

भारतीय मानक
Indian Standard

IS 19609 : 2026

**यूपीवीसी प्रोफाइल फ्रेमयुक्त दरवाज़े,
खिड़कियाँ और स्लाइडर्स — विशिष्टि**

**uPVC Profile Framed Doors,
Windows and Sliders —
Specification**

ICS 83.140; 91.060.50

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August 2026

Price Group 7

Doors, Windows and Shutters Sectional Committee, CED 11

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Doors, Windows and Shutters Sectional Committee had been approved by the Civil Engineering Division Council.

Due to availability of different materials along-with the advancement in the manufacturing technology of framed doors, windows and sliders, nowadays lot of options are available in the market. One such option is uPVC framed doors, windows and sliders. The advantage with uPVC framed doors, windows and sliders, are good aesthetic, acoustics, thermal conductivity, more view area, etc. However, beyond the looks and aesthetics, it is also very much important that these framed doors, windows and sliders must meet the desired performance for the purpose they have been installed in buildings. The performance parameters include air infiltration/exfiltration, water tightness, operating force, durability, mass, corrosion, thermal, acoustic, impact resistance, mechanical strength, etc.

To create the awareness regarding the performance requirements and to ensure the desired quality for the same in framed doors, windows and sliders, standardization is necessary. Considering the same, two standards have been formulated. One standard is for the product specification of uPVC framed doors, windows and sliders specifying the raw material requirements as well as final performance requirements. The other standard, IS 18648: 2024, is for classification based on product type, different performances, etc of the framed doors, windows and sliders and performance tests based on the classifications.

The composition of the Committee responsible for the formulation of this standard is given in [Annex B](#).

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

uPVC PROFILE FRAMED DOORS, WINDOWS AND SLIDERS — SPECIFICATION

1 SCOPE

1.1 This standard specifies the requirements for materials, fabrication and performance of whole system of external doors, windows and sliders made from uPVC profiles.

NOTE — Some auxiliary profiles may be of other material than uPVC.

1.2 This standard does not cover:

- a) Windows and doors subject to regulations on smoke leakage, resistance to fire and escape routes;
- b) Curtain walls;
- c) Revolving doors;
- d) Internal partitions including internal windows, doors and sliders; and
- e) Bullet and blast resistant windows, doors and sliders.

2 REFERENCES

The standards listed in [Annex A](#) contain provisions which though reference in the text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards.

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 18648, IS 17953 and IS 16231 (Part 1) shall apply.

4 TYPES, HANDING AND CLASSIFICATION

The types, handing and classification of uPVC framed doors, windows and sliders shall be as per IS 18648.

5 MATERIALS

5.1 uPVC Profiles

The uPVC profiles used for fabrication of doors, windows and sliders shall conform to the requirements of IS 17953.

5.2 Aluminium Extrusions and Flashings

5.2.1 Extruded aluminium alloy (if used) for reinforcement and auxiliary profiles such as interlocks, rails, couplers etc., shall be fabricated from any grade of alloy complying with IS 733, IS 738 or equivalent or better (in terms of mechanical properties given in these standards). The chemical composition and mechanical properties of the aluminium profile used shall be traceable and produced as and when requested.

5.2.2 Visible profile distortions post surface finishing when viewed from a distance of 3 m shall be accepted. For any distortion visible from distance of less than 3 m, acceptance shall be as agreed between the manufacturer and the purchaser.

5.2.3 The aluminum extrusions may be finished by any one of the following:

- a) Anodizing;
- b) Liquid organic coating; and
- c) Powder coating.

5.3 Protective Tape

Protective tape with an adhesive applied on the visible surface of uPVC profiles, shall be of minimum 50 microns thickness. For testing, a specimen of uPVC profile, with protective tape applied, shall be kept for a minimum period of 3 months at ambient atmospheric conditions for testing (see IS 196). After the testing period, on removal of protective tape, it shall not leave any stains.

5.4 Glass

Different type of glass and glazing products used in doors, windows and sliders shall be as per the following Indian Standards:

- a) Float glass (annealed glass) conforming to IS 14900;
- b) Safety glass (laminated and toughened glass) conforming to IS 2553 (Part 1);
- c) Heat strengthened glass conforming to IS 16982;

IS 19609 : 2026

- d) Insulated glazing unit (IGU) conforming to IS 17346; and
- e) Silvered glass mirror conforming to IS 3438.

NOTE — For guidance related to selection of glass, refer IS 16231 (Part 1 to Part 4).

5.5 Hardware and Fixing

5.5.1 All metal straps, clips, brackets, screws, nuts, bolts, washers and other fixings and all metal components of hardware shall be manufactured from one of the following materials:

- a) Anodized/powder coated aluminium alloy;
- b) Zinc die casting;
- c) Lead brass;
- d) Cast lead gunmetal;
- e) Austenitic steel of minimum grade 304 of IS 6911; and
- f) Any metal which has been treated for corrosion protection such that there shall be no corrosion of the metal visible to normal or corrected vision when subjected to 240 h exposure in a neutral salt spray test as per IS 5528.

5.5.2 For areas located at a distance less than 1 km from seashore, the hardware with minimum 480 h corrosion resistance shall be used. For all other regions, minimum 240 h corrosion resistance shall be used.

5.5.3 Some of the hardware components may contain parts made of plastics that is nylon, polyethylene, and polypropylene.

5.6 Reinforcement

5.6.1 The reinforcement if used, may be of mild steel with corrosion resistance coating, stainless steel or extruded aluminium. The reinforcement shall be installed in a manner that it shall not move or rattle when the window is in use. The reinforcement shall be provided in a closed or sealed chamber.

5.6.2 The thickness and design of the reinforcement shall be such that the windows meet the performance requirements as per IS 18648.

5.6.3 In case mild steel is used as reinforcement, it shall conform to any grade of IS 1079 or IS 513 (Part 1) or IS 513 (Part 2) and shall be galvanized with a zinc of minimum grade of coating of 120 g/m² (see IS 277) for internal usage. For external usage of reinforcement (ex-couplers), it shall be hot dip galvanized with coating thickness of 100 g/m² to 120 g/m², alternatively cold galvanizing with zinc of minimum grade of coating of 275 g/m² (see IS 277). The minimum wall thickness of mild steel reinforcement shall be 1.5 mm.

5.6.4 Tolerance for reinforcement straightness shall not be more than 1 mm in any 600 mm length.

5.7 Glazing Gasket

Material for glazing gaskets and weather stripping shall be of EPDM, silicone, rubber, vulcanized or thermoplastic material having the following properties in [Table 1](#).

Table 1 Properties of Glazing Gaskets

(Clause [5.7](#))

Sl No. (1)	Characteristic (2)	Requirement (3)	Method of Test, Ref to (4)
i)	Shore hardness A	60 to 80 Shore A	IS 3400 (Part 2/ Sec 4)/ISO 48-4
ii)	Compression set percent		
	a) High at (100 ± 1) °C for (24 + 0/– 2 h)	≤ 35 percent	IS 3400 (Part 10/ Sec 1)/ISO 815-1
	b) Low at (– 25 ± 2) °C for (24 + 0/– 2 h)	≤ 85 percent	IS 3400 (Part 10/ Sec 2)/ISO 815-2

Table 1 (Concluded)

Sl No. (1)	Characteristic (2)	Requirement (3)	Method of Test, Ref to (4)
iii)	Ozone resistance (50 pphm for 96 h $\frac{+0}{-2}$ h at 40 °C $\pm$ 2 °C)	No visible cracks	IS 3400 (Part 20)/ ISO 1431-1
iv)	Ageing test (for 168 h $\frac{+0}{-2}$ at 100 °C $\pm$ 1 °C)		
	Co-efficient of deterioration of hardness change, <i>Max</i> (Shore A)	+ 15/– 5	IS 3400 (Part 4)/ ISO 188
	Tensile strength change, <i>Max</i>	– 25 percent of initial value	
	Elongation at break change, <i>Max</i>	– 50 percent of initial value	
v)	Minimum tensile strength, MPa	7.5	IS 3400 (Part 1)/ ISO 37
vi)	Minimum elongation, percent	200	IS 3400 (Part 1)/ ISO 37

5.8 Setting Blocks

5.8.1 Setting block material shall be of PVC or silicone compatible EPDM or silicone, with a Shore A hardness of 80 to 90. Setting blocks should be compatible with all other glazing materials that may come into contact with the blocks.

5.8.2 Shaped setting block or glazing bridge is commonly used to achieve a flat surface for the glazing. Setting block width and location shall not restrict water drainage.

6 CONSTRUCTION

6.1 Locking Points

For sliding windows with height greater than 1.5 m and casement windows with height greater than 0.9 m, multipoint locking shall be used. For doors, (casement and sliders) multipoint lock shall be mandatory.

6.2 Human Life Safety, Especially for Children

6.2.1 Window Restrictor for Children

For projected top hung window, parallel opening window, vertical sliding hung window and pivot window (except when used as an access door), the window restrictor shall be provided such that the clear opening shall not exceed 100 mm for human life safety, especially for children. Releasable window restrictor may be provided for the purpose of cleaning/maintenance. The side hung opening is

recommended only for low rise buildings [upto 20 m, see IS 875 (Part 3)]. For buildings above 20 m height, projected top hung or parallel opening is recommended.

NOTES

1 For fire access panels/window, the local authority regulations will be applied and same will supersede the above.

2 The above requirement of window restrictor for children is for residential apartments and can be used for commercial establishment.

6.2.2 Anti-Fallout — shall be applicable as per the following:

- For all open out windows in buildings up to 5 storey height (< 15 m), anti fall out secondary safety device is recommended; and
- For all open out windows in buildings more than 5 storey height (> 15 m), anti fall out secondary safety device is mandatory.

6.2.3 In the case of a fall out due to the sash getting completely disengaged from the hinges/stay arms/restrictors, the anti-fallout device shall be capable of withstanding the self-weight of the sash. The drop height in the test for the sash shall be minimum 100 mm.

6.3 Safety in Construction of Windows, Doors and Sliders

In addition to the requirements given in [6.2](#), the

IS 19609 : 2026

following shall be complied with:

- a) For all sliders to be installed in buildings more than 20 storey height (> 70 m), it is recommended to have symmetrical interlock; and
- b) For wind loads beyond 3 000 Pa, only inward operable windows and doors and sliders shall be used.

6.4 Number and Location of Setting Blocks

6.4.1 Number and location of setting blocks shall be as shown in [Fig 1](#). Setting blocks shall be:

- a) Positioned at quarter points or not less than 30 mm from the corner;
- b) Minimum width of each setting block shall not be less than the glass thickness; and
- c) If a glazing bridge is used, then the thickness of the glazing bridge can be added to the thickness of the setting block to achieve the minimum gap of 6 mm between the edge of glass and the framing member.

6.4.2 Setting blocks shall be located to equally support all panes of glass, and shall be fixed to prevent displacement during installation and service. The minimum length of each setting block (or two blocks side by side) shall be 25 mm in length for every square metre of glass area, or minimum length of 50 mm whichever is greater. For example, for a 3.0 m^2 glass area, $3.0 \text{ m}^2 \times 25 \text{ mm/m}^2 = 75 \text{ mm}$ long, that is, 75 mm is the length of each setting block.

6.5 Drainage and Ventilation

6.5.1 Ventilation and drainage slots shall be provided in the frames, sash, transom or mullions, as shown in [Fig 2](#), in order to permit the escape of entrapped water, moisture or hot air from the system.

6.5.2 A minimum one slot of minimum size 5 mm $\times$ 25 mm shall be provided. The slots shall offset between the inner and outer walls by minimum 25 mm so as to prevent any back flow of water.

6.6 Joinery

uPVC windows shall be fabricated with fusion welded corners. The mullions or transoms shall be either fusion welded or mechanically joined with adequate sealing so as to prevent any ingress of

water or air in the reinforcement chamber or inside the room/building.

6.7 Weldability

6.7.1 For the determination of the weldability of profiles, welded corners shall be tested as per Annex F of IS 17953.

6.7.2 The calculated mean stress at maximum load of each corner, in tension (σ_t) or compression (σ_c), shall not be less than 90 percent of the values as specified in **5.8** of IS 17953.

6.8 Mechanical Jointing

6.8.1 For determination of torsion strength of mechanically jointed mullions/transom, use two U shaped sections suitable for the profile depth and width (60 mm $\pm$ 10 mm), as shown in [Fig. 3](#). Using these levers apply a load simultaneously at both ends of the mullion profile. Apply 20 loading cycles, with alternating torque of ± 10 Nm with each torque maintained for 1 minute. Then, apply a static loading torque of 10 Nm simultaneously at each end of the mullion in each direction in turn. Measure and record the maximum misalignment at the extreme ends of the Mullion. This misalignment (average of two extreme ends) shall not be more than 2 mm from the neutral position.

6.8.2 When windows with mechanically jointed mullions/transom are tested for water tightness test as per IS 18648, water shall not penetrate through the joint into the reinforcing chambers and undrained chambers (chambers without drainage provision). The water shall be checked by dismantling the specimen.

7 DIMENSIONS AND TOLERANCES

7.1 The width and height of the door, window and slider shall be measured between the outer faces of outer frame as shown in [Fig. 4](#). The dimensions shown in [Fig. 4](#) are for illustration only.

7.2 For fabrication and assembly of doors, windows and sliders, the tolerances shall be as follows:

- a) For linear dimensions: ± 3 mm ($\leq 1\ 500$ mm);
- b) For linear dimensions: ± 5 mm ($> 1\ 500$ mm);
- c) Diagonal Difference: 5 mm ($\leq 1\ 500$ mm); and
- d) Diagonal Difference: 8 mm ($> 1\ 500$ mm).

NOTE — For installation tolerances, see IS 18648.

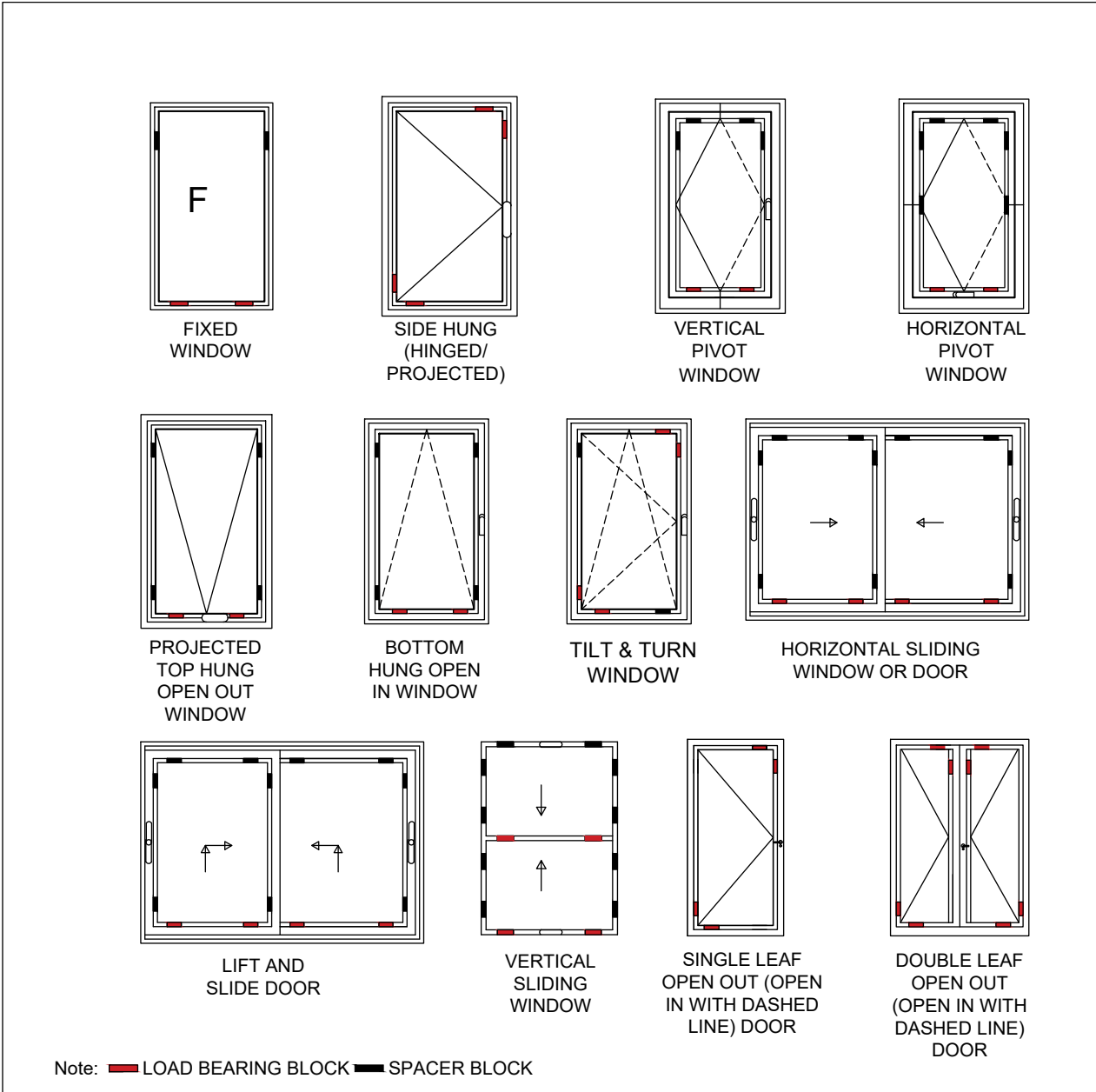


FIG.1 NUMBER AND POSITION OF SETTING BLOCKS.

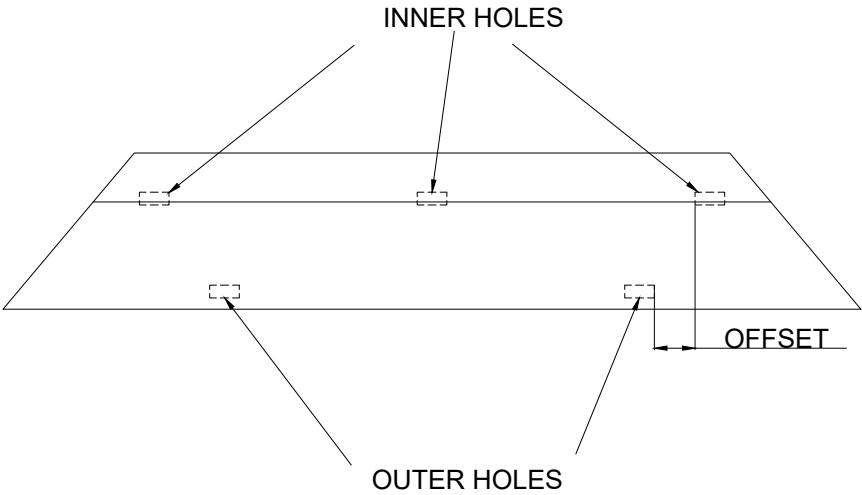


FIG. 2 VENTILATION AND DRAINAGE HOLE LOCATION

IS 19609 : 2026

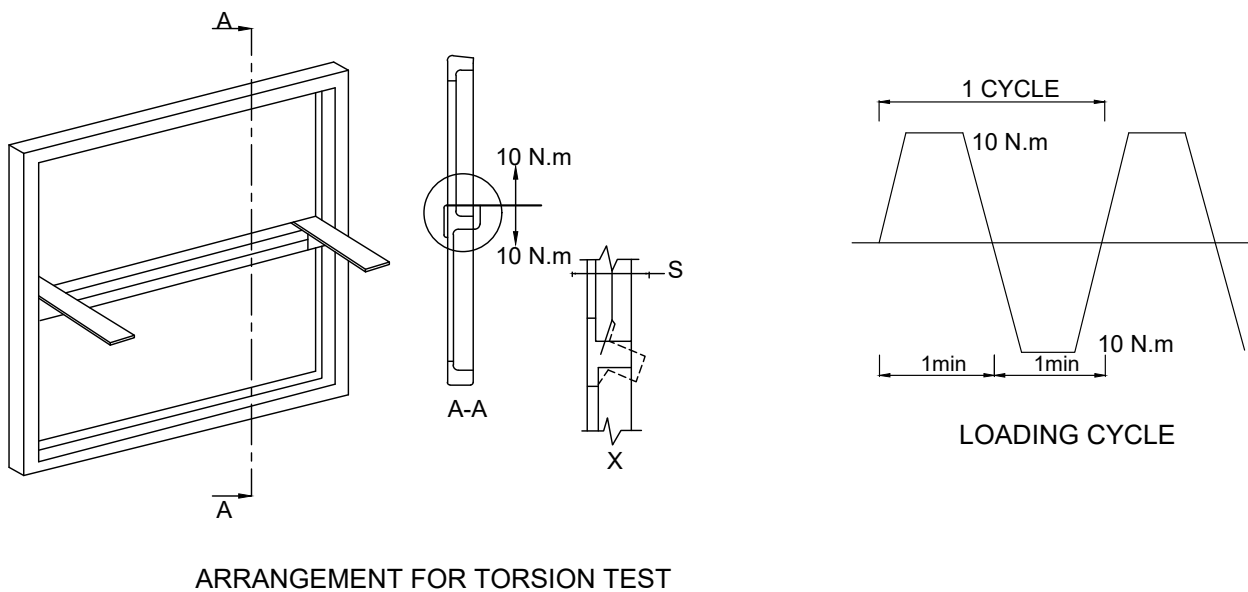


FIG. 3 MULLION MECHANICAL JOINT

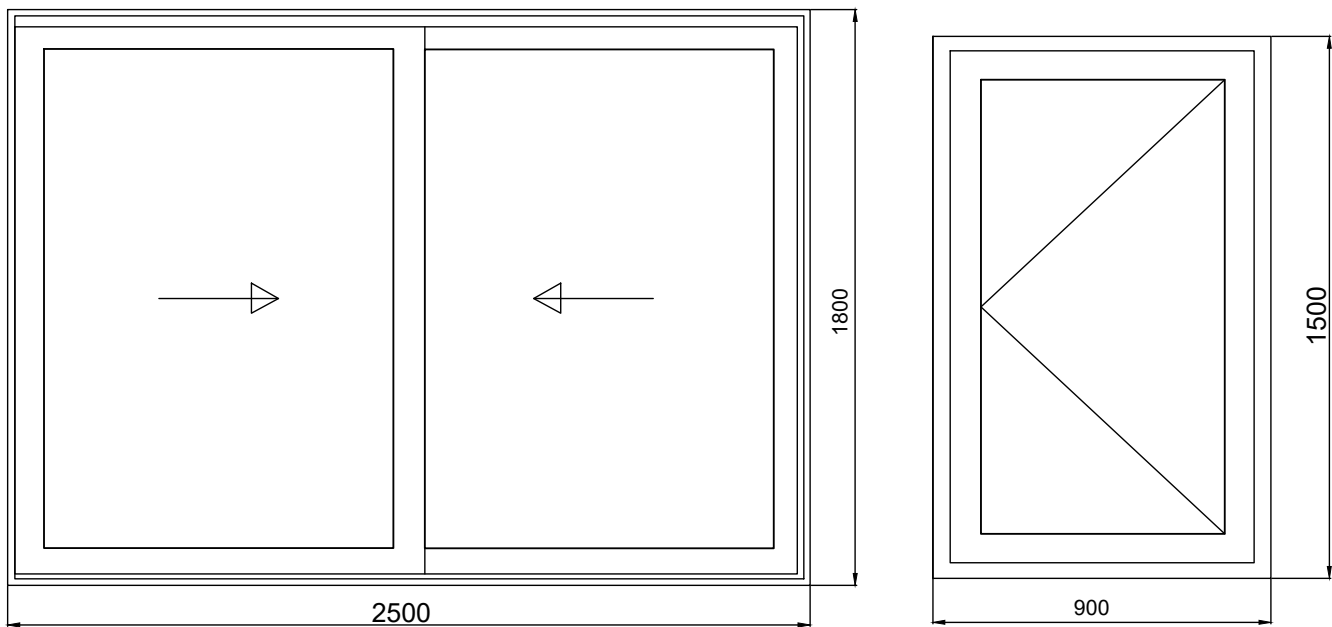


FIG. 4 SYMBOLIC REPRESENTATION OF MEASURING DIMENSIONS

8 TESTS AND REQUIREMENTS

The following tests shall be carried out on the whole system of external doors, windows and sliders made from uPVC profiles.

8.1 Product Basic Classification

Refer 6.1, Table 1A of IS 18648.

8.2 Product Performance Classification

Refer 6.1, Table 1B of IS 18648.

8.3 Optional Product Performance Classification

Refer 6.1, Table 1C in addition to Table 1B of IS 18648

9 LOT, SAMPLING AND CRITERIA OF CONFORMITY

9.1 Lot

Windows, doors and sliders with same designation (type and handing) and designed for same load application, manufactured with raw materials having similar properties shall constitute a lot.

9.2 Sampling

Random sampling to be taken from every lot. However, the number of samples shall be as agreed between the manufacturer and the purchaser.

9.3 Criteria of Conformity

Sample selected as mentioned above shall meet the

requirements mentioned in this standard.

10 MARKING

10.1 Each doors, windows and sliders shall be indelibly and legibly marked in a position, as agreed between the manufacturer and the purchaser, with the following information:

- a) Name of manufacturer or trademark or brand name;
- b) The value for each parameter mentioned in the classification as per the product type (see IS 18648); and
- c) Date of manufacture or/and batch number.

10.2 BIS Certification Marks

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the product may be marked with the Standard Mark.

11 PACKING

11.1 All doors, windows and sliders shall be dispatched with the opening parts suitably secured to preserve alignment when fixing and glazing.

11.2 All applicable hardware shall be installed along with door, windows and sliders except handles, which can be supplied separately.

11.3 Coupled windows, doors and sliders shall be dispatched uncoupled.

IS 19609 : 2026

ANNEX A

(Clause 2)

LIST OF REFERRED STANDARDS

IS No.	Title	IS No.	Title
IS 196 : 2024	Atmospheric conditions for testing (<i>second revision</i>)	(Part 4) : 2012 ISO 188 : 2011	Accelerated ageing and heat resistance (<i>third revision</i>)
IS 277 : 2018	Galvanized steel strips and sheets (Plain and corrugated) — Specification (<i>seventh revision</i>)	(Part 10) : 1977	Compression set
IS 513	Cold reduced carbon steel sheet and strip:	(Sec 1) : 2022/ ISO 815-1 : 2019	At ambient or elevated temperatures (<i>third revision</i>)
(Part 1) : 2016	Cold forming and drawing purpose (<i>sixth revision</i>)	(Sec 2) : 2022/ ISO 815-2 : 2019	At low temperatures (<i>third revision</i>)
(Part 2) : 2016	High tensile and multi-phase steel (<i>sixth revision</i>)	(Part 20) : 2025 ISO 1431-1 : 2022	Resistance to ozone cracking — Static strain test (<i>third revision</i>)
IS 733 : 1983	Specification for wrought aluminium and aluminium alloy bars, rods and sections (for general engineering purposes) (<i>third revision</i>)	IS 3438 : 2023	Silvered glass mirrors for general purposes — Specification (<i>third revision</i>)
IS 738 : 1994	Wrought aluminium and its alloys — Drawn tubes for general engineering purposes — Specification (<i>third revision</i>)	IS 6911 : 2017	Stainless steel plate, sheet and strip — Specification (<i>second revision</i>)
IS 875 (Part 3) : 2015	Design loads (other than earthquake) for buildings and structures — Code of practice: Part 3 Wind loads (<i>third revision</i>)	IS 5528 : 2024/ ISO 9227 : 2022	Corrosion tests in artificial atmospheres — Salt spray tests (<i>second revision</i>)
IS 1079 : 2017	Hot rolled carbon steel sheet, plate and strip — Specification (<i>seventh revision</i>)	IS 14900 : 2018	Transparent float glass — Specification (<i>first revision</i>)
IS 2553 (Part 1) : 2018	Safety glass — Specification: Part 1 Architectural, building and general uses (<i>fourth revision</i>)	IS 16231	Use of glass in buildings — Code of practice:
IS 3400	Methods of test for vulcanized rubber:	(Part 1) : 2019	General methodology for selection (<i>first revision</i>)
(Part 1) : 2021 ISO 37 : 2017	Tensile stress-strain properties (<i>fourth revision</i>)	(Part 2) : 2019	Energy and light (<i>first revision</i>)
(Part 2/Sec 4) : 2022/ISO 48-4 : 2018	Determination of hardness, Section 4 Indentation hardness by durometer method (shore hardness) (<i>second revision</i>)	(Part 3) : 2019	Fire and loading (<i>first revision</i>)
		(Part 4) : 2019	Safety related to human impact (<i>first revision</i>)
		IS 16982 : 2018	Heat strengthened glass — Specification
		IS 17346 : 2020	Insulating glazing unit — Specification
		IS 17953 : 2023	uPVC profiles for windows and doors — Specification
		IS 18648 : 2024	Classification and performance requirements for doors, windows and sliders — Specification

ANNEX B

(Foreword)

COMMITTEE COMPOSITION

Doors, Windows and Shutters Sectional Committee, CED 11

<i>Organization</i>	<i>Representative(s)</i>
In Personal Capacity (357, Bhera Enclave, Paschim Vihar, New Delhi – 110087)	SHRI R. K. KAKAR (Chairperson)
B. G. Shirke Construction Technology Ltd, Pune	COL (RETD) SANJAY M. ADSAR SHRI Y. B. PATHAN (<i>Alternate</i>)
Bhoruka Extrusions Private Limited, Mumbai	SHRI MAKOTO ISHIHARA
Central Public Works Department, New Delhi	CHIEF ARCHITECT SENIOR ARCHITECT (<i>Alternate</i>)
CSIR - Central Building Research Institute, Roorkee	SHRI A. ARVIND KUMAR SHRI S. K. SINGH (<i>Alternate I</i>) SHRI MOHAMMAD REYAZUR RAHMAN (<i>Alternate II</i>)
Eminent International Testing Centre Pvt Ltd, Hyderabad	SHRI REJI BHAMI SHRI SWAMINATHAN (<i>Alternate I</i>) SHRIMATI SAJIN SHARAF (<i>Alternate II</i>)
Engineers India Limited, New Delhi	SHRI SAMIR DAS SHRI ANISH KUNDU (<i>Alternate I</i>) SHRI ANISH MAHALA (<i>Alternate II</i>)
Glazing Society of India, Chennai	SHRI G. N. GOHUL DEEPAK SHRI NAVEEN KARKI (<i>Alternate I</i>) MS DILNA SUBRAMANIAN (<i>Alternate II</i>)
Greenlam Industries, Kolkata	SHRI SHIRISH BHATT SHRI INDER KOCHHAR (<i>Alternate</i>)
Hindalco Industries Limited, Mumbai	SHRI ANJAN PUTATUNDA SHRI AMRIT RAJ THAKUR (<i>Alternate I</i>) SHRI DEEPAK DESHMUKH (<i>Alternate II</i>)
Institute of Wood Science and Technology, Bengaluru	SHRI ANAND NANDANWAR
Multiwyn Industrial Corporation, Kolkata	SHRI B. K. JHAJHARIA SHRI VISHAL JHAJHARIA (<i>Alternate</i>)
National Test House, Kolkata	SHRI ANIMESH DAS SHRI RAJESHWAR SINGH (<i>Alternate</i>)
Schueco India Private Limited, Bengaluru	SHRI ANTONY JOHN SHRI SUBIN CALVIN GEO (<i>Alternate</i>)
Shakti Hormann Pvt Ltd, Secunderabad	SHRI VUPPALA VIVEK SHRI MAHESH SINGH (<i>Alternate I</i>) SHRI K. PARAMESWARA REDDY (<i>Alternate II</i>)
Sleek Boards India LLP, Pune	SHRI NITIN VAZE SHRI AMIT VAZE (<i>Alternate</i>)

IS 19609 : 2026

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Winwall Technology Indian Private Limited, Chennai	SHRI P. JOTHI RAMALINGAM SHRI SHARANRAJ A. (<i>Alternate</i>)
BIS Directorate General	SHRI DWAIPAYAN BHADRA, SCIENTIST 'F'/SENIOR DIRECTOR AND HEAD (CIVIL ENGINEERING) [REPRESENTING DIRECTOR GENERAL (<i>Ex-officio</i>)]
<i>Member Secretary</i> SHRI PRADEEP SINGH SHEKHAWAT SCIENTIST 'E'/DIRECTOR (CIVIL ENGINEERING), BIS	

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website- www.bis.gov.in or www.standardsbis.in.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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