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उत्पाद मैन्युअल

सिंचाई उपकरण - सिंचाई के लिए पॉलिएथाइलिन पाइप - विशिष्टि

IS 12786:2024 के अनुसार

PRODUCT MANUAL
FOR Irrigation Equipment — Polyethylene Pipes for Irrigation Laterals — Specification ACCORDINGTO IS 12786:2024

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 12786:2024
	शीर्षक **Title**	:	Irrigation Equipment — Polyethylene Pipes for Irrigation Laterals — Specification
	संशोधनों की संख्या **No. of amendments**	:	NIL
2.	**नमूना दिशानिर्देश** **Sampling Guidelines**		
a)	**कच्चा माल** **Raw material**	:	Raw Material shall comply with Clause 4.1 of IS 12786:2024 Conformity of raw material shall be established through raw material supplier test certificate/test report from BIS recognized lab/empanelledlab or any other lab having accreditation as per IS/ISO/IEC 17025 or in house testing/combination thereof In addition, manufacturer shall submit a declaration that addition of not more than 10 percent of the manufactures own rework material produced during the manufacturing

			and testing of pipe complying with this standard shall be done, as per Cl. 4.3 of IS 12786:2024 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 **Annex-A**
c)	**नमूने का परिमाण** **Sample Quantity**	:	2 No of Coils of 25 meter length 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)
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**		
	Dimensions, Internal pressure creep rupture test – Acceptance test, Reversion test, tensile test (cl.7.3) 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 12786:2024 with the following scope:		
	Name of the product	Polyethylene Pipes for Irrigation Laterals	
	Type	Class of Pipe (based on Working Pressure) :1,2 or 3	
	Size	Size (based on Outer Diameter): 12, 16, 20, 25 and/or 32 mm.	

ANNEX-A

GROUPING GUIDELINES

i) The Standard covers the following classification of polyethylene pipes for irrigation laterals:

a. Class of pipe (based on working pressure): Class 1, 2 & 3.
b. Size (based on outside diameter): 12, 16, 20, 25 & 32 mm.

ii) Samples of pipes of each class of any size (preferably the largest size) shall be tested for considering grant of licence/ change in scope of licence.

iii) Scope of licence shall be restricted based on the manufacturing and testing facilities available.

iv) During operation of licence, samples of each variety covered in the scope of licence, shall be testedin rotation, to the extent possible

ANNEX – B

LIST OF TEST EQUIPMENTS

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests Used In With Clause Reference	Test Equipment/Chemical
1	Determination of Carbon Black Content, Cl. 4.2	Combustion Boat - made of porcelain or silica, having minimum dimensions of 75 mm length, 9 mm width and 8 mm height. Combustion Tube - made of hard glass, of approximately 30 mm diameter and 400 ± 50 mm length. Gas Flow Meter-for measuring and controlling the rate of flow of nitrogen within 1.7 ± 0.3 litres per minute Thermometer - in the range 250 to 550°C. Furnace - to accommodate the combustion tube and to give temperatures up to at least 5OO°C Nitrogen – gas Trichloroethylene Other labware and reagents as per Cl. 10 of IS 2530
2	Determination of Carbon Black Dispersion, Cl. 4.2	Microscope with magnification of 200 ± 10 with a field of view of 1 ± 0.1 mm diameter. Microscope slides Hot plate capable of being maintained at 170 to 210°C. Analytical balance Photomicrograph as per Fig. 5 of IS 2530 (for comparison)
3	Dimensions, Cl. 5	Dial Vernier calipers, Ball ended micrometer
4	Hydraulic Characteristics – Internal Pressure Creep Rupture test, Cl. 7.1	Equipment which permits the application of a controlled internal hydraulic pressure to the specimen while being immersed in a thermostatically controlled water-bath
5	Reversion test, Cl. 7.2	Vernier Calipers Air oven or a suitable liquid bath capable of being maintained at a temperature of 100 °C ± 2 °C for 60 min in such a way that dimensional

		changes in the pipe section are not impeded.
6	Tensile Test, Cl. 7.3	Tensile testing machine - capable of producing a specified rate of grip separation and indicating the tensile load applied on the test piece. The loading range of the tensile machine shall be such that the breaking load lies between 85 percent and 15 percent of the maximum of the scale Punch Cutting Machine - provided with an accurately machined die for cutting dumb-bell shaped test specimens
7	Susceptibility to Environmental Stress Cracking, Cl. 7.4	Forced air circulation oven, maintained at 77 °C ± 3 °C, capable of re-establishing that temperature within five minutes after insertion of test pieces Igepal CO-630 or antarox CO-630 or teepol 300 or equivalent surface active reagent
8	Air conditioner or conditioning chamber with temperature controller	For conducting tests under specified conditions

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 is : All pipes of the same type (class) and size manufactured using the same consignment of raw material (extrusion compound) at one time on the same machine.

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.

2.1 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.

2.2 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.

2.2.1 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.

2.3 **Large Scale manufacturers shall maintain an in-house laboratory equipped at least withtest facilities for routine tests (indicated as "R" in Column 2 of Table 1)**, where different testsgiven 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.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize theprovisions 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.

2.4 **TEST RECORDS**- The manufacturers maintaining an in-house laboratory or utilizing commoncluster 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 the pipe at intervals of not more than fifteen meters in the form of a transfix label, by screen printing or by hot stamping in such a manner that it does not impact the strength of the pipe in any way, provided always that the material so marked conforms to each requirement of the specification.

3.1 Packing and Marking shall be done as per the Indian Standard.

3.2 **Additional Marking requirements**: The material shall also be marked with the following additional requirement on each pipe.

a) "For BIS certification details please visit www.bis.gov.in"

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 Clause Reference			No. of Sample	Frequency	Remarks
4.1	Material	4.1	IS 12786	S	One	Each consignment	Conformity of raw material shall be established through raw material supplier test certificate/test report from BIS recognized lab/empanelledlab or any other lab having accreditation as per IS/ISO/IEC 17025 or in house testing/combination thereof
4.2	Carbon content and dispersion of pipe		IS 2530	R	One	Each week	
5	Dimensions (Outside diameter and wall thickness)		IS 12786	R	Manufacturer shall put in place adequate inspections and in-process controls to ensure conformity to the requirements of the standard and maintain records thereof		
6	Visual Appearance		IS 12786	R	Manufacturer shall put in place adequate inspections and in-process controls to ensure conformity to the requirements of the standard and maintain records thereof		
7	Performance Requirements						
7.1	Hydraulic Characteristics – Internal Pressure Creep Rupture Test				Three	Each control unit	

i)	Quality Test	Annex C	IS 12786	R	One	Once in a year	Also when change is made in polymer composition or method of manufacture or when a new size of pipe is to be introduced.
ii)	Acceptance Test	Annex C	IS 12786	R	Three	Each control unit	
7.2	Reversion Test		IS 12786	R	Three	Each control unit	
7.3	Tensile Test	6	IS 2530	R	Three	Each control unit	
7.4	Susceptibility to Environmental Stress Cracking	Annex D	IS 12786	R	Three	Once in a week	
8	Supply of pipes		IS 12786	R	Manufacturer shall put in place adequate inspections and in-process controls to ensure conformity to the requirements of the standard and maintain records thereof		
9	Coiling		IS 12786	R	Manufacturer shall put in place adequate inspections and in-process controls to ensure conformity to the requirements of the standard and maintain records thereof		