



Introduction to Masonry, Painting, Timber structure, Glass in Building

Kanika Kalia, Sc. E & HJPBO



Masonry

A construction technique involves the building of structures using individual units laid in a specific pattern and bound together by mortar.

These units, traditionally made of materials like brick, stone, or concrete blocks, are stacked and arranged to create walls, columns, arches, and other architectural elements.



BRICKS MASONRY



STONE MASONRY



CEMENT BLOCKS MASONRY

Masonry: Components

A combination of bricks/ stone/cement blocks etc. with mortar, and workmanship to create structures.

Brick + Mortar + Workmanship = Bricks Masonry



Masonry

Use of stone masonry work is known and practised froth the earlier days and natural stone is extensively available in many parts of this country.

The types of stone masonry construction followed depends on local factors like physical characteristics of the stone, climatic conditions, workmanship, etc.

Certain broad principles in laying, bonding, breaking of joints and finish should be complied with in order that the masonry develops adequate strength and presents a neat appearance.

Masonry

Choice of masonry units is generally made from the consideration of:

- local availability,
 - compressive strength,
 - durability,
 - cost, and
 - ease of construction.
-
- Brick has the advantage over stone that it lends itself to easy construction and requires less labour for laying. Stone masonry, because of practical limitations of dressing to shape and size, usually has to be thicker and results in unnecessary extra cost. Thus, the first choice for a building at any place, would be brick, if it is available at reasonable cost with requisite strength and good quality. |



Masonry

Decoding the Durability Factor in Masonry Materials

Utility and Functionality: Masonry Material for Every Purpose

Longevity and Maintenance: Masonry's Lifespan Matters

Considering the Resale Value: How Masonry Affects Your Home's Worth



“Choosing the right masonry material can make all the difference in your project. It is not just about aesthetics, it is about durability and long-term maintenance.”

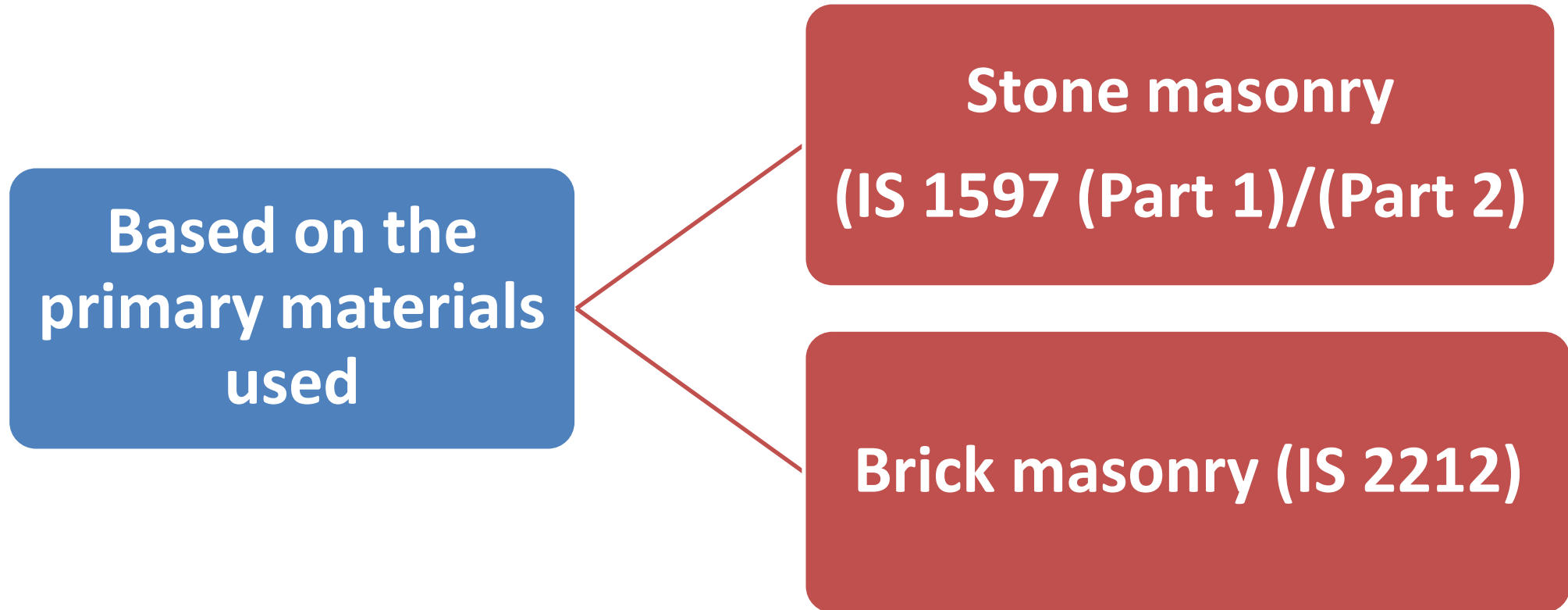
Masonry

Brick has the advantage over stone that it lends itself to easy construction and requires less labour for laying.

Stone masonry, because of practical limitations of dressing to shape and size, usually has to be thicker and results in unnecessary extra cost.

Thus, the first choice for a building at any place, would be brick, if it is available at reasonable cost with requisite strength and good quality.

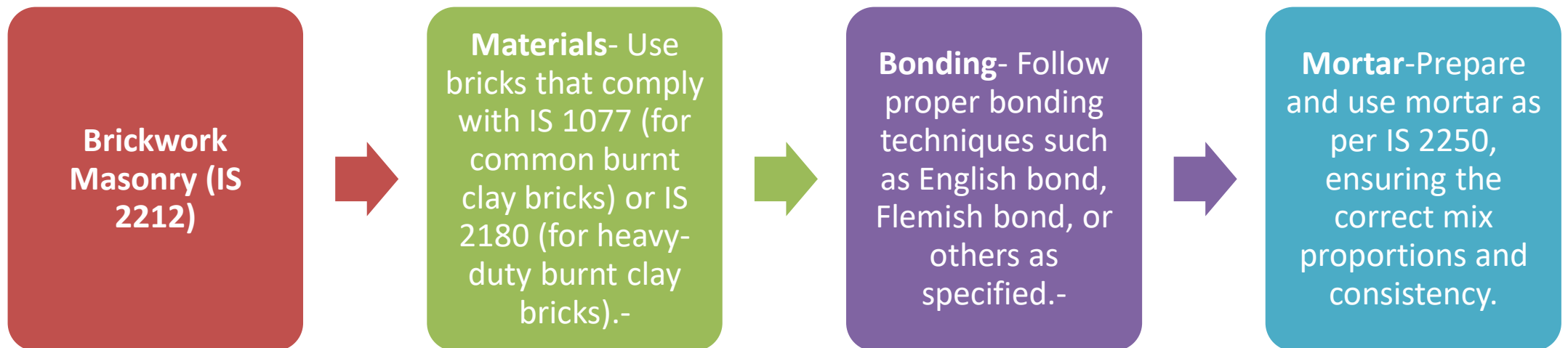
Masonry: Classification





Masonry: Relevant Indian Standards

1. **Design and Structural Use of Masonry (IS 1905)** - Ensure that the design of masonry elements like walls and columns considers the load-bearing capacity as specified in IS 1905
2. **IS 2212:1991 - Code of Practice for Brickwork:** Provides guidelines on construction practices for brickwork in buildings, covering aspects like bonding patterns, jointing techniques, plastering, curing, and other relevant construction practices.



Common bonding patterns: IS 2212:1991

Stretcher bond

Header bond

English bond

Single Flemish
bond

Double Flemish
bond

English Garden
Wall bonds

Flemish Garden
Wall bonds

Dutch bond

Raking bond
Herring bone
bond Diagonal
bond

1. Stretcher Bond

Description: In stretcher bond, all bricks are laid as stretchers (long sides of bricks) in each course.

Usage: Suitable for walls that are one brick thick (typically 90 mm) and where appearance is not a primary concern.

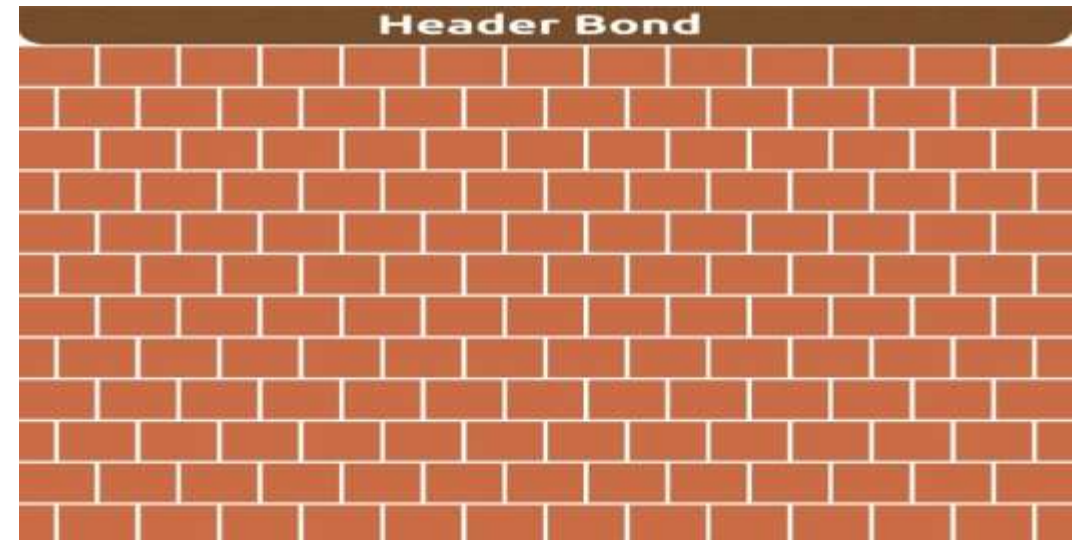
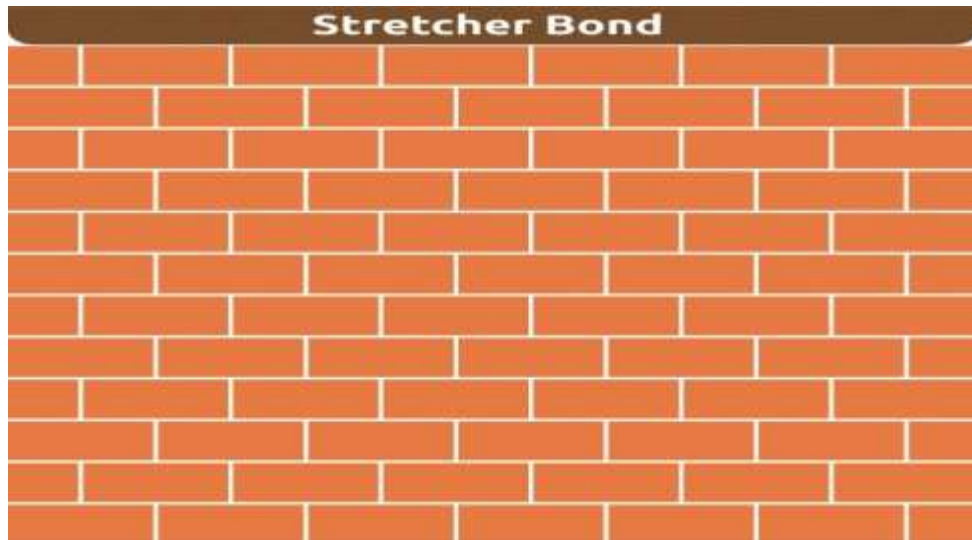
Advantages: Simplest and most economical bond pattern;

2. Header Bond

Description: In header bond, all bricks are laid as headers (short sides of bricks) in each course.

Usage: Often used in thicker walls (more than one brick thick) or where additional strength is required.

Advantages: Provides better strength and bonding compared to stretcher bond.



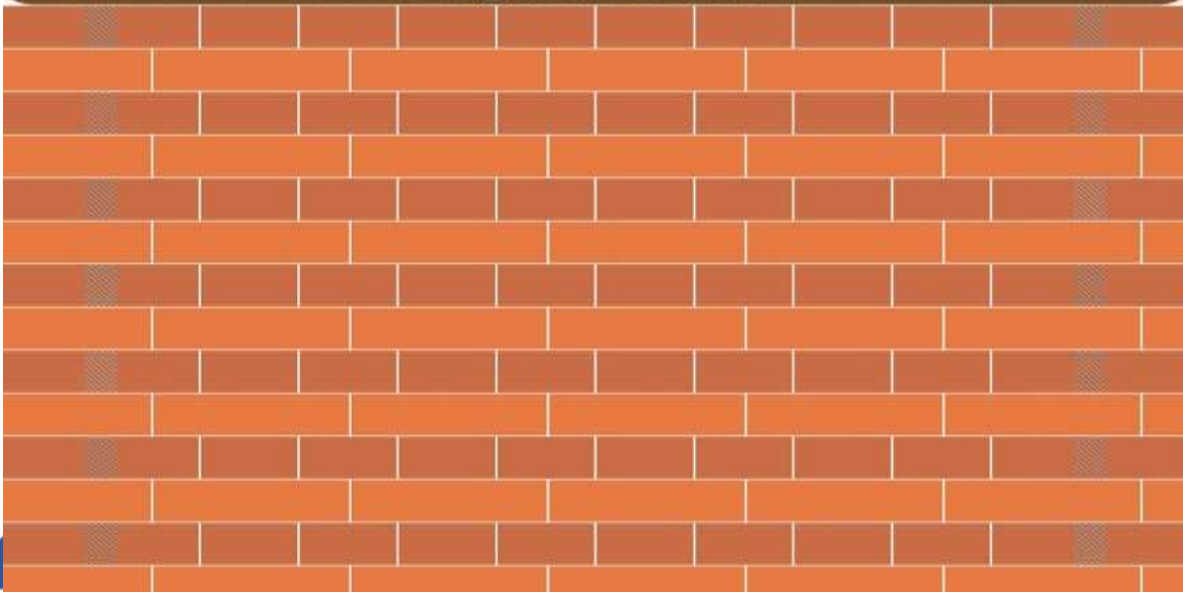
3. English Bond

Description: **Alternates courses** of stretchers and headers. Every alternate course starts with a header at the corner.

Usage: Provides good appearance and structural strength, commonly used in load-bearing walls.

Advantages: Distributes loads evenly; offers a uniform and pleasing pattern.

English Bond



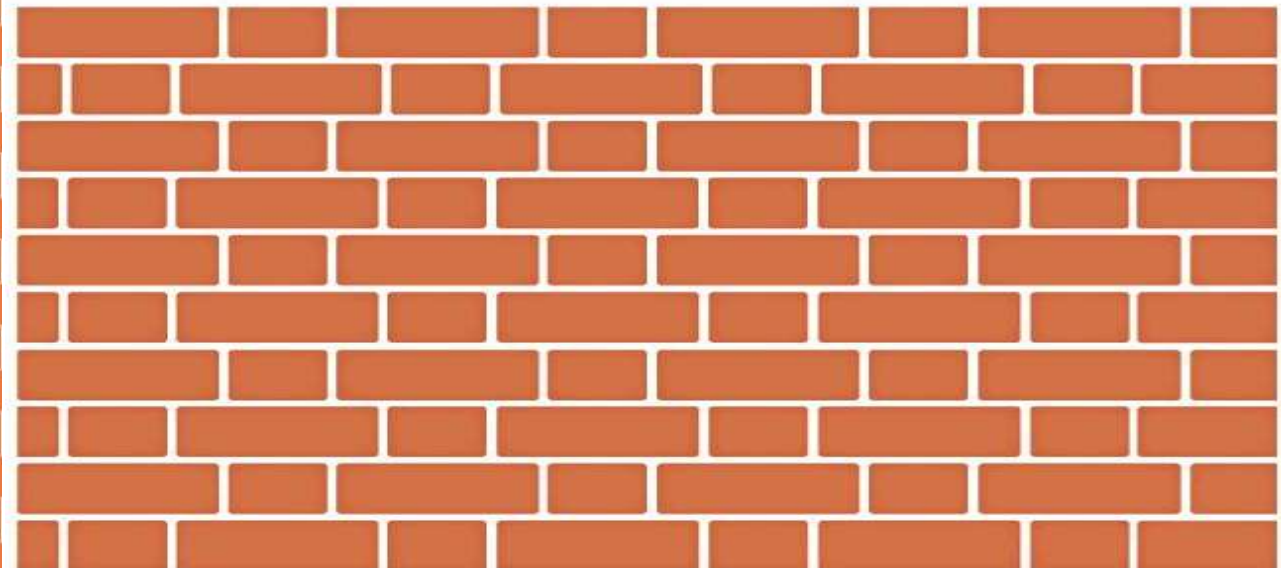
4. Flemish Bond

Description: Alternates headers and stretchers within the **same course**, creating a checkerboard pattern.

Usage: Provides a decorative appearance and is suitable for both load-bearing and non-load-bearing walls.

Advantages: Offers good bonding and aesthetics; requires skilled craftsmanship.

Flemish Bond



5. English Garden Wall Bond:

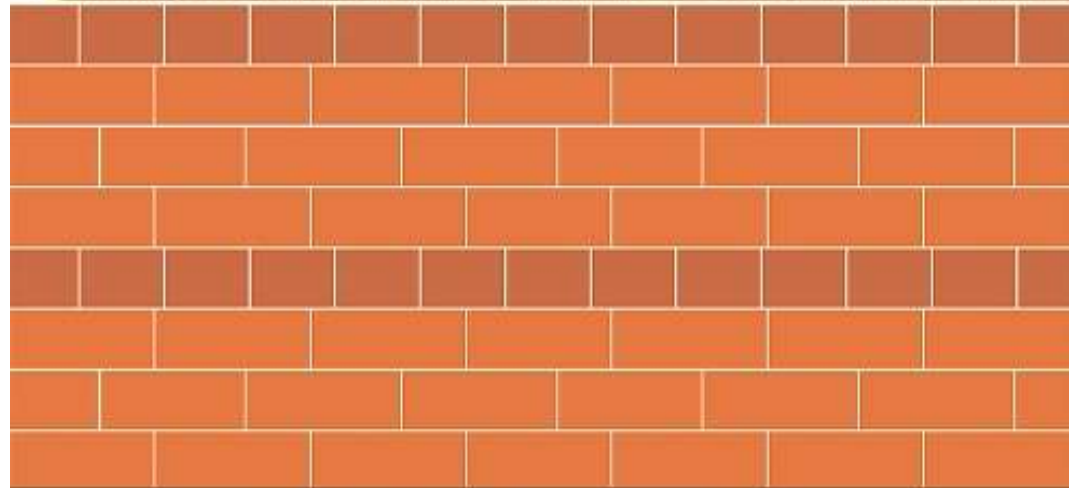
Description: The English Garden Wall bond is a decorative variation of the traditional English bond. Typically, it alternates courses of three stretchers followed by one header. This pattern repeats throughout the wall.

6. Flemish Garden Wall Bond:

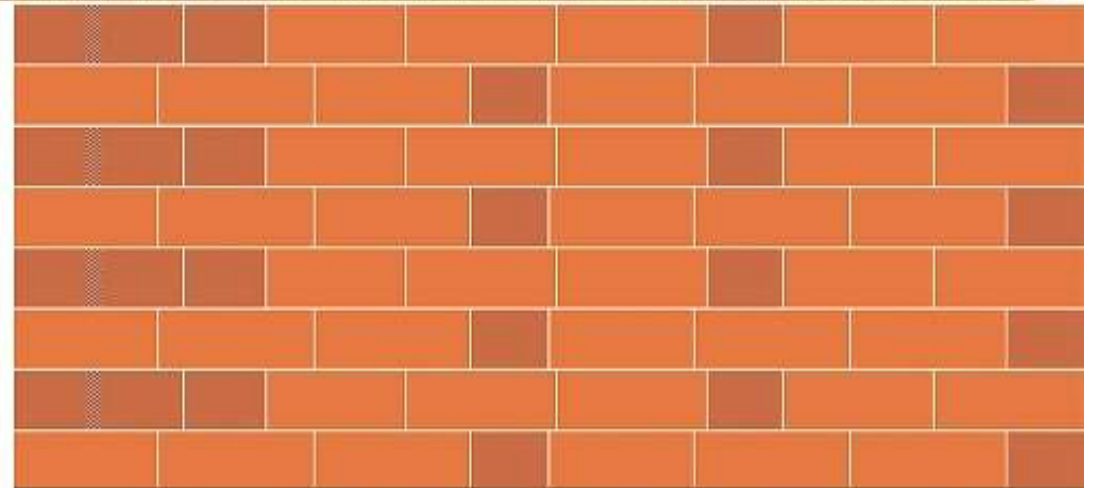
Description: The Flemish Garden Wall bond is a decorative variant of the traditional Flemish bond.

Alternates courses of headers and stretchers in a more regular pattern compared to the English Garden Wall bond.

Garden wall bond



English Garden Wall Bond



Flemish Garden Wall Bond

7. Rat Trap Bond

Description: Involves placing bricks on edge (like headers) with the wall thickness being equal to the length of the brick.

Usage: Provides thermal insulation and reduces material usage, suitable for non-load-bearing walls.

8. Dutch Bond

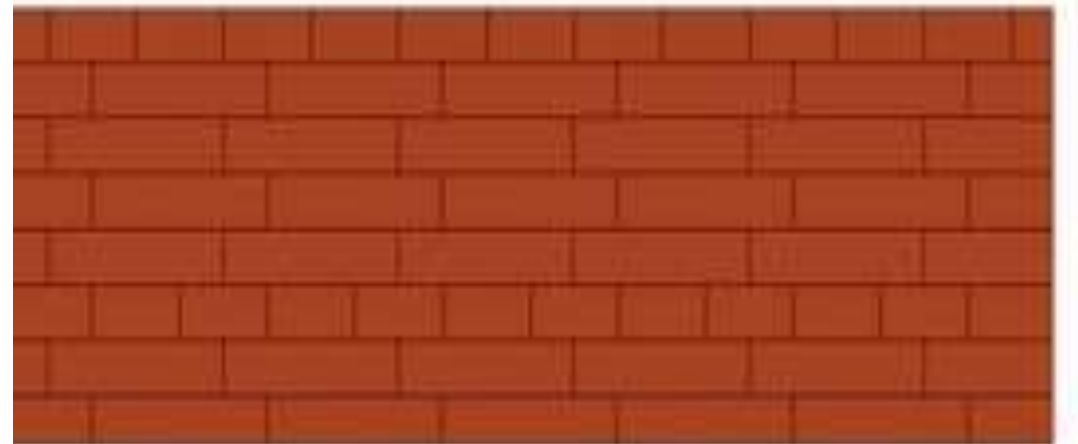
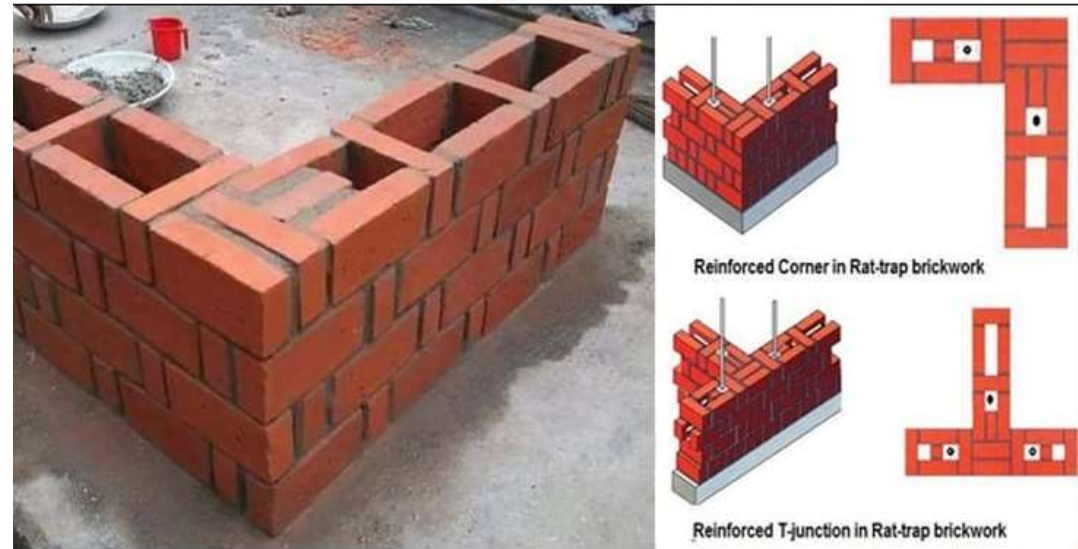
Dutch bond consists of alternating courses of headers and stretchers. In each course:

One stretcher is followed by one header.

The headers are centered over the stretchers in the course below.

This creates a staggered pattern where each header is centered over the joint between two stretchers in the course below.

Rat Trap Bond



Dutch Bond

Important Standards

Mortar Preparation and Use (IS 2250)

Concrete Masonry Units (IS 2185)- Use concrete blocks that meet the specifications for hollow and solid concrete masonry units as per IS 2185

Hollow and Solid Concrete Block Masonry (IS 2572)

Stone Masonry (IS 1597)

Autoclaved Cellular Concrete Block Masonry (IS 6041)

Testing of Masonry Units (IS 3495): Conduct tests to determine the physical and mechanical properties of burnt clay bricks and other masonry units



Important Standards

IS 1077:1992 - Common Burnt Clay Building Bricks – Specification- It covers dimensions, physical properties, and classification of bricks based on their compressive strength.

IS 1905:1987 - Code of Practice for Structural Use of Unreinforced Masonry

IS 4326:1993 - Code of Practice for Earthquake Resistant Design and Construction of Buildings

IS 6041:1985 - Specification for Structural Design of Load-bearing Brickwork



Stone masonry

Involves detailing the selection of materials, preparation, construction practices, and quality control measures.

**IS 1597 (Part 1) : 1992
Construction of stone masonry -
Code of practice: Part 1 rubble
stone masonry**



**IS 1597 (Part 2) : 1992 Construction
of stone masonry - Code of practice:
Part 2 ashlar masonry**



References

Recommended Books:

1. **"Building Construction" by B.C. Punmia, Ashok Kumar Jain, and Arun Kumar Jain.**
Comprehensive coverage of building construction techniques, including masonry work.
2. **"A Textbook of Building Construction" by S.P. Arora and S.P. Bindra.**
Detailed explanations and illustrations of various aspects of building construction, including masonry.
3. **"Masonry Structures: Behavior and Design" by Robert G. Drysdale, Ahmad M. Khalifa, and Lawrie R. Baker.**
Focuses on the behavior and design principles of masonry structures, including seismic design aspects.
4. **"Masonry Design and Detailing for Architects and Contractors" by Christine Beall.**
Practical guide covering masonry design principles, construction techniques, and detailing for architects and contractors.
5. **Bureau of Indian Standards (BIS) website-**
Official website where you can access and purchase IS codes related to masonry and building construction: <https://www.bis.gov.in/>



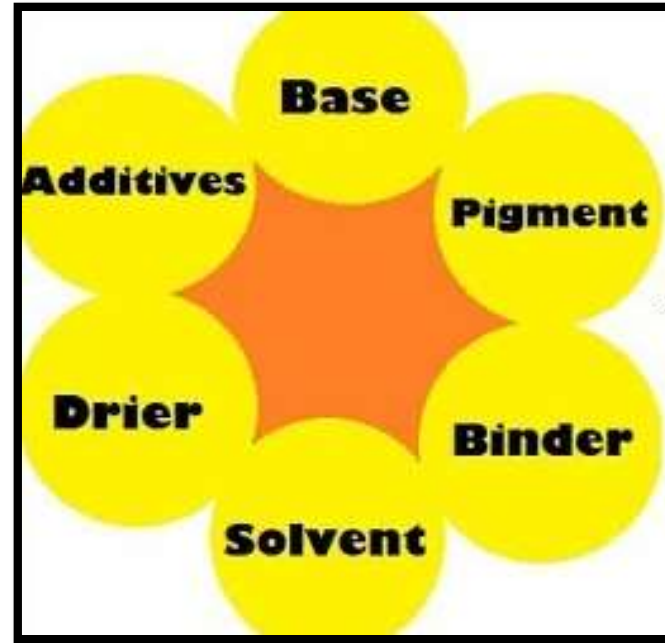
Paints

The best designed residential building will be considered unfinished if its properly plastered walls are not covered with a coat of proper **distemper in the interior and snowchem on the exterior.**

The paint and varnishes give the aesthetic appeal to the construction on the other hand and Also protect the material against deteriorating agents thereby increasing their life.

IS 15489 - "Painting Code of Practice":-This comprehensive code provides detailed guidelines for the painting of various types of surfaces, including preparation, application, and finishing

Ingredients of Paint






Essential Components

**Pigment – real
colouring substance**





**Solvent – in which
pigment is dissolved**

**Drier –Necessary to
quicken process of
evaporation**

Major components for painting work in buildings

Component	Description	
Paint	Primary material used to coat surfaces, available in various types (emulsion, oil-based, acrylic).	
Primer	Preparatory coating applied before painting to enhance adhesion and durability of the topcoat.	
Paint Brushes and Rollers	Tools used for applying paint. Brushes for detail work and edges, rollers for large surface areas.	

Major components for painting work in buildings

Component	Description	Photo (example)
Paint Thinner or Solvent	Used to adjust paint viscosity, clean tools, or thin out paint for application.	
Surface Preparation	Includes sandpaper, patching compounds, fillers, and masking tape for preparing surfaces for painting.	
Safety Equipment	PPE such as gloves, goggles, and respirators to protect against paint fumes and chemicals.	
Ladders or Scaffolding	Equipment for reaching high or difficult-to-access areas safely during painting.	

Types of a Paint

Paints

Interiors

Walls

- Distemper
- Luster
- Enamel
- Emulsion

Metals

- Enamel

Wood

- Wood Finish

Exteriors

Emulsion

Textured

Cement

Oil Paint

Enamel paint

Lacquers

Emulsion paint

Synthetic paint

Aluminium paint

Cement paint

Distemper



Relevant Indian Standards

Surface Type	IS Code	Type of Paint
Concrete	IS 5410:1992	Cement Paint
Masonry (Interior)	IS 15489:2004	Water-Based Acrylic Paint
Masonry (Exterior)	IS 15489:2004	Water-Based Acrylic Exterior Masonry Paint
Metal (Interior)	IS 2932:1983	Synthetic Enamel Paint (Brushing)
Metal (Exterior)	IS 2932:1983	Synthetic Enamel Paint (Spray)
Wood (Interior)	IS 2932:1983	Synthetic Enamel Paint (Brushing)
Wood (Exterior)	IS 2932:1983	Synthetic Enamel Paint (Spray)
Plaster (Interior)	IS 15489:2004	Water-Based Acrylic Paint
Plaster (Exterior)	IS 15489:2004	Water-Based Acrylic Exterior Masonry Paint



Relevant Indian Standards

Surface Type	IS Code	Type of Paint
Ferro Cement	IS 2932:1983	Synthetic Enamel Paint (Brushing)
Asbestos Cement	IS 5411:1992	Synthetic Resin Enamel Paint (Brushing)
Plywood	IS 2932:1983	Synthetic Enamel Paint (Brushing)
Galvanized Iron (GI)	IS 2932:1983	Synthetic Enamel Paint (Spray)
Aluminum	IS 2932:1983	Synthetic Enamel Paint (Spray)
Brick	IS 101:1989	Red Oxide Zinc Chrome Primer
Cement	IS 8662:2004	Water-Thinnable Cement Primer



IS codes related to the use of paint in buildings work

1. IS 2395: Part 1 and 2 - "Painting of Concrete, Masonry, and Plaster Surfaces – Code of Practice":

Part 1: Operations and Workmanship: This part provides guidelines for the preparation of surfaces and the application of paint on concrete, masonry, and plaster surfaces. -

Part 2: Schedule: This part includes a schedule of painting operations for different types of surfaces.

IS 2395: Part 1 and Part 2 are Indian Standards that provide guidelines for Surface Preparation , Paint Application, Drying and Curing, Maintenance, Performance and testing Requirements, Health and Safety for painting of concrete, masonry, and plaster surfaces.



2. IS 1477: Part 1 and 2 - "Code of Practice for Painting of Ferrous Metals in Buildings"

- **Part 1: Pretreatment:** This part covers the pretreatment of ferrous metal surfaces before painting.
- **Part 2: Painting:** This part provides guidelines for the application of paint on pretreated ferrous metal surfaces.



3. IS 2338: Part 1 and 2 - "Code of Practice for Finishing of Wood and Wood-Based Materials":

- **Part 1: Operations and Workmanship:** This part covers the preparation of wood and wood-based surfaces for painting.
- **Part 2: Schedule:** This part includes a schedule of painting operations for wood and wood-based materials.



4. IS 2394 - "Code of Practice for Application of Lime-Based Paints":

- This standard provides guidelines for the preparation and application of lime-based paints on various surfaces.

5. IS 5410 - "Cement Paints – Specification":

- This standard specifies the requirements for cement-based paints used on concrete and masonry surfaces, including their composition, properties, and performance.



6. IS 158 - "Ready Mixed Paint, Brushing, Bituminous, Black, Lead-Free, Acid, Alkali, and Heat-Resisting – Specification"

- This standard specifies the requirements for ready-mixed bituminous paints used as waterproofing membrane.



7. IS 428 - "Distemper, Dry, Colour as Required – Specification"

- **Distemper paint is commonly used in homes and commercial buildings. This standard specifies the requirements for dry distemper used for painting walls and ceilings.**

8. IS 427 - "Distemper, Oil Emulsion – Specification"

- **This standard specifies the requirements for oil emulsion distemper used for interior painting**

10. IS 2932 -Enamel, Synthetic, Exterior

- Suitable for painting exterior walls, doors, window frames, metal structures, fences, etc.

11. IS 2933 -Enamel, Synthetic, Interior

- Suitable for painting interior walls, doors, window frames, metal structures, fences, etc.

12. IS 15489 -Painting Code of Practice

- This comprehensive code provides detailed guidelines for the painting of various types of surfaces, including preparation, application, and finishing.



References

Books

1. **"Painting and Decorating Level 1 Diploma" by Ann Cook**
Comprehensive coverage of painting and decorating techniques, tools, materials, and safety procedures.
2. **"Modern Painting Technology" by B. P. Bhardwaj**
Covers various painting techniques, materials, and advancements in painting technology.
3. **"Architectural Painting Specification Manual" by Painting and Decorating Contractors of America (PDCA)**
Detailed specifications for various painting tasks, including preparation, application, and finishing.
4. **"Surface Coatings: Science and Technology" by Swaraj Paul**
Discusses the chemistry, application, and testing of different types of coatings used in the building industry.



International Standards

ISO Standards

ISO 12944: Paints and varnishes — Corrosion protection of steel structures by protective paint systems.

ISO 11998: Paints and varnishes – Determination of wet-scrub resistance and clean ability of coatings.

ASTM Standards

ASTM D3276: Standard Guide for Painting Inspectors (Metal Substrates).

ASTM D3359: Standard Test Methods for Measuring Adhesion by Tape Test.

ASTM D7234: Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.

British Standards (BS)

BS 6150: Painting of buildings. Code of practice.

BS EN ISO 2409: Paints and varnishes – Cross-cut test.



Timber Structures in Buildings

Timber structures in building construction involves utilizing wood as a primary material for various structural components. Timber has been used for centuries in construction due to its availability, sustainability, strength-to-weight ratio, and aesthetic appeal.



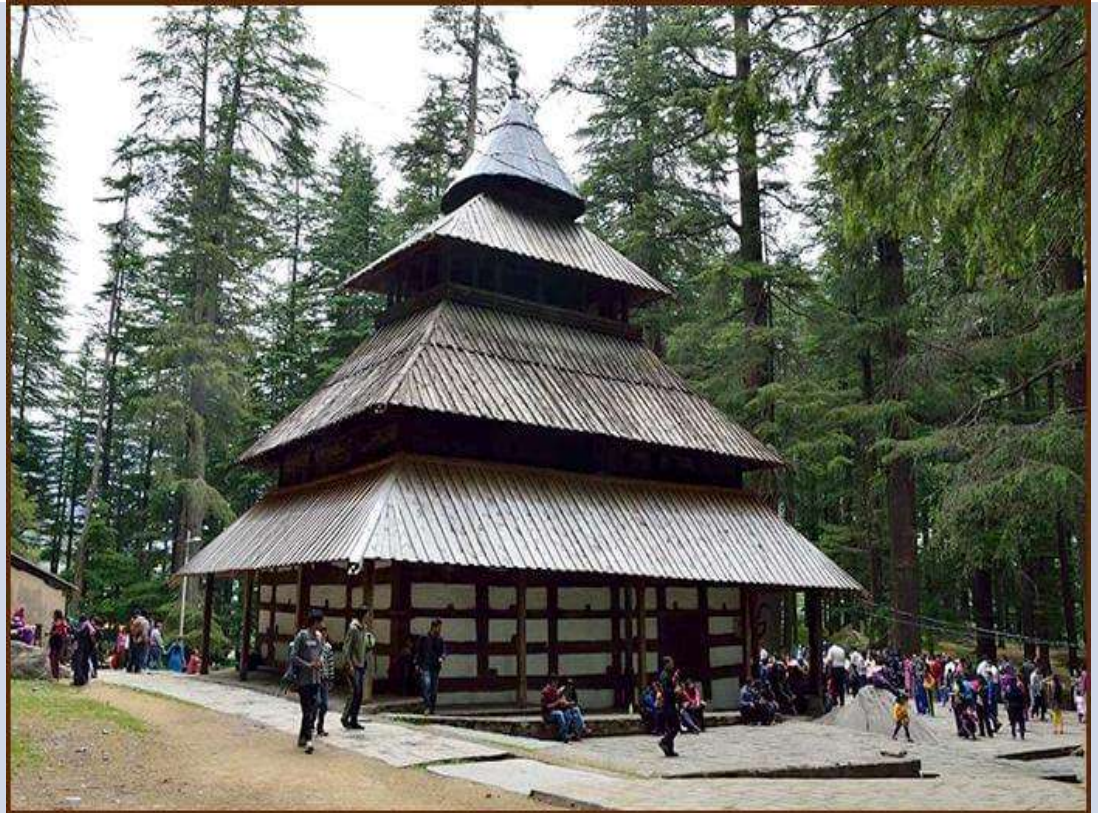
"Wood is universally beautiful to man. It is the most humanly intimate of all materials." - Frank Lloyd Wright

Examples of buildings where timber has been prominently featured

**Hall of Nations
Pragati Maidan, New Delhi, India**



Hidimba temple, Manali



➤ Timber is a versatile building material used in various structural applications due to its strength, flexibility, and aesthetic appeal.

■ Here are some of the main types of timber structures and their applications:

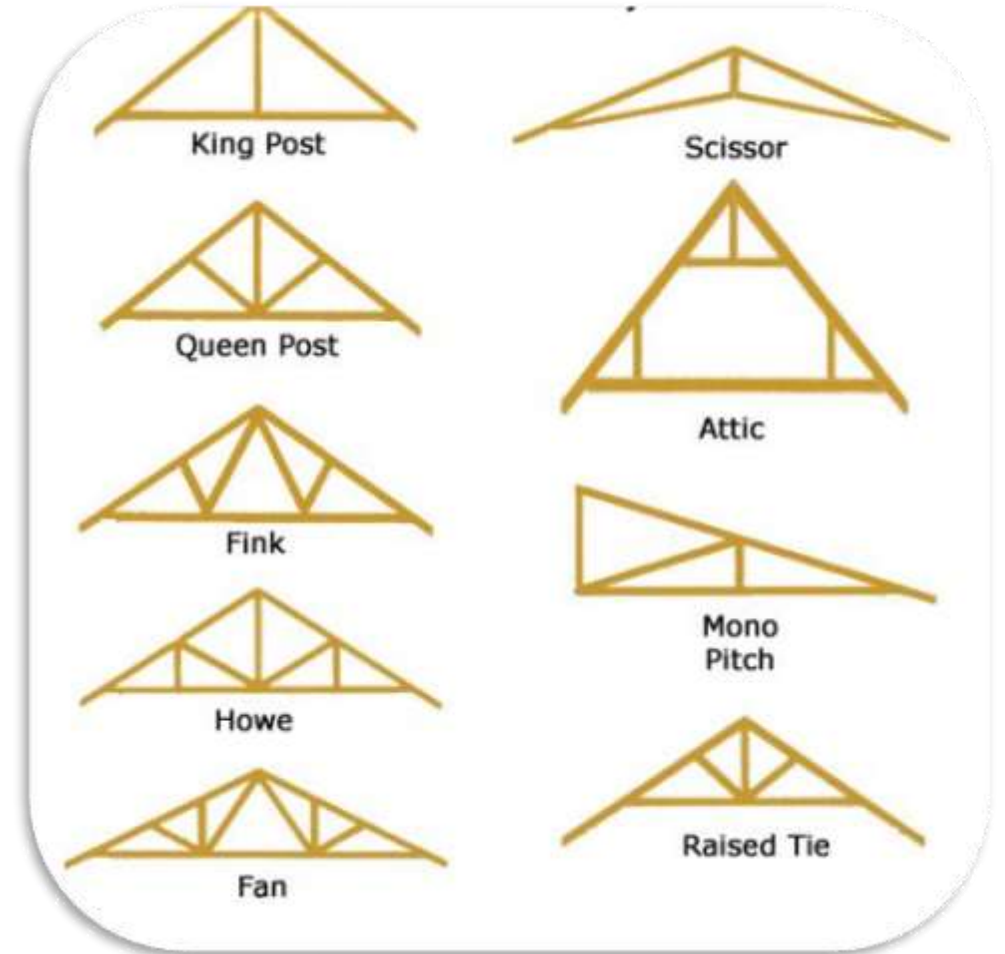
1. Timber Frame Structures(IS 883:2016)

- **Post-and-Beam Construction:** Involves vertical posts and horizontal beams forming a skeleton.
- Used in residential buildings, barns, and some commercial structures as per **IS 883:2016 - Code of Practice for Design of Structural Timber in Building**



2. Timber Roof Trusses (IS 883:2016)

- **King Post Truss:** Simplest type with a central vertical post and two angled beams. Common in smaller spans.
- **Queen Post Truss:** Similar to king post but with two vertical posts, allowing for longer spans.
- **Fink Truss:** Triangular units with internal web members, widely used in residential and commercial buildings.
- **Howe Truss:** Similar to king post but with two vertical posts and diagonal bracing.
- **Fan Truss:** Similar to king post but with multiple vertical posts and diagonal bracing.
- **Scissors Truss:** Has two angled bottom chords that create a vaulted ceiling.
- **Attic Truss:** Similar to king post but with a horizontal tie beam and vertical posts.
- **Mono Pitch Truss:** Similar to king post but with a horizontal tie beam and vertical posts.
- **Raised Tie Truss:** Similar to king post but with a horizontal tie beam and vertical posts.

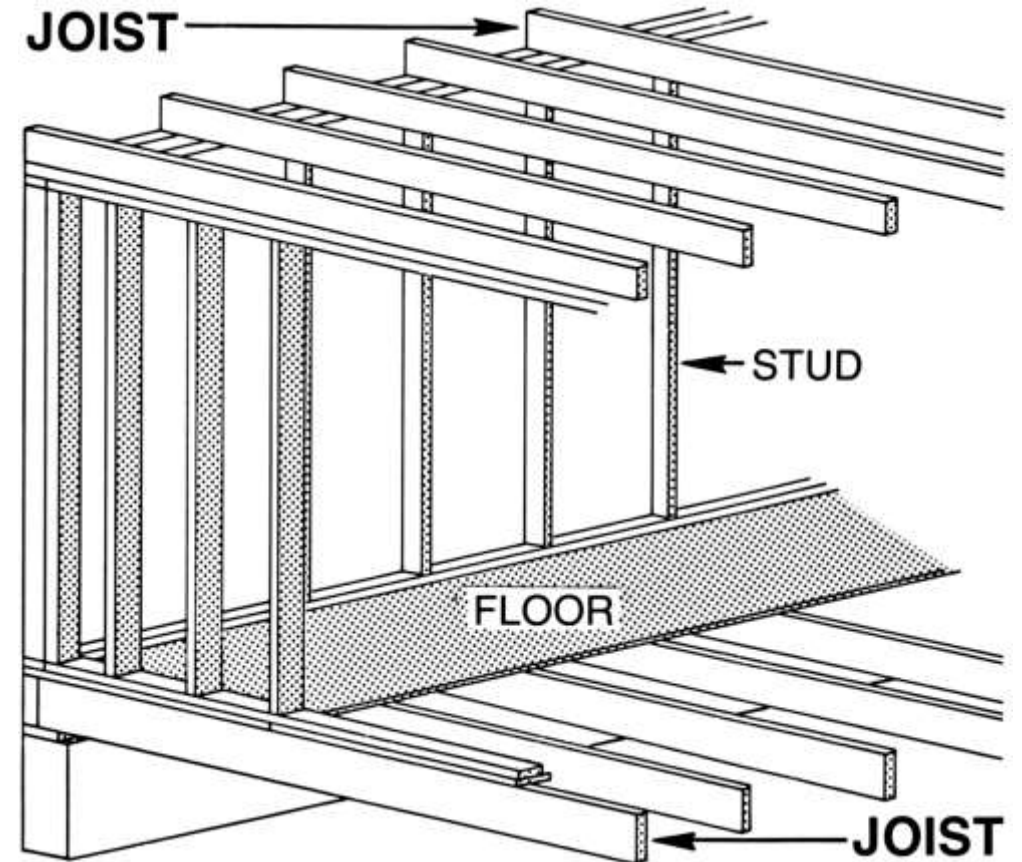


3. Timber Beams and Joists (IS 883:2016)

➤ **Solid Timber Beams:** Used in traditional construction for supporting floors and roofs.

➤ **Glulam (Glued Laminated Timber) Beams:** Made by gluing together layers of timber, allowing for longer spans and more complex shapes.

➤ **I-Joists:** Engineered wood products that resemble the letter "I", used for floor and roof joists due to their strength and lightweight.



4. Timber Decking -

➤ **Outdoor Decking:** Used for patios, balconies, and garden walkways. Designed to withstand weather and load conditions



5. Timber Cladding

➤ **Weatherboards:** Horizontal or vertical boards used to clad the exterior of buildings.



7. Timber Flooring

➤ **Solid Wood Flooring:** Made from single pieces of timber, offering durability and a traditional look.

➤ **Engineered Wood Flooring:** Layers of wood glued together, providing stability and resistance to moisture changes.



✓ **IS 3670 : 1989-Code of practice for construction of timber floors**



8. Timber Bridges

- **Beam Bridges:** Simple, supported by beams and used for short spans.
- **Truss Bridges:** Use a truss system of interconnected elements to support loads over longer spans.
- **Arch Bridges:** Utilize the natural strength of an arch to support loads.



9. Timber Piles- (IS 2911 (Part 2) : 2021)

Used in foundation systems where timber posts are driven into the ground to support structures, especially in areas with poor soil conditions.

10. Timber Retaining Walls -Structures used to hold back soil or water, commonly used in landscaping and civil engineering projects.

11. Timber Scaffolding (IS 3696 (Part 1/2):1987)

➤ Temporary structures used during construction for access to high areas. Still used in regions where wood is abundant.



Relevant Indian Standards

Timber Structure Type	Description	Relevant Indian Standard Codes
Timber Frame Structures	Structural framework with vertical posts and horizontal beams.	IS 883:2016 - Code of Practice for Design of Structural Timber in Building
Timber Roof Trusses	Frameworks for supporting roofs.	IS 883:2016
Timber Beams and Joists	Horizontal members supporting floors and roofs.	IS 883:2016
Timber Columns and Posts	Vertical members transferring loads to the foundation.	IS 883:2016, IS 4021:1995
Timber Decking	Horizontal planks for outdoor spaces.	IS 883:2016
Timber Cladding	External coverings for walls.	IS 883:2016, IS 13622:1993
Timber Flooring	Structural and decorative floor systems.	IS 883:2016, IS 3637:1989
Timber Bridges	Bridges made using timber, for light and pedestrian traffic.	IS 883:2016

Relevant Indian Standards

Timber Structure Type	Description	Relevant Indian Standard Codes
Timber Piles	Foundation systems using driven timber posts.	IS 883:2016, IS 2911 (Part 1/Sec 3):2010 - Code of Practice for Design and Construction of Pile Foundations, (IS 2911 (Part 2) : 2021)
Timber Retaining Walls	Walls used to hold back soil or water.	IS 4998 (Part 1):1992 - Criteria for Design of Reinforced Concrete and Masonry Structures for Hydraulic Retaining Structures, applies to timber with relevant adjustments
Timber Scaffolding	Temporary structures for construction access.	IS 3696 (Part 1):1987 - Safety Code of Scaffolds and Ladders
Timber Shear Walls	Walls designed to resist lateral forces.	IS 883:2016
Timber Domes and Shells	Advanced structures for large, open spaces.	IS 883:2016
Cross-Laminated Timber (CLT) Panels	Engineered wood product used for floors, walls, and roofs.	IS 883:2016, Emerging standards and guidelines as CLT is a newer technology

References

Books

1. **"Timber Construction Manual" by American Institute of Timber Construction (AITC)**
Covers design, construction, and maintenance of timber structures, including laminated timber and connections.
2. **"Wood Engineering and Construction Handbook" by Keith F. Faherty and Thomas G. Williamson**
Detailed information on wood properties, design principles, and construction techniques for timber structures.
3. **"Structural Wood Design: A Practice-Oriented Approach" by Abi Aghayere and Jason Vigil**
Focuses on practical design techniques for structural wood, load calculations, and design of timber elements.
4. **"Design of Wood Structures – ASD/LRFD" by Donald E. Breyer, Kelly Cobein, Kenneth Fridley, and David Pollock**
Covers Allowable Stress Design (ASD) and Load and Resistance Factor Design (LRFD) methods for wood structures.
5. **"Wood: Craft, Culture, History" by Harvey Green**
Provides a historical and cultural perspective on the use of wood in construction.



Glass

The term Glass signifies an amorphous solid substance that has been formed by super cooling; a liquid solution containing chiefly silica and some other selected components.





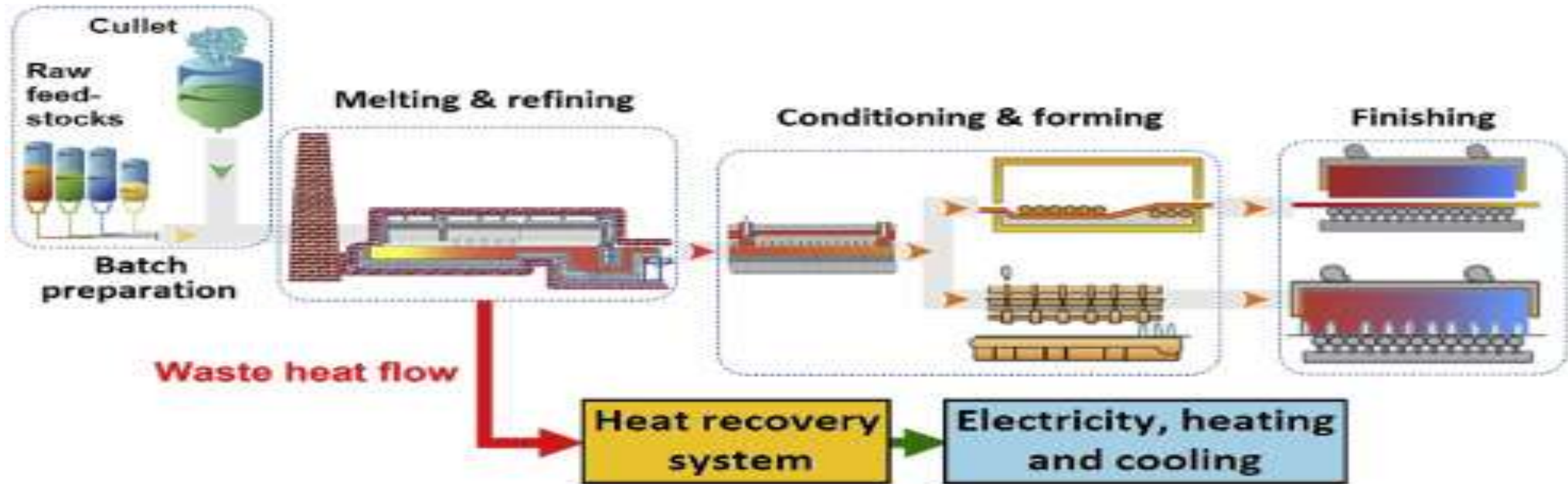
Cybertecture egg: Under construction



Manufacturing

The basic raw material for the manufacturing of good quality glass is **silica**, which in nature occurs as quartz (SiO_2), the material melts at 1700°C and is cooled rapidly without allowing it to undergo recrystallization. Quartz and other desired components are heated in special melting furnace. The molten glass comes out, rather flows, from these furnaces continuously. Various Glass shapes are obtained from this molten glass by one of the following process such as pressing, blowing drawing.

Manufacturing



Properties of Glass

Quite high tensile strength.

The ordinary glass thread possess tensile strength of 700 to 1400 kg/ cm²

The modulus of elasticity of glass is also very high.

Glasses have low ductility, low conductivity and low coefficient of thermal expansion.

Glasses are resistant to acids and many other chemicals hence they are ideal material for storage of chemicals.

Glasses are very good electrical Insulators

They have very high softening point and can be used at high temperature.

Types of glass and their common applications

Type of Glass	Description	Common Applications
Float Glass	Clear, flat glass with uniform thickness, produced by floating molten glass on a bed of molten metal.	Windows, doors, facades
Toughened Glass	Heat-treated to increase strength and safety. Shatters into small, blunt pieces when broken.	Glass doors, partitions, balustrades
Laminated Glass	Sandwiched layers of glass bonded with a tough plastic interlayer (PVB or EVA). Holds together when shattered, providing safety.	Safety glazing, overhead glazing, hurricane-resistant windows
Reflective Glass	Coated with a metallic layer to reflect heat and light. Reduces solar heat gain and glare.	Skyscraper facades, energy-efficient buildings
Low-E (Low Emissivity) Glass	Coated with a thin layer of metal oxide to reduce heat transfer while allowing light transmission.	Energy-efficient buildings, climate control
Solar Control Glass	Treated to reduce solar heat gain and UV radiation. Enhances energy efficiency by controlling heat transmission.	Facades, windows, skylights



Types of glass and their common applications

Type of Glass	Description	Common Applications
Patterned Glass	Textured or embossed with patterns on one or both surfaces. Provides privacy while allowing light transmission.	Interior partitions, decorative panels
Wire Glass	Embedded with a wire mesh for added strength and safety. Provides fire resistance and impact resistance.	Fire-rated doors, windows, partitions
Fire-Rated Glass	Designed to withstand fire for a specified period, maintaining integrity and insulation.	Fire-rated doors, partitions, assemblies
Acoustic Glass	Laminated glass designed to reduce noise transmission. Improves sound insulation properties.	Buildings near airports, highways, urban areas
Decorative Glass	Customized with etching, frosting, or colored films for aesthetic purposes. Enhances interior design and visual appeal.	Interior design elements, feature walls
Smart Glass	Can change light transmission properties based on external conditions or user control. Includes electrochromic, thermochromic, and photochromic technologies.	Modern buildings, adaptive shading, privacy control



Relevant Indian Standards

IS 14900:2000 - Glass for Buildings:

- This standard covers requirements for various types of glass used in buildings, including float glass, tinted glass, reflective glass, laminated glass, etc.
- It specifies dimensions, tolerances, safety requirements, and quality control measures for different types of architectural glass.

IS 2553 (Part 1):1990 - Safety Glass, Part 1: Non-wired Glass:

- Part 1 of IS 2553 deals with non-wired safety glass, including toughened (tempered) glass and heat-strengthened glass.
- It provides specifications for the manufacture, testing, and installation of safety glass to ensure resistance to impact and safety in case of breakage.



Relevant Indian Standards

IS 2553 (Part 2):1992 - Safety Glass, Part 2: Wired Glass

- Part 2 of IS 2553 covers wired safety glass, which includes wired glass panels used for fire-resistant glazing and safety applications.
- It specifies the requirements for wire mesh embedded in the glass and its impact resistance properties.

IS 16231:2016 (Part 1 to 4) – Use of Glass in Building

- This standard provides guidelines for the design, installation, and use of glass in buildings. It covers aspects such as structural design considerations, safety criteria, thermal performance, and maintenance requirements for glass installations.



Relevant Guidelines

National Building Codes (NBC):

- The National Building Code of India (NBC) includes provisions related to the use of glass in building construction.
- Covers aspects such as safety, fire resistance, and energy efficiency requirements for glass installations.

Green Building Standards (e.g., IGBC, GRIHA):

- Provide guidelines for sustainable building practices, including the use of energy-efficient materials such as low-e glass and solar control glass.

Energy Conservation Building Code (ECBC):

- Includes provisions for energy-efficient building design, which may affect the use of glass for thermal insulation and solar control.



Mapping of type of Glass with ISS

Type of Glass	Description	Relevant Indian Standard (IS)
Float Glass	Clear and flat glass with uniform thickness, produced by floating molten glass on a bed of molten metal.	IS 14900:2000
Toughened Glass	Glass that has been heat-treated to increase its strength and safety. When broken, it shatters into small, blunt pieces.	IS 2553 (Part 1):1990
Laminated Glass	Glass made by sandwiching a plastic interlayer between two or more glass layers. It holds together when shattered, providing safety.	IS 2553 (Part 2):1992
Wired Glass	Glass that contains a wire mesh embedded within it, providing additional strength and safety.	IS 5437:1994
Insulating Glass Units	Multiple glass panes separated by a spacer and sealed to form a unit, providing thermal and acoustic insulation.	IS 14618:1999



Mapping of type of Glass with ISS

Type of Glass	Description	Relevant Indian Standard (IS)
Heat-Strengthened Glass	Glass that has been partially tempered to provide increased strength over annealed glass but less than fully tempered glass.	IS 2553 (Part 1):1990
Reflective Glass	Glass with a metallic coating that reflects heat and light, reducing glare and solar heat gain.	IS 16231:2016
Patterned Glass	Glass that has been embossed with a pattern on one or both surfaces, often used for decorative purposes.	IS 2835:1987
Fire-Resistant Glass	Glass that can withstand high temperatures and resist fire, providing safety in case of fire incidents.	IS 16231:2016

References

Books

1. **"Glass in Building: A Guide to Modern Architectural Glass Performance" by Patricia J. Lyons** - This book covers the properties, performance, and applications of different types of architectural glass.
2. **"Architectural Glass to Resist Seismic and Extreme Climatic Events" by Richard A. Behr** - Focuses on the design and performance of glass in buildings, especially under seismic and extreme weather conditions.
3. **"Glass Engineering: Design Solutions for Automotive, Building, and Other Applications" by Jerry J. Slack** - Discusses the engineering aspects of glass design for various applications, including building construction.
4. **"Glass Construction Manual" by Christian Schittich** - Provides detailed information on the construction techniques, design principles, and material properties of glass in architecture.
5. **"Facade Construction Manual" by Thomas Herzog, Roland Krippner, and Werner Lang** - Although focused on facades, this book covers the use of glass in building envelopes extensively.
6. **National Glass Association (NGA) Guidelines*** - Provides a range of technical resources and best practice guidelines for the glazing industry



**Get Connected to us
through: eBIS**



BIS website



Bureau of Indian Standards
The National Standards Body of India

About Us ▾ Standards ▾ Conformity Assessment ▾ Laboratory Services ▾ Hallmarking ▾ Training ▾ Consumer Engagement ▾ हिन्दी / A+ A A- A

Home Standard of the Week Standard of the Month New Standards Revised Standards Know Your Standard Guidance Documents ▾ Products under Compulsory Certification BIS Talks Contact Us



Whats New View All ▾

- Uncertainty To Be Held During 21-22 October 2021 **NEW**
- Cancellation Notice **NEW**
- Grant Of All India First Certificate Of Conformity (CoC) For Essential Requirement For Retro-reflective Devices For Bicycles As Per Clause 4.14 Of IS 10613: 2014 (Cycles – Safety Requirements For Bicycles) **NEW**

Play | Pause



www.bis.gov.in

eBIS Portal



Bureau of Indian Standards
The National Standards Body of India



Connect

A+

A-

A

[Home](#) [About BIS](#) [Contact Us](#)



Existing users of manakonline(Product Certification, I



Standardization

Conformity Assessment (Manakonline)

Compulsory Registration Scheme (CRS)

Foreign Manufacture Certification

Management System Certification (MSCD)

Laboratory

Hallmarking

Consumer Engagement / Complaints

Training

Human Resource Management System

GIS

Important Links

NEWS AND EVENTS

Extension of date of implementation of amendments to Indian Standards and revised Indian Standards

Relaxation in fee for MSME units for licence under Bureau of Indian Standards (Conformity Assessment) Regulations 2018 and its amendments- reg.

Revamped portal eBIS - Login instructions for existing users

Designed, Developed and Maintained by:

भारतीय मानक बोर्ड
भारतीय मानक बोर्ड, नई दिल्ली



<https://www.manakonline.in>

Wide Circulation Drafts and Online Platform for Comments

BUREAU OF INDIAN STANDARDS
Manak Bhawan, 9 Bahadur Shah Zafar Marg, New Delhi-110002

Draft Under Wide Circulation

Bureau of Indian Standards establishes Indian Standards in relation to any article or process and amends, revises or cancels the standards so established as may be necessary, by a process of consultation involving consumers, manufacturers, Government and regulatory bodies, technologists, scientists and testing laboratories through duly constituted committees of the Bureau.

The experts form a technical committee which specializes in a specific subject area. They begin the process with the development of a draft that would cater to the needs of market as well as consumers. The committee strives to compile a draft which not only sets high standards for the subject dealt with, but also aims at improving suitability and acceptability of the end result. This draft is duly approved by the Committee and is issued in draft form and widely circulated for a period of not less than one month amongst the various interests concerned for critical review and suggestions for improvement. The wide circulation may be waived if so decided by the Sectional Committee where the matter is urgent or non-controversial.

This interface facilitates in accessing all the draft Indian standards under wide-circulation for comments. A link is provided for the users to comment on any existing Indian Standard or draft under wide-circulation. Users can comment as well as monitor the progress of their comments using this interface.

Technical Department: All
Technical Committee: All
Search

S.No.	Department	Document No.	Title of Document	ICS No.	Last Date for Comment	Comment
1	LTD	LTD 12 (13157)	Radio Communications:transmittersreceiversnetworks and operation	01.040.33;33.060.20	24-03-2020	Comment
2	WRD	WRD 1 (13510)	Method for measurement of suspended sediment in open channels (Revision of IS 4890)	93.160	21-04-2020	Comment
3	CED	CED 50 (13686)	Preliminary draft for Polyethylene-aluminium-polyethylene composite pressure pipes for hot and cold water supplies Specifications first revision of IS 15450	83.140.30, 91.340.60	14-03-2020	Comment
4	LTD	LTD 14 (13806)	Software and Systems Engineering – Part 1 Core Agile Practices	35.080	25-04-2020	Comment
5	CHD	CHD 19 (13882)	LEATHER SAFETY AND PROTECTIVE FOOTWEAR WITH DIRECT MOULDED POLYVINYL CHLORIDE PVC SOLE - SPECIFICATION First Revision	61.060; 83.080.20; 13.340.50	05-04-2020	Comment
6	MED	MED 33 (14259)	STAINLESS STEEL VACUUM FLASKS - SPECIFICATION	67.250	14-04-2020	Comment
7	CHD	CHD 26 (14726)	Methods of test for commercial blasting explosives and accessories: Part III Detonators general and permitted	71.100.30	20-03-2020	Comment
8	LTD	LTD 12 (15108)	Code of practice for installation of single and community antenna systems for reception of sound and television broadcasting Amendment - 1	--	14-04-2020	Comment
9	CHD	CHD 1 (15162)	POLYPHOSPHORIC ACID SPECIFICATION	71.060	22-03-2020	Comment
10	CHD	CHD 17 (15181)	Leather Bovine Wet Blue - Specification First Revision	59.140.01	05-04-2020	Comment

<https://www.services.bis.gov.in:8071/php/BIS/WCDraft/WcDraft.php>



Online Proforma for Proposal for New Subjects for National Standardization

The screenshot shows a web browser window displaying the 'BUREAU OF INDIAN STANDARDS' website. The page title is 'Proforma for Proposing New Subjects for National Standardization'. The header includes the BIS logo and the address: 'Manak Bhawan, 9 Bahadur Shah Zafar Marg, New Delhi-110002'. Below the header, there is a form with the following sections:

- Are You a Government Department/Organization :** Yes No
- Part-1**
 - 1. Proposer Name *
 - 2. Email ID *
 - 3. Contact No *
 - 4. Address *
- Part-2**
 - 5. Proposed title of Standard *
 - 6. Aspect *
 - 7. Define subject of standard *
 - 8. Select Most Relevant Technical Department *

The Windows taskbar at the bottom shows the system clock as 10:32 AM on 1/12/2020.

<https://www.services.bis.gov.in:8071/php/BIS/bisconnect/NWIP/Proposal>



Awareness through Social Media



Social media presence

The screenshot shows the YouTube channel page for the Bureau of Indian Standards. At the top, there is a search bar with the text "bureau of indian standards" and a search icon. To the right of the search bar are icons for video uploads, a grid, and a "SIGN IN" button. Below the search bar is a banner image with the text "SETTING THE INDIAN STANDARDS HIGH" and illustrations of robotic arms and lightbulbs. The channel name "Bureau of Indian Standards" is displayed with a profile picture and "3.34K subscribers". A red "SUBSCRIBE" button is located to the right. Below the channel name are navigation tabs: HOME, VIDEOS, PLAYLISTS, COMMUNITY, CHANNELS, and ABOUT. The "VIDEOS" tab is selected. Underneath, there are options for "Uploads" and "PLAY ALL", and a "SORT BY" dropdown menu. Five video thumbnails are shown, each with a title, view count, and upload date. The first video is titled "BIS CARE APP" with 145K views. The second is "Ghar mein sirf #ISIMark wala samaan hi kyun laye?" with 674 views. The third is "Kya apka ghar ISI SAFE?" with 1K views. The fourth is "How standards help us live a fulfilled life?" with 656 views. The fifth is "Buy only ISI marked electricity products | BIS" with 590 views.

YouTube ^{IN}

bureau of indian standards

Home

Trending

Subscriptions

Library

History

SETTING THE INDIAN STANDARDS HIGH

Bureau of Indian Standards

3.34K subscribers

SUBSCRIBE

HOME VIDEOS PLAYLISTS COMMUNITY CHANNELS ABOUT

Uploads PLAY ALL SORT BY

BIS CARE APP EMPOWERS YOU TO:
• SEARCH AND VERIFY LICENCE DETAILS
• REPORT MISUSE OF ISI MARK, HALLMARK AND REGISTRATION MARK

घर में सिर्फ #ISIMark वाला सामान ही क्यों लाएं?

क्या आपका घर है ISI Safe?

HOW STANDARDS HELP US LIVE A FULFILLED LIFE?

बिजली का सामान खरीदें, तो सिर्फ आईएसआई मार्क वाला!

BIS CARE APP
145K views • 1 month ago

Ghar mein sirf #ISIMark wala samaan hi kyun laye?
674 views • 7 months ago

Kya apka ghar ISI SAFE?
1K views • 7 months ago

How standards help us live a fulfilled life?
656 views • 7 months ago

Buy only ISI marked electricity products | BIS
590 views • 8 months ago

- <https://www.youtube.com/c/BureauofIndianStandards/featured>











BIS Talks on Electrotechnical Standards

559 views • 8 Apr 2021

👍 23 💬 1 ➦ SHARE ⋮ SAVE ⋮

- BIS Talks**
Bureau of Indian Standards - 1/19
- ▶  **BIS Talks on Electrotechnical Standards**
41:36
Bureau of Indian Standards
 - 2  **BIS Talks on Standardization in Civil Engineering**
35:54
Bureau of Indian Standards
 - 3  **BIS Talks on Standardization in Transport Engineering**
31:47
Bureau of Indian Standards
 - 4  **BIS Talks on Standardization in Food & Agriculture Sector**
38:44
Bureau of Indian Standards
 - 5  **BIS Talks on Standardization in Electronics & IT Sector**
42:49
Bureau of Indian Standards
 - 6  **BIS Talks on Petroleum, Coal and Related Products Sector**

All Listenable Recently uploaded Watched

How GOOGLE  How Google's monopoly power



Social media presence

Bureau of Indian Standards ✓
@IndianStandards · Government Organization

Home Reviews Videos Photos More

Liked

About See All

BIS is the National Standard Body of India established under the BIS Act 1986 for the harmonious development of the activities of standardization, marking and quality certification of goods and for matters connected therewith or incidental thereto.

9,681 people like this including 2 of your friends

10,484 people follow this

<http://www.bis.gov.in/>

01123230131

Send Message

sm@bis.gov.in

Government Organization

BIS is the National Standard Body of India established under the BIS Act 1986 for the harmonious development of the activities of standardization, marking and quality certification of goods and for matters connected therewith or incidental thereto. BIS is co founder of ISO and is Nodal Point for all TBT under WTO from India. BIS is also active member of all the International Standardizing agencies such as ISO, IEC, ITU etc. The BIS flagship scheme is ISI Mark (started by late Sh Pt

Create Post

Photo/Video Check in Tag Friends

Bureau of Indian Standards ✓
December 14 at 10:55 AM · 🌐

BIS is holding an insightful webinar to help you understand the implementation of standards for safer, reliable, sustainable energy storage systems. Especially if you work closely in the above mentioned field - then you should sure attend this webinar.

#BIS #IndianStandards #webinar

KEEPING SAFETY FIRST.

Webinar on
"Standards for Building Safe Electrical Energy Storage System (EESS)"

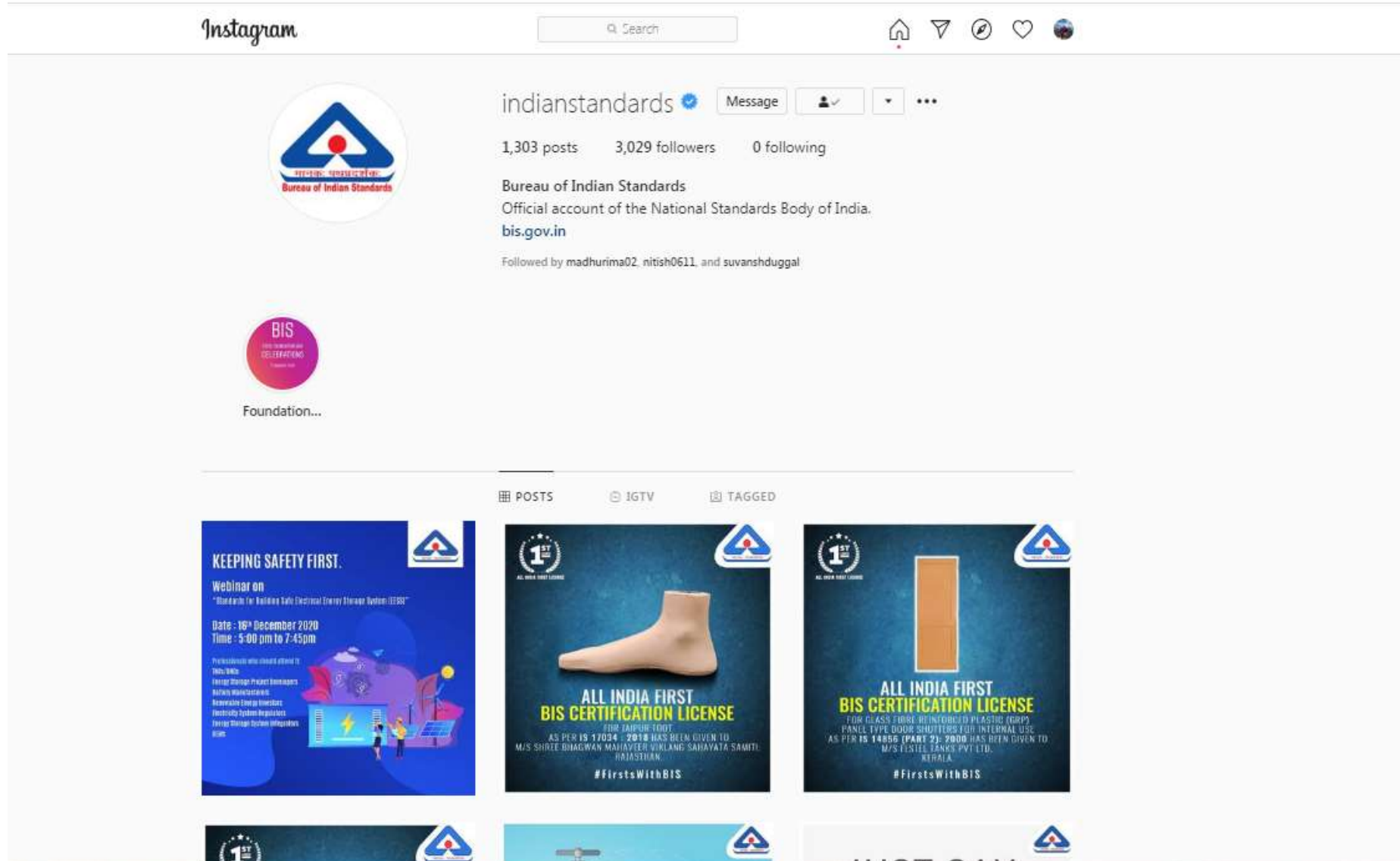
Date : 16th December 2020
Time : 5:00 pm to 7:45pm

Professionals who should attend it:
TNDs/DMOs
Energy Storage Project Developers
Battery Manufacturers
Renewable Energy Investors
Electricity System Regulators
Energy Storage System Integrators
OEMs

- <https://www.facebook.com/IndianStandards>



Social media presence



The screenshot shows the Instagram profile for 'indianstandards'. The profile name is 'indianstandards' with a verified badge. The bio reads: 'Bureau of Indian Standards Official account of the National Standards Body of India. bis.gov.in'. It shows 1,303 posts, 3,029 followers, and 0 following. Below the bio, it lists users followed: 'madhurima02, nitish0611, and suvanshduggal'. There is a 'Message' button and a dropdown menu. The profile picture is the BIS logo. A post titled 'Foundation...' is visible. The main feed shows three posts: a webinar announcement, and two 'All India First BIS Certification License' announcements for a shoe and a door shutter.

Instagram

Search

indianstandards Message

1,303 posts 3,029 followers 0 following

Bureau of Indian Standards
Official account of the National Standards Body of India.
bis.gov.in

Followed by madhurima02, nitish0611, and suvanshduggal

Foundation...

POSTS IGTV TAGGED

KEEPING SAFETY FIRST.
Webinar on
"Standards for Building Safe Electrical Energy Storage System (ESS)"
Date: 16th December 2020
Time: 5:00 pm to 7:45 pm

Professionals who should attend to:
Tech. Staff
Energy Storage Project Managers
Battery Manufacturers
Renewable Energy Investors
Electricity System Regulators
Energy Storage System Integrators
etc.

ALL INDIA FIRST
BIS CERTIFICATION LICENSE
FOR SHOE TOOT
AS PER IS 17034 : 2018 HAS BEEN GIVEN TO
M/S SHREE BHAGWAN MAHAFER GUNLAKH SAHAYATA SAMITI,
TRIPUNJARI,

#FirstsWithBIS

ALL INDIA FIRST
BIS CERTIFICATION LICENSE
FOR CLASS FIBRE REINFORCED PLASTIC (FRP)
PANEL TYPE DOOR SHUTTERS FOR INTERNAL USE
AS PER IS 14856 (PART 2): 2000 HAS BEEN GIVEN TO
M/S L STEEL LANKS PVT LTD,
KERALA.

#FirstsWithBIS

- <https://www.instagram.com/indianstandards/>





hjpb0@bis.gov.in, jpbo@bis.gov.in

