# उत्पाद मैन्युअल
# आई एस 12818:2010 के अनुसार
# बोर/नलकूपों के लिए अनम्यकृत पीवीसी जली और आवरक पाइप के लिए

**दस्तावेज़ संख्या - पीएम/आईएस 12818/2/ जुन 2021**

***भारतीय मानक ब्यूरो की स्कीम-I (अनुरूपता मूलयांकन) विनियम , 2018 के तहत यह उत्पाद मैन्युअल प्रमाणीकरण के प्रचालन में रीति और पारिर्शिता की सुसंगतता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों और लाइसेंसी द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस प्रमाणीकरण लाइसेंस/ प्रमाणपत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग किया जा सकता है ।***

# PRODUCT MANUAL FOR
# UNPLASTICIZED POLYVINYL CHLORIDE (PVC-U) SCREEN AND CASING PIPES FOR BORE/TUBEWELLS ACCORDING TO IS 12818: 2010

**Document No - PM/ IS 12818/2/ June 2021**

***This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence 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 licence/certificate.***

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# PRODUCT MANUAL FOR UNPLASTICIZED POLYVINYL CHLORIDE (PVC-U) SCREEN AND CASING PIPES FOR BORE/TUBEWELLS ACCORDING TO IS 12818:2010

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| | | | |
|---|---|---|---|
| 1. | **Product** | : | IS 12818 : 2010 |
| | **Title** | : | UNPLASTICIZED POLYVINYL CHLORIDE (PVC-U) SCREEN AND CASING PIPES FOR BORE/ TUBEWELLS |
| | **No. of Amendments** | : | 3 |
| | | | |
| 2. | **Sampling Guidelines:** | | |
| a) | **Raw material** | : | PVC resin – Clause 4.1 of IS 12818 |
| b) | **Grouping guidelines** | : | Please refer ANNEX – A |
| c) | **Sample Size** | : | 1 mtr x 6 nos for all tests |
| | | | |
| 3. | **List of Test Equipment** | : | Please refer ANNEX – B |
| | | | |
| 4. | **Scheme of Inspection and Testing** | : | Please refer ANNEX – C |
| | | | |
| 5. | **Possible tests in a day :** | | Please refer ANNEX – D |
| | | | |
| 6. | **Scope of the Licence :** | | Please refer ANNEX – E |

## ANNEX A

# Grouping Guidelines

1. IS 12818 : 2010 covers Unplasticized polyvinyl chloride (PVC-U) screen and casing pipes for bore/tubewells of various designation and sizes as given below:

a) ***Designation***:

| | |
|---|---|
| Ribbed screen pipe | Ribbed medium well screen (RMS)<br>Ribbed deep well screen (RDS) |
| Plain screen pipe | Plain medium well screen (PMS)<br>Plain deep well screen (PDS) |
| Casing pipe | CS Pipe/ CM Pipe/ CD pipe |

b) ***Size***:

| | |
|---|---|
| RMS | DN 35 to DN 400 |
| RDS | DN 100 to DN 400 |
| PMS | DN 200 to DN 400 |
| PDS | DN 200 to DN 400 |
| CS | DN 150 to DN 400 |
| CM | DN 35 to DN 400 |
| CD | DN 100 to DN 400 |

2. PVC-U screen and casing pipes are classified into the following groups:

| **Designation** | **Size Group** | | |
|---|---|---|---|
| | **Group-1** | **Group-2** | **Group-3** |
| RMS | DN 35 to DN 80 | DN 100 to DN 175 | DN 200 to DN 400 |
| RDS | - | DN 100 to DN 175 | DN 200 to DN 400 |
| PMS | - | - | DN 200 to DN 400 |
| PDS | - | - | DN 200 to DN 400 |
| CS | - | DN 150 to DN 175 | DN 200 to DN 400 |
| CM | DN 35 to DN 80 | DN 100 to DN 175 | DN200 to DN 400 |
| CD | - | DN 100 to DN 175 | DN 200 to DN 400 |

3. For considering GoL /CSoL, Pipe of any size from each size group for each designation shall be tested for all requirements to cover pipes of all sizes in that size group and designation tested.

4. The Firm shall declare the varieties of Pipes intended to be covered in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.

5. During the operation of the Licence, BO shall ensure that all the designations and sizes covered in the Licence are tested in rotation, to the extent possible.

## ANNEX B

# List of Test Equipment

***Major test equipment required to test as per the Indian Standard***

| S. No. | Tests used in with Clause Reference | Test Equipment |
|---|---|---|
| 1 | Dimension (Clause 7) | - Vernier calliper, Ball end micrometre<br>- Measuring tape, Pi tape or flexible tape |
| 2 | Threading of screen and casing pipe (Clause 8) | - Thread gauges as per IS 554<br>- Vernier calliper<br>- Radius gauge, Protractor<br>- Scale<br>- Shore hardness tester |
| 3 | Density (Clause 9.3) | - Balance<br>- Thermometer<br>- Demineralized water<br>- Beaker<br>- Corrosion resistant wire |
| 4 | Resistance to external blows at 0°C (Clause 9.4) | - Falling Weight testing machine from height 2000 mm<br>- Striker of weight 0.25, 0.50 & 1.00 kg<br>- Digital watch<br>- Liquid bath or freezer for conditioning of samples |
| 5 | Tensile strength (Clause 9.5) | - Digital Tensile Testing M/c<br>- Dumb bell die along with Hydraulic jack<br>- Micrometer Ball ended<br>- Air Conditioner |
| 6 | Vicat softening temperature (Clause 9.6) | - Oil heating Bath equipped with means to raise temperature at uniform rate of 50 ± 5°C/hr with suitable stirrer<br>- Rod with loading plate, loads and indenting tips<br>- Micrometer dial gauge<br>- Thermometer or temperature measuring equipment |
| 7 | Effect on water (Clause 9.7) | - Distilled water<br>- Air conditioner<br>- pH meter<br>- Reagents and equipment |

***The above list is indicative only and may not be treated as exhaustive.***

## ANNEX C

# Scheme of Inspection And Testing

**1. LABORATORY** - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

**1.1** The manufacturer shall prepare a calibration plan for the test equipment.

**2. TEST RECORDS** – The manufacturer shall maintain test records for the tests carried out to establish conformity.

**3. LABELLING AND MARKING** – As per the requirements of IS 12818: 2010.

**4. CONTROL UNIT** – Pipes of same size and designation extruded from same compound under similar conditions from same machine in eight hours shall constitute a control unit.

**5. LEVELS OF CONTROL -** The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

**5.1** All the production which conforms to the Indian Standard and covered by the licence should be marked with Standard Mark.

**6. REJECTIONS –** 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**

| (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 | 4 | IS 12818<br>IS 10148 | S | 1 | Each consignment received | No further testing is required, if accompanied with the Test Certificate |
| 4.1.1<br>4.1.2 | PVC resin | 4.1.1<br>4.1.2 | IS 12818<br><br>IS 10151<br>IS 4669 | S | 1 | Each consignment received | |
| 5 | Colour | 5 | IS 12818 | - | Each Pipe | – | – |
| 7<br>9.2 | Dimensions | 7.1 to 7.4<br>9.2 | IS 12818<br><br>IS 12235 ( Part 1) | R | 10 | Each control unit | Samples shall be drawn at regular intervals during production.<br><br># |
| 8 | Threading of screen and casing pipes | 8.1 to 8.5 | IS 12818<br><br>IS 554 | R | 10 | Each control unit | |
| 8.4 | Elastomeric Sealing ring | 8.4 | IS 12818 | R | 10 | Each consignment received | No further testing is required, if accompanied with the Test Certificate or ISI marked. Random check may be carried out before accepting the consignment. |
| 9.1 | Visual Appearance | 9.1 | IS 12818 | - | Each Pipe | – | – |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9.3 | Density | 9.3 | IS 12818<br><br>IS 12235 ( Part 14) | R | 1 | Each Control Unit | Samples shall be drawn at regular intervals during production.<br># |
| 9.4 | Resistance to External Blows at 0 °C | 9.4 | IS 12818<br><br>IS 12235 ( Part 9) | R | Adequate pieces | Each Control Unit | – |
| 9.5 | Tensile Strength | 9.5 | IS 12818<br><br>IS 12235 ( Part 13) | R | 1 | Each Control Unit | – |
| 9.6 | Vicat Softening Temperature | 9.6 | IS 12818<br><br>IS 12235 ( Part 2) | S | 1 | Once in three months | The test shall be conducted whenever there is change in composition/method of manufacture |
| 9.7 | Effect on Water | 9.7 | IS 12818<br>IS 4985<br>IS 12235 ( Part 4) | S | 1 | Once in three months | Smallest size pipe produced shall be tested. @ |

# In case of any failure, twice the number of samples shall be drawn and tested and control shall be accepted if retested samples pass.

@ Additional sample shall be tested whenever there is a change in formulation/composition. Pipes from each class shall be tested in one year.

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: Levels of control given in column 3 are only recommendatory in nature. The manufacturer may define the control unit/batch/lot and submit his own levels of control in column 3 with proper justification for approval by BO Head.

## ANNEX- D

## POSSIBLE TESTS IN A DAY

(i) Colour (Clause 5)
(ii) Dimensions (Clause 7)
(iii) Threading of screen and casing pipes (Clause 8)
(iv) Visual appearance (Clause 9.1)
(v) Density (Clause 9.3)
(vi) Resistance to external blows at 0°C (Clause 9.4)
(vii) Tensile Strength (Clause 9.5)
(viii) Vicat Softening temperature (Clause 9.6)

## ANNEX- E

## SCOPE OF THE LICENCE

| "Licence is granted to use Standard Mark as per IS 12818 : 2010 with the following scope: | |
|---|---|
| Name of the product | UNPLASTICIZED POLYVINYL CHLORIDE (PVC-U) SCREEN AND CASING PIPES FOR BORE/ TUBEWELLS |
| Type | a) Ribbed screen pipe - Ribbed medium well screen (RMS)<br>Ribbed deep well screen (RDS)<br><br>b) Plain screen pipe – Plain medium well screen (PMS)<br>Plain deep well screen (PDS)<br><br>c) Casing pipe – CS Pipe<br>CM Pipe<br>CD pipe |
| Nominal size and slot width and length | DN --- × slot width × length |