



**बोरवेल/नलकूप के लिए असुघटियत पॉलीविनॉयल क्लोराइड (पीवीसी-यू) चूड़ीदार कॉलम पाइप
आई एस IS 18166:2025 के अनुसार**

**UNPLASTICIZED POLYVINYL CHLORIDE PVC-U THREADED COLUMN
PIPES FOR BOREWELLS/TUBEWELLS
ACCORDING TO IS 18166:2025**

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो (अनुरूपता मूल्यांकन) विनियम, 2018 की योजना- I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification.

1.	मानक संख्या IS No.	:	IS 18166:2025
	शीर्षक Title	:	Unplasticized Polyvinyl Chloride PVC-U Threaded Column Pipes for Borewells/Tubewells
	संशोधनों की संख्या No. of amendments	:	Nil
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	PVC resin shall confirm to Clause 4 of IS 18166. Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be established during Grant of Licence/Change in Scope of Licence/ Factory Surveillance
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Please refer to Annex-A
c)	नमूने का परिमाण Sample Quantity	:	01 mtr x 10 Nos. Pipes with declared ends (Bell/Threaded couplers), Extra couplers - 05 no Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/ Factory Surveillance (in case of market surveillance, effort may be made to procure the required quantity of product sample, as far as possible since raw material sample may not be available in market)

d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	-	Same as the scope of licence
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	Please refer to Annex-B
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	:	Please refer to Annex-C
5.	एक दिन में संभावित परीक्षण Possible tests in a day		
	(i) Dimensions (Clause 7), (ii) Resistance to external blows at 0°C (Clause 9.2), (iii) Flattening test (Clause 9.3), (iv) Tensile strength (Clause 9.4), (v) Ultimate breaking load (Clause 9.5), (vi) Izod impact strength test (Clause 9.6), (vii) Density (Clause 9.8), (viii) Vicat softening temperature (Clause 9.9), (ix) Hydrostatic pressure test (Clause 9.11), (x) Joint leak pressure test (Clause 9.12) Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies (OSAs) during factory inspection to provide ready reference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.		
6.	लाइसेंस का दायरा /Scope of the Licence:		
	Licence is granted to use Standard Mark as per IS 18166: 2025 with the following scope :		
	Name of the product	Unplasticized Polyvinyl Chloride PVC-U Threaded Column Pipes for Borewells/Tubewells	
	Class	1/2/3/4/5/6/7	
	Nominal Size (DN) (in mm)	25/32/40/50/65/80/100/125/150	
	Type	• Bell ended (socketed) type • Coupler joint type	

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ANNEX-A

Grouping Guidelines

1. Unplasticized Polyvinyl Chloride (PVC-U) Threaded Column Pipes for Borewells/Tubewells as per IS 18166:2025 are categorized as follows :

(a) Class : 1,2,3,4,5,6,7

(b) Nominal Size (DN) (in mm): 25,32,40,50,65,80,100,125,150

(c) Type : Bell ended (socketed) type, Coupler joint type

2. PVC-U Threaded Column Pipes for Borewells/Tubewells are grouped based on nominal sizes as given below :

Size Group	Nominal Size (DN) (in mm)
Group 1	25 - 50
Group 2	65 - 150

3. For GoL/CSoL, the grouping guidelines as given below are to be followed:

- Pipe of each Class, each Type and highest Nominal Size from each size group shall be tested for all requirements to cover all the Nominal Sizes in that size group for that particular Class and Type of pipe tested.

3. The Firm shall declare the varieties of Pipes they intend to cover in the Licence. The Scope of the Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.

- 4 . During the operation of the Licence, BO shall ensure that all the varieties covered in the Licence are tested in rotation, to the extent possible.

ANNEX-B

List of Test Equipment

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause Reference	Test Equipment
1	Mean Outside Diameters (Clause 7.1)	- Pi Tape or flexible tape
2	Outside Diameter at any Point (Clause 7.1)	- Vernier Calipers or outside caliper
3	Wall Thickness (Clause 7.1)	- Dial Gauge Method or - Micrometer - Ultrasonic gauge
4	Effective length (Clause 7.4)	- Tape
5	Resistance to external blows at 0°C (Clause 9.2)	- Falling Weight testing machine up to a height of 2000 mm - Striker of weight 0.25, 0.50 & 1.00 kg - Digital watch - Liquid bath or freezer for conditioning of samples
6	Flattening test (Clause 9.3)	- Compression testing machine - Loading plates - Deformation/Deflection indicator - Vernier calliper - Internal diameter gauge/bore gauge
7	Tensile Strength (Clause 9.4)	- Tensile Testing machine - Dumb bell dies along with the Hydraulic jack - Micrometer Ball ended - Air Conditioner
8	Ultimate Breaking Load (Clause 9.5)	- Universal testing machine (UTM) - End fixtures - Air Conditioner
9	Izod Impact Strength Test(Claude 9.6)	- V-Notch cutting machine - Impact testing machine
10	Resistance to Dichloromethane at specified temperature (Clause 9.7)	- Dichloromethane test apparatus (Bath), thermostatically controlled digital temperature indicator. - Dichloromethane, Analytical grade
11	Density (Clause 9.8)	- Balance - Thermometer - Demineralized water - Beaker

		- Corrosion-resistant wire
12	Vicat Softening temperature (Clause 9.9)	- Oil heating Bath equipped with means to raise the temperature at uniform rate of $50 \pm 5^{\circ}\text{C/hr.}$ with suitable stirrer. - Rod with loading plate, load and indenting tips - Micrometer dial gauge - Thermometer or temperature measuring equipment
13	Effect on water (Clause 9.10)	- Distilled water - Air conditioner - pH meter - Testing reagent and equipment for the determination of cadmium, mercury, lead, tin and other toxic substances.
14	Hydrostatic Pressure Test (Clause 9.11)	- Hydrostatic pressure testing apparatus with pressuring unit and multiple outlets - Water bath with temperature control - Thermometer - End Caps
15	Joint Leak Pressure Test (Clause 9.12)	- Hydrostatic pressure testing apparatus with pressuring unit and multiple outlets - End Caps

ANNEX C

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit: Pipes of the same nominal size, class, and type extruded from the same compound in a day, shall constitute a control unit.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.

1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

2 ENSURING COMPLIANCE THROUGH TESTING- It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

2.3 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in house as “R” or other tests which can be subcontracted as “S”. Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.4 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) is also optional.

2.4.2 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.5 Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as “R” in Column 2 of Table 1), where different tests given in the specification shall be carried out in accordance with the method given in the specification. They shall also implement a calibration plan for the in-house test equipment.

2.5.2 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.6 TEST RECORDS- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3 PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be clearly and indelibly marked on each pipe, provided always that the product so marked conforms to all requirements of the specification.

3.3 Marking shall be done as per Clause 11 of IS 18166:2025.

4 REJECTION - All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act,2016.

TABLE 1
(ONLY FOR GUIDANCE PURPOSE)

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S:Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
4	Composition -						No further testing is required if accompanied with the Test Certificate or ISI marked.
	Polyvinyl Chloride Resin	4.1	IS 18166	S	One	Each consignment	
	a) VCM Content	4.1.1	IS 10151				
	b) K-Value	4.1.2	IS 4669				
8	Sealing rings	8.4	IS 18166 IS 5382	S	One	Each consignment	
7	Dimensions						
7.1	Dimensions of Plain Pipes						
	Mean outside diameter, Outside diameter at any point and wall thickness (for plumbing pipes)	7.2 Table 2	IS 18166 IS 12235 (Part 1)	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		
	Wall thickness	7.3 Table 3	IS 18166 IS 12235 (Part 1)				
	Length	7.4	IS 18166				
7.2	Dimensions of Bell-Ended Pipes						
	Dimensions	7.1 Table 7	IS 18166	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard.		
9	Pipes ends	9.1	IS 18166				

9.1	Visual appearance	9.1	IS 18166		However, appropriate records shall be maintained by the manufacturer for evidence of conformity.		
9.2	Resistance to external blows at 0°C	9.2	IS 18166 IS 12235 (Part 3)	R	One	Each control unit	-
9.3	Flattening test	9.3	IS 18166 IS 12235 (Part 19)	R	One	Each control unit	-
9.4	Tensile Strength	9.4	IS 18166 IS 12235 (Part 13)	R	One	Each control unit	-
9.5	Ultimate Breaking Load	9.5	IS 18166	R	One	Each control unit	-
9.6	Izod Impact Strength Test	9.6	IS 18166	S	One	Once in six months	-
9.7	Resistance to Dichloromethane at specified temperature	9.7	IS 18166 IS 12235 (Part 11)	R	One	Each control unit	
9.8	Density	9.8	IS 18166 IS 12235 (Part 14)	R	One	Each control unit	
9.9	Vicat Softening temperature	9.9	IS 18166 IS 12235 (Part 2)	R	One	Each control unit	-
9.10	Effect on water	9.10	IS 18166 IS 12235 (Part 4) IS 12235 (Part 10)	S	One	Once in six months	-
9.11	Hydrostatic Pressure Test	9.11	IS 18166 IS 12235 (Part 8/Sec 1)	R	One	Each control unit	-

9.12	Joint Leak Pressure Test	9.12	IS 18166	R	One	Each control unit	-
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