 5 परीक्षण के तरीके यांत्रिक गुण धारा 22 घर्षण पहियों द्वारा पहनने के लिए प्रतिरोध का निर्धारण
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No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 13360 (Part 6/Sec 17) : 2017/ISO 75-2 : 2013 Plastics–Methods of Testing Part 6 Thermal Properties Section 17 Determination of Temperature of Deflection under load–Plastics and Ebonite. (Second Revision)	आई एस 13360 (भाग 6 आई एस ओ 17): 2017 आई एस ओ 75-2: 2013 प्लास्टिक-परीक्षण के तरीके भाग 6 थर्मल गुण धारा 17 लोड-प्लास्टिक और इबोनाइट के तहत विक्षेपण के तापमान का निर्धारण। (दूसरा संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 13360 (Part 6/Sec 17) : 2013/ISO 75-2: 2004 Plastics- Methods of Testing Part 6 Thermal Properties Section 17 Determination of Temperature of Deflection under load–Plastics and Ebonite (First Revision)	आई एस 13360 (भाग 6 आई एस ओ 17): 2013आई एस ओ 75-2: 2004 प्लास्टिक- परीक्षण के तरीके भाग 6 तापीय गुण धारा 17 लोड-प्लास्टिक और इबोनाइट (प्रथम संशोधन) के तहत विक्षेपण के तापमान का निर्धारण
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No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 13535 : 2017/ ISO 16889 : 2008 Hydraulic Fluid Power Filters–Multi-pass Method for Evaluating Filtration Performance of Filter Element (Second Revision)	आई एस 13535: 2017 आई एस ओ 16889: 2008 हाइड्रोलिक द्रव बिजली फिल्टर-फिल्टर तत्व के फिल्टरिंग प्रदर्शन (दूसरा संशोधन) के मूल्यांकन के लिए बहु-पास विधि
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No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 13535 : 2005/ISO 16889 : 1999 Hydraulic Fluid Power Filters–Multi-pass Method for Evaluating Filtration Performance of Filter Element (First Revision)	आई एस 13535: 2005 आई एस ओ 16889: 1999 हाइड्रोलिक द्रव बिजली फिल्टर-फिल्टर तत्व के प्रथम प्रदर्शन को निष्कासित करने के लिए बहु-पास विधि (पहला संशोधन)
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 13631 : 2017/ IEC 60666 : 2010 Detection and Determination of Specified Additives in Minerals Insulating Oils (First Revision)	आई एस 13631: 2017 आई ई सी 60666: 2010 खनिजों को इन्सुलेट करने वाले तेल (पहले संशोधन) में विशिष्ट योज्य का पता लगाने और निर्धारण
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 13631 : 1993 Method of Test for Detection and Determination of Antioxidant Additives in Insulating Oils	आई एस 13631: 1993 इंसुलेटिंग आयल्स में एंटीआक्सिडेंट एडिटिव्स का पता लगाने और निर्धारण के लिए टेस्ट की विधि
Date Of Cancellation रद्द होने की तिथि	17 Oct 2017	17 अक्टूबर 2017
No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 14849 (Part 1) : 2017/ISO 4392-1 : 2002 Hydraulic Fluid Power–Determination of Characteristics of Motors Part 1 at Constant Low Speed and at Constant Pressure (First Revision)	आई एस 14849 (भाग 1): 2017 आई एस ओ 4392-1: 2002 हाइड्रोलिक द्रव शक्ति-मोटर्स की विशेषताओं का निर्धारण भाग 1 की लगातार कम गति पर और लगातार दबाव (पहला संशोधन)
Date Of Establishment संशोधन की सख्या और तिथि	17 Oct 2017	17 अक्टूबर 2017
No. and year of the amendment संशोधन की तिथि एवं वर्ष	IS 14849 (Part 1) : 2000/ISO 4392-1 : 1989 Hydraulic Fluid Power–Determination of Characteristics of Motors Part 1 at Constant Low Speed and at Constant Pressure	आई एस 14849 (भाग 1): 2000 आई एस ओ 4392-1: 1989 हाइड्रोलिक द्रव शक्ति-लगातार कम गति पर और लगातार दबाव में मोटर्स भाग 1 के अभिलक्षणों का निर्धारण
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No.,Year & Title Of The Indian Standards Established भारतीय मानकों की संख्या, वर्ष एवं शीर्षक	IS 16310: 2017/ IEC 62535: 2008 Insulating Liquids–Test Method for Detection of Potentially Corrosive Sulphur in Used and Unused Insulating Oil	आई एस 16310रू 2017 आई ई सी 62535: 2008 इन्सुलेटेड लिक्विड्स-टेस्ट मेथड फार डिटेक्शन अ०फ पोटेंशियलली करेक्टिव सल्फर
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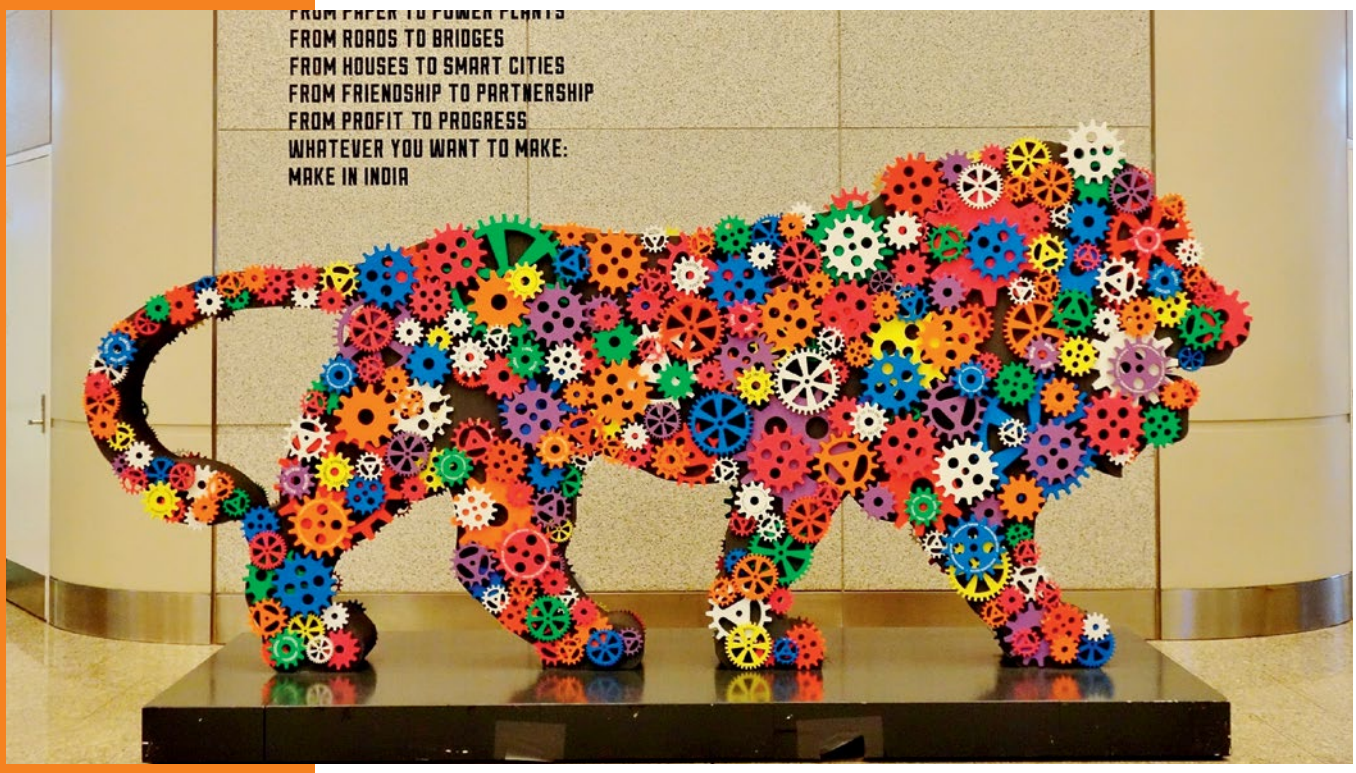
No. and year of the amendment संशोधन की तिथि एवं वर्ष	NA	लागू नही
Date Of Cancellation रद्द होने की तिथि	NA	17 अक्टूबर 2017

NEWS YOU CAN USE

ENERGY AND EMISSIONS

Recent trends in energy consumption and energy–related carbon emissions for the global buildings and construction sector are varied, with increasing energy use but limited growth in buildings–related emissions. Buildings construction and operations accounted for 36% of global final energy use and 39% of energy–related carbon dioxide (CO2) emissions in 2017. The buildings and construction sector, therefore, has the largest shares of energy and emissions, even when excluding construction–related energy use for transport associated with moving building materials to construction sites.



NEWS THAT MATTERS

NEW LEGISLATION

THE BIS ACT COMES INTO EFFECT

The much-awaited Bureau of Indian Standards (BIS) Act came into effect on October 12, 2017 with a provision to bring more services and products like jewellery under the mandatory standard regime. In March 2016, the Parliament had passed the law to replace the BIS Act of 1986. Only recently did the Consumer Affairs Ministry finalize the rules for the law. "The new law will further help ease of doing business in the country," said Consumer Affairs Minister Ram Vilas Paswan, in a statement.

Not only will the provisions of the Act give fillip to the 'Make in India' campaign, but they will also ensure the availability of quality products and services to the consumers. As per the new law, the government can bring under its compulsory certification regime any set of goods and services that it considers necessary in public interest or for the protection of human, animal or plant health, safety of the environment, or prevention of unfair trade practices, or security.

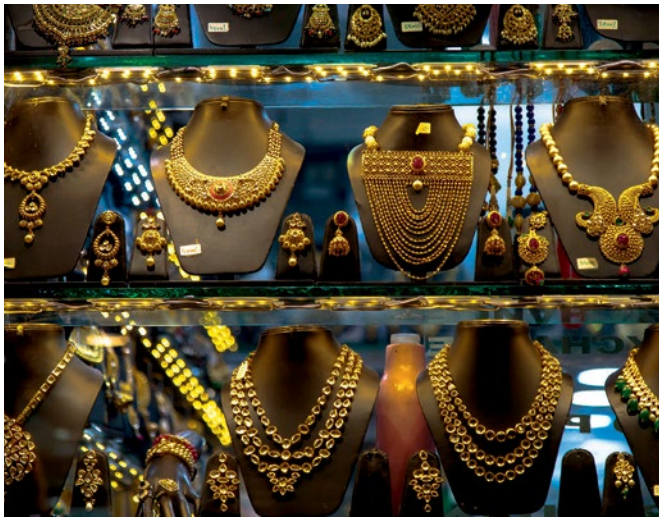
The new Act also allows multiple types of simplified conformity assessment schemes, including self-declaration of conformity against a standard that will give simplified options to manufacturers to adhere to the standards and get a certificate of conformity.

There is also a provision that enables the central government to appoint any authority/ agency, in addition to the BIS, to verify the conformity of products and services to a standard and issue a certificate of conformity.

A DEFINITE YES

GOLD HALLMARKING TO BE MANDATORY

The government is planning to make hallmarking along with carat count mandatory for gold jewellery being sold in the country. Ram Vilas Paswan said, "At present, people don't get to know the quality of gold jewellery that they buy. We are planning to make hallmark for gold jewellery mandatory. It should be done by January." He said the BIS mark is used on some jewellery, but that does not sufficiently convey quality of jewellery to consumers. Under the proposed rules, the hallmark will also mention the carat of the gold used in the jewellery. Paswan added, "It will be done for jewellery in three categories—14 carat, 18 carat and 22 carat."



FSSAI MAKES ITS PICK

BIS TO AUDIT FOOD SAFETY

The Food Safety and Standard Authority of India (FSSAI) has empanelled 15 national and international agencies to audit food, safety and hygiene standards of canteens, cafeterias and hostel mess of several IITs and IIMs. Some agencies that have been empanelled are DNV, Bureau Veritas, Intertek, MS Certification, IRCLASS, SGS, BIS, TUV and Indocert. This is the first time the food authority has taken a step like this in order to strengthen the food safety surveillance system in the country. The audit will start with select large central institutes such as the IITs in Delhi, Mumbai, Chennai and Guwahati, AIIMS (Delhi and Jodhpur), IIM (Ahmedabad and Kozhikode), IISc Bangalore and IISER Kolkata.

QUALITY CHECK

CHINESE TOYS TAKE A HIT

Toy imports from China have dropped to less than half, according to industry estimates, with the government introducing tough quality criteria and mandating certification of compliance by accredited agencies from September 1, 2017. This has hit supply and pushed retail prices up by 8-14 percent, while wholesale prices have risen about 30 percent, executives said, cautioning that further increases were likely. Supply would be hit further during the festive season right up to Christmas, according to Mattel Inc, Future Retail and other retailers, as they pointed to the paucity of infrastructure in the country to test imported toys and issue BIS certifications.

NEW ADDITIONS TO OUR SHELVES

The BIS' collection of standards literature is always being supplemented

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IMBIBING

With the current state of affairs, the need of the moment is to nurture a sense of energy consciousness in the process of building construction

BY GAYATRI MOODLIAR

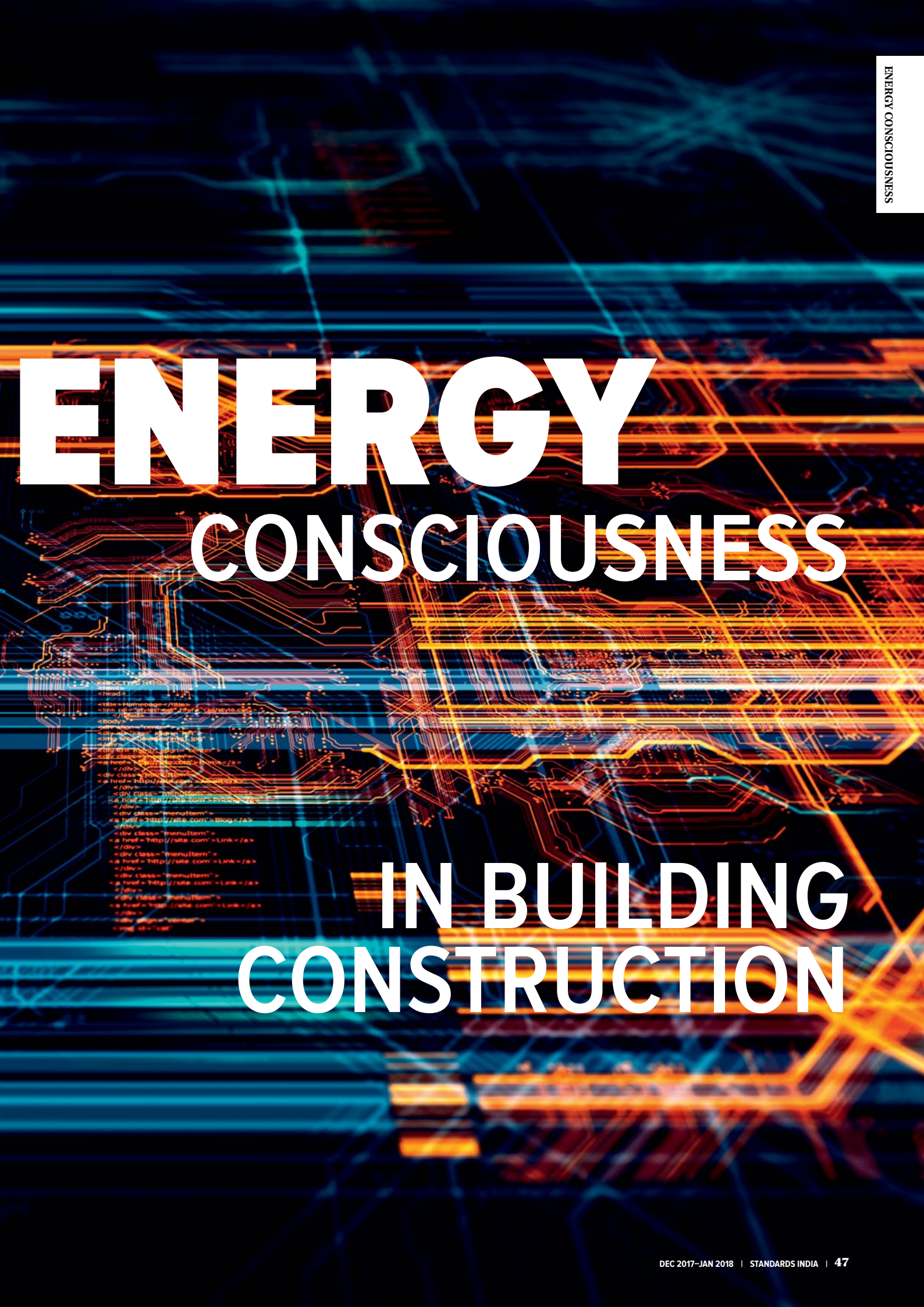
To say that buildings consume a lot of energy would be an understatement. From the moment ground breaks, each aspect of the construction process depends on unfathomable amounts of power—and then the sheer maintenance of the building comes in. For buildings that already exist, revamping them to suit the current environmental requirements is a hefty process, but for properties that are in the blueprint stage, there are various factors that should be considered to make them more sustainable and viable for the future.

Globally, the building sector is believed to account for about 42 percent of electricity consumption (and with the increasing rate of urbanization and population growth, the amount of buildings to be constructed will only rise), so should some semblance of energy consciousness be brought into the sector, the dividends and the consequent results would be drastically beneficial. In developing countries especially, there is a need for raw materials across all sectors, and the building industry consumes a significant chunk of it. A study that followed the life cycle assessment of construction products, primarily of buildings and roads, found that they were responsible for a sizeable share of the total energy consumption, alongside the fact that the waste generation was directly proportional to the total value of materials consumed. However, what has to be taken into account is that this industry is also heavily regulated, with various codes and standards attached to it, whether it comes to appliance use or building materials, meaning that the intention, in spite of how good it may be, may not come to fruition due to roadblocks.

The whole purpose of sustainable construction is to make sure that what's being constructed is not only able to meet the demands and needs of the present, but also that it does so with a futuristic outlook, meaning that future generations will be able to reap the benefits. This looks at various factors such as the environmental impact, design trends and quality, and, of course, economic efficiency.

Simple at face value, the concept is actually an over-arching one that has under its purview the design and management of buildings; materials and their performance; construction technology and processes; long-term monitoring of the buildings; scouting a socially-viable location and environment; the working conditions for those involved; how the landscape, infrastructure and architecture will mingle with each other; and a host of other elements.

Design and construction practices that significantly reduce or eliminate the negative impact of buildings on the environment and occupants in five broad areas are generally accepted as green buildings. These five areas are: sustainable site planning, ensuring



ENERGY CONSCIOUSNESS IN BUILDING CONSTRUCTION

To achieve a desired level of energy efficiency, architects need to study the macro- and micro-climate of the site and then apply suitable bio-climatic architectural principles

judicious water usage, energy efficiency and renewable energy, conservation of materials and resources, and indoor environmental quality.

To achieve the desired level of energy efficiency, especially in building designs, architects should be studying the macro- and micro-climate of the site and accordingly apply suitable bio-climatic architectural principles. There are some design elements that are commonly used to impact thermal comfort, and, thereby, the energy consumption of buildings. With a drastic reduction in the use of natural resource consumption and energy-intensive materials like cement, steel, aggregates and aluminium, a huge step in the direction towards global environmental sustainability can be taken—but it's necessary to develop feasible alternatives for these conventional options.

The rise in global temperatures also needs to be accounted for when choosing materials, the building envelope, and the types of equipment being used. An area that's growing in popularity to fill this demand is the use of agricultural waste products and other biological materials as building products. The other is the time-tested re-use and recycling. A more recent approach that requires dissemination of information is manipulating traditional materials to suit modern construction methods, which are perhaps on the greener side and help reduce wastage in the process. In fact, the spread of knowledge and methods is an exceptionally important requirement because there's a striking dearth of information regarding sustainable construction. This could be done through a multi-pronged approach: to continue teaching professionals in the field, to incorporate the material in courses at a foundation level, and to instruct government officials so that the regulations and standards are modernised and support ecologically responsible building methods.

A few trends that have already been emerging are modular construction, which involves constructing certain sections of the building off-site and then transporting them to the main property. It's been shown to maximise resource efficiency. Another is zero-energy construction that incorporates solar and hydro energy to power the building—the aim is to put as much power back into the grid as is consumed during the construction process, so it's also known as net-zero construction. Another key fact is that the growth of sustainability in this field is emerging at a time when other fields are also striving to incorporate it in their approaches, leading to a pool of shared knowledge, as well as the common interest to take the goal forward.

Despite the advantages of sustainable construction, there are hurdles and barriers, the most blatant being the lack of capacity to handle this move, both technology- and information-wise. The willingness to invest in this technology is currently missing, along with adequate data to support the growth. Also, since green buildings are relatively new, there isn't enough viable proof of their contribution towards a sustainable future, as the results are yet to be determined.

Sustainable construction has to be spread out across the social, economic, biophysical and technical spheres, and when these occupy the same level of priority for industrialists, government officials and construction workers, there will be scope for making it into a reality. Information pertinent to the end goal has to be cumulated and shared to enable seamless progress. Incentivizing green construction is one way to make it appealing for stakeholders to invest in, if a general concern for the environment isn't enough.

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