



उत्पाद मानुयल
सिंचाई उपस्कर — स्प्रिकलर सिंचाई प्रणाली के लिए सहज संयोजी
पालीएथिलीन पाइप तथा फिटिंग IS 17425 : 2020 के अनुसार

PRODUCT MANUAL FOR
IRRIGATION EQUIPMENT- QUICK COUPLED POLYETHYLENE PIPES AND
FITTINGS FOR SPRINKLER IRRIGATION SYSTEMS ACCORDING TO IS 17425 : 2020

भारतीय मानक ब्यूरो - विनियम की स्कीम (अनुरूपता मूल्यांकन) I के तहत यह उत्पाद मानुयल प्रमाणीकरण के प्रचलन में रीति और पारदर्शिता के सुसंगत सुनिश्चित करने के लिए सभी क्षेत्रीय शाखा कार्यालयों एवं लाइसेंस / धारियों द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस लाइसेंस/ प्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग किया जा सकता है।

1.	उत्पाद Product	:	IS 17425 : 2020
	शीर्षक Title	:	सिंचाई उपस्कर — स्प्रिकलर सिंचाई प्रणाली के लिए सहज संयोजी पालीएथिलीन पाइप तथा फिटिंग Irrigation Equipment- Quick Coupled Polyethylene Pipes and Fittings for Sprinkler Irrigation Systems.
	संशोधन संख्या No. of Amendments	:	Nil
2.	नमूनाकरण दिशा निर्देश Sampling Guidelines:		
a)	कच्चा माल Raw material	:	i) PE material of grade PE 63 or PE 80 and above. (refer IS 4984) ii) Material used should not constitute toxic hazard, should not support microbial growth. (Pipe manufacturers shall obtain a certificate to this effect from the manufacturer of raw material). iii) PE resin used for the manufacture of pipes shall conform to parameters mentioned in Table 2 of IS 4984. The material classification conformity shall be provided by the raw material (resin) manufacturer with documentation duly certified as per Table 1 of IS 17425. iv) Carbon content and dispersion (as per clause 4.1.4) v) Carbon black specification (as per clause 4.1.5) vi) Antioxidants (as per clause 4.1.6) vii) Rework Material (as per clause 4.1.7) viii) Metallic couplers/ HDPE Couplers (as per clause 4.2).

b)	समूहिकरण दिशा निर्देश Grouping Guidelines	:	कृपया ANNEX –A देखें Please refer Annex – A
c)	नमूने का परिमाण Sample Size	:	For Grant of licence under Normal Procedure, the following samples to be drawn: i) Raw material compound (mixture of PE resin and master batch) (if firm provides conformity of raw material as per Cl No. 4 of ISS, no raw material sample to be drawn) ii) 1m X 6 no of Pipes iii) 1m X 3 sets (male and female couplers with holding attachments and sealing rings). Routine sample: 1m X 6 no of pipes + 1m X 3 (male and female couplers with holding attachments and sealing rings).
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	कृपया ANNEX –B देखें Please refer Annex - B
4.	निरीक्षण व परीक्षण स्कीम Scheme of Inspection and Testing	:	कृपया ANNEX –C देखें Please refer Annex – C
5.	एक दिन में संभावित परीक्षण Possible tests in a day :		
	i) Dimensions ii) Visual Appearance iii) Hydraulic characteristics iv) Reversion test v) Tensile test and Elongation vi) Fusion compatibility test vii) Melt Flow Rate viii) Leakage test ix) Hydraulic Proof test x) Weldability test xi) Carbon Black content xii) Carbon Black Dispersion xiii) Supply length of Pipe		
6.	लाइसेन्स का कार्यक्षेत्र/Scope of the Licence :		
	IS 17425 : 2020 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेन्स निम्नलिखित कार्यक्षेत्र के लिए प्रदान किया जाता है Licence is granted to use Standard Mark as per IS 17425 : 2020 with the following scope:		
	उत्पाद का नाम Name of the product	Irrigation Equipment- Quick Coupled Polyethylene Pipes and Fittings for Sprinkler Irrigation Systems.	

	Class	Class of pipes	Maximum Permissible Working Pressure at 30°C
		Class 1	0.25 MPa
		Class 2	0.32 MPa
		Class 3	0.40 MPa
		Class 4	0.60 MPa
	Size (Outside Diameter)	<i>40 mm to 200 mm</i> (Outer Diameter)	

ANNEXURE A

**TO PRODUCT MANUAL
FOR IRRIGATION EQUIPMENT- QUICK COUPLED POLYETHYLENE PIPES AND
FITTINGS FOR SPRINKLER IRRIGATION SYSTEMS
ACCORDING TO IS 17425 : 2020**

GROUPING GUIDELINES

Grouping Guidelines for grant of licence and inclusion of new varieties of Quick Coupled Polyethylene Pipes and Fittings for Sprinkler Irrigation Systems as per IS 17425 : 2020 is as given below:

i) One sample of each variety of Quick Coupled Polyethylene Pipes and Fittings for Sprinkler Irrigation Systems from each of the following Groups (preferably higher size) for each class shall be tested for all requirements of the specification, in order to cover the complete range of sizes:

Group I	40mm - 75mm (Nominal Diameter)
Group II	90mm – 140mm (Nominal Diameter)
Group III	160mm – 200mm (Nominal Diameter)

ii) The raw material shall also be tested as per the specification. Firm may submit undertaking as per clause no. 4.1.1, 4.1.6, and 4.1.7 of IS 17425. Metallic coupler/metallic part of HDPE Coupler i.e. holding attachments shall be tested as per the specified IS. However, in case of ISI Marked base metal, no further test is required.

iii) It shall however be ensured and recorded that the applicant/licensee has got complete manufacturing as well as testing facilities for the sizes required to be covered as per the Grouping guidelines.

iv) During the operation of licence, BOs shall also ensure that all sizes/classes covered in the licence are drawn for independent testing on rotation over a period of time.

ANNEXURE B

TO PRODUCT MANUAL FOR IRRIGATION EQUIPMENT- QUICK COUPLED POLYETHYLENE PIPES AND FITTINGS FOR SPRINKLER IRRIGATION SYSTEMS ACCORDING TO IS 17425 : 2020

LIST OF TEST EQUIPMENT

Major test equipment required to test as per requirements of Indian Standard.

S. No.	Tests used in with clause reference	Test Equipment
1	Density of Polythylene Cl. 4.1.5 (a)	Electrical hot press sample preparation apparatus hydraulic jack along with digital temp. indicator, fitted with pressure gauge, Spacer frame, Chrome plated sheet, n-Butyl acetate, Room Thermometer, Electrical single pan balance, Hydrometer, Measuring cylinder, Beaker, Nylon wire, Platform for weighing.
2	Melt flow rate Cl. 4.1.3 and 7.1.7	M.F.I. Test apparatus with digital temp. Controller and digital timer Weight load 5kg, Electrical single pan balance, Sharp knife (For Sample cutting) /sample cutter, Xylene (For piston cleaning).
3	Carbon black content Cl. 4.1.4	C.B.C test App. With digital temperature controller, Combustion Tube, N2 Cylinder with regulator & Gas flow meter, Ceramic boats, Tong, Poker, Bubbblers, CaCL ₂ , Trichloroethylene, Desiccators, Weighing Balance single pan, Dry Ice box.
4	Carbon black dispersion Cl. 4.1.4	Hot plate thermostatically Controlled with temp. indicator, Microscope, Glass slides, Tong, Metal shim.
5	Dimensions of pipe Cl. 5	
	a) Outside diameter Cl. 5.1.1	Vernier Caliper and Pie Tape
	b) Wall thickness Cl. 5.1.1	Micrometer ball ended
	c) Ovality Cl. 5.1.2	Vernier Caliper
	d) Squareness Cl. 5.1.2 Pipe length	i) Half Round Angle Protector fitted with steel strip for Square ness Test & Right Angle ii) Filler Gauge set iii) Measuring Tape
6	Quick coupled male and female couplers Cl. 6.2	

i.	Metallic couplers, HDPE couplers,	Shall be as per IS 737 and IS 617 for aluminium alloy and shall be as per IS 513; Part 1:2016 for Steel, Micrometer ball ended
ii.	Holding attachment of coupler parts.	
	Material of holding attachment, Strength of holding attachment, Coating thickness of holding attachment.	Shall be as per IS 737 and IS 617 for aluminium alloy and attachment shall be as per IS 513; Part 1:2016 for Steel. Automatic Hydrostatics Pressure tester station, End Plugs, Hacksaw with Blade, Coating Gauge.
iii	Rubber rings	
a)	Shore hardness	Shore Hardness Tester with Standards Shore-A
b)	Accelerated Storage test	2nd Hot Air Oven Thermostatically Controlled with Air test Circulating Fan and Digital Temp. Indicator, shore Hardness Tester with Standards Shore-A.
7	Hydraulic characteristics Cl. 7.1.2	i) 1st Hot water bath thermostatically controlled with digital temp. indicator with stirrer and hour meter ii) Hydrostatics Pressure tester station iii)End Plugs iv) Hacksaw with Blade
8	Reversion test Cl. 7.1.3	i) 1 st Hot Air Oven Thermostatically Controlled with Air Circulating Fan and Digital Temp. Indicator ii)Vernier Caliper iii)Steel Scale iv) Wall Clock v) Hacksaw with Blade vi) Glass Plate vii) Telcum Powder
9	Tensile test and Elongation Cl. 7.1.4	i) Digital Tensile Testing M/c ii) Dumbell Die ½, 1 and 2 Type along with Hydraulic jack iii)Vernier Caliper Micrometer ball ended iv) Air Conditioner
10	Fusion compatibility Cl. 7.1.5	i) 2nd Water bath thermostatically controlled with digital temp. indicator with stirrer and hour meter ii) Hydrostatics Pressure tester station iii) End Plugs iv) Hacksaw with Blade
11.	Corrected Density Cl 7.1.6 (Annex A of IS 7328)	Heated press-Steam or Electrical, Analytical balance, Butyl Acetate –lab grade, Thermometer, Hydrometer, Beaker-250 ml.
12.	Melt flow rate Cl 7.1.7 (Cl 7 of IS 2530)	Extrusion plastometer consisting of Cylinder, Piston, Removable load on top of the piston, Heater, Temperature measuring device, two roll mixing mill.
13.	Leakage test	Hydrostatic Pressure tester, End plugs, Hacksaw

	Cl. 7.2.1	with blade.
14.	Hydraulic Proof test Cl. 7.2.2	Hydrostatic Pressure tester, End plugs, Haxsaw with blade.
15.	Weldability test Cl. 7.2.3	Hot Air Oven Thermostatically Controlled with Air Circulating Fan and Digital Temp. Indicator and Water bath thermostatically controlled with digital temp. indicator with stirrer and hour meter. Hydrostatic Pressure tester, End plugs, Haxsaw with blade.

List above is only indicative and may not be taken as exhaustive.

ANNEXURE C

SCHEME OF INSPECTION AND TESTING

FOR IRRIGATION EQUIPMENT- QUICK COUPLED POLYETHYLENE PIPES AND FITTINGS FOR SPRINKLER IRRIGATION SYSTEMS ACCORDING TO IS 17425 : 2020

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 equipments.

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

3. LABELLING AND MARKING – The Standard Mark, as given in the Schedule of the licence, shall be marked on each quick coupled polyethylene pipes and fittings for sprinkler irrigation systems, provided always that the product to which this mark is thus applied, conform to every requirement of the specification.

3.1 Marking – Each quick coupled pipe and fittings shall be indelibly marked in English at intervals of not more than 6 m in the pipe section and at a prominent place on the coupler which is visible even after installation by heat embossing/moulded embossing or other options of marking like LASER or inkjet printing. If marked in colour, the colours shall be as indicated in 10.1.1. In case of fittings, marking shall be on male/female end and the plain fitting at a prominent place which is visible even after installation, by methods specified above. The marking shall show the following:

- a) Manufacturer's name or trade-mark, if any;
- b) Outside diameter;
- c) Class of pipe; and
- d) Batch number.

In addition, the following details shall be mentioned on each quick coupled pipe and fittings legibly and indelibly:

- a) BIS Licence No. CM/L. _____
- b) BIS website details i.e –“For details of BIS certification please visit www.bis.gov.in”.

4. CONTROL UNIT: For the purpose of this scheme, total quantity of quick coupled pipe and fittings of same size and class manufactured under similar conditions and from one machine using same composition of the materials, up to a maximum of eight hours duration shall constitute a control unit.

4.1 The percentage of antioxidant in the base resin and addition of reworked material shall be as per Cl 4.1.6 and 4.1.7 of IS 17425. Appropriate records shall be maintained to indicate the amount of these materials used in the manufacture of every 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 this license shall be marked with certification Mark of the Bureau.

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
LEVELS OF CONTROL

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or)S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method Cl. Ref.	Test Method IS		No. of Sample	Frequency	Remarks
4	Material						
4.1	PE Pipes, Couplers and Fittings	4.1 and Table 1	IS 17425	S	One	Each consignment	In case test certificate is received with each consignment of raw material, further testing in the factory would not be necessary.
4.1.4	Carbon black content	10	IS 2530	R	One sample	Each day	Composite sample from 3 pieces selected from a day's production shall be tested. Non-confirming batches shall not be covered under ISI mark.
-do-	Carbon black dispersion	16	-do-	R	-do-	-do-	-do-
4.1.6	Antioxidant	4.1.6	IS 17425	S	One	Each consignment	In case test certificate is received with each consignment of raw material, further testing in the factory would not be necessary.
4.2	Metallic Couplers	4.2	IS 17425, IS 737 or IS 617 IS 504(Part 1 to 12) & (Parts 13 to 16), IS 513,	R	One	Each control unit	Alternatively, test certificate may be obtained with each consignment.

			IS 1079, IS 4736, IS 1573				
5	Dimension	5.1, 5.1.1 & 5.1.2	IS 17425	R	One sample for every hour of production		Samples shall be drawn at regular interval
6.1	Quick coupled pipes	6.1	IS 17425	R	One	Each control unit	If pipes are ISI marked, no further testing is required.
6.2	Quick coupled male and female couplers	6.2, 6.2.1 & 6.2.2	IS 17425	R	One	Each control unit	
6.2.3	Sizes of coupler parts	6.2.3	IS 17425	R	One	Each control unit	
6.2.4	Workmanship and Appearance	6.2.4	IS 17425	R	One	Each control unit	Size of sampling as per Table 10 and criterion for conformity of every control unit as per cl. 9.2 of IS 17425.
6.2.5	Holding Attachments for Coupler parts	6.2.5 a)	IS 17425	S	One	Each consignment	TC of holding attachment from supplier may be accepted if the samples conform as per the specified IS. If sample is ISI marked, no further testing may be required.
		b)	IS 17425	R	One (5 Nos.)	Each control unit	If the sample fails, twice the no. shall be tested, in case of any failure, control unit shall be rejected.
6.2.6	Rubber ring	6.2.6	IS 17425	R	One	Each consignment	Alternatively, test certificate may be obtained with each consignment.
6.3	Quick coupled pipe fittings	6.3	IS 17425	R	One	Each control unit	
6.3.1	Material	6.3.1	IS 17425	R	One	Each control unit	Alternatively, test certificate may be obtained with each consignment.
6.3.2	Metal parts	6.3.2	IS 17425	S	One	Each consignment	If the metal parts is ISI marked, no further testing is required. But, firm may record/maintain the TCs from supplier of each consignment.
6.3.3	Insert valve coupler		IS 17425	R	One	Each control unit	

6.3.4	Valve opener		IS 17425	R	One	Each control unit	
6.3.5	Sprinkler saddle/foot batten sprinkler assembly and their dimensions		IS 17425	R	One One (5 Nos.) for dimensions	Each control unit	
6.3.6	Pump connector		IS 17425 IS 7634 (Part 2) IS 554	R	One	Each control unit	
6.3.6.1	Flanged connections		IS 17425	R	One	Each control unit	
6.3.6.2	Dimensions of pump connectors		IS 17425	R	One (5 Nos.)	Each control unit	
7.1	Plain PE Pipes						
7.1.1	Visual appearance and workmanship	7.1.1	IS 17425	R	Each pipe		
7.1.2	Hydraulic performance characteristics						
7.1.2.1	a) Acceptance test	7.1.2	IS 17425	R	3 pieces of each class #	Once in a week	If no defective is found, the control unit shall be declared as passing. However, if only one defective is found the control unit may be considered as failing and the control unit shall be rejected
7.1.2.2 to 7.1.2.5	b) Quality test	-do-	-do-	S	3 pieces	Once in a year **	
7.1.3	Reversion test	7.1.3	-do-	R	3 pieces of each class#	Once in a week	
7.1.4	Tensile test	7.1.4	-do-	R	3*	-do-	-do-

7.1.5	Fusion compatibility test						
7.1.5.1 & 7.1.5.2	a) Acceptance test	7.1.5	IS 17425	R	3 pieces of each class #	Once in a week	If no defective is found, the control unit shall be declared as passing. However, if only one defective is found the control unit may be considered as failing and the control unit shall be rejected
	b) Quality test		-do-	S	-do-	Once in a year **	In case of failure the same number of samples shall be tested again. No failure shall be permissible in this test
7.1.6	Corrected Density	Annex A	IS 7328	R	3 Pipes	Once in a week	If no defective is found, the control unit shall be declared as passing. However, if only one defective is found the control unit may be considered as failing and the control unit shall be rejected
7.1.7	Melt flow rate	7	IS 2530	R	3 pipes of each class and size	-do-	-do-
7.2	Quick coupled Pipes and Fittings						
7.2.1	Leakage test	7.2.1	IS 17425	R	One	Each control unit	Criterion for conformity and sample size shall be as per clause 9.3.2 (Table 11) of IS 17425.
7.2.2	Hydraulic proof test	7.2.2	IS 17425	R	One	Each control unit	
7.2.3	Weldability test	7.2.3	IS 17425	R	One	Each control unit	Criterion for conformity and sample size shall be as per clause 9.4.1 (Table 12) of IS 17425.
7.3	Quick coupled fittings	7.1.2	IS 17425	R	One	Each control unit	
8	Supply of pipes	8	IS 17425	R	-	Each coil	

Note-1: Whether test equipment is required or sub-contracting is permitted in column 2 shall be decided by the Bureau and shall be mandatory. 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.

Note-3:

Effort shall be made to cover each size of Quick coupled PE pipes and fittings during an operative period of one year.

* Number of test specimen in D-2 of IS 17425 shall be used.

** This test shall be carried out on each size of each class produced in a year and on change of polymer composition, or change in method of manufacture or whenever new sizes are produced.