उत्पाद मैन्युअल
आई एस 8008 : 2022 के अनुसार
जल पूर्ति के लिए अंत:क्षेपण संचकित/ मशीनीकृत पाली इथाइलीन फिटिंग
के लिए दस्तावेज़ संख्या – पी एम/ आई एस 8008/2/दिसंबर 2022

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
INJECTION MOULDED/ MACHINED POLYETHYLENE FITTINGS
FOR WATER SUPPLY ACCORDING TO IS 8008 : 2022

Document No.- PM/ IS 8008/2/Dec 20222

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.

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, ९, बहादुर शाह ज़फ़र मार्ग
Manak Bhawan, 9, Bahadur Shah Zafar Marg
नई दिल्ली- ११०००२
New Delhi – 110002

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1.	**Product**	:	IS 8008 : 2022
	Title	:	Injection Moulded/ Machined Polyethylene Fittings For Water Supply
	No. of Amendments	:	Nil
2.	**Sampling Guidelines:**		
a)	**Raw material**	:	As per Clause 4 of IS 8008:2022
b)	**Grouping guidelines**	:	Please refer ANNEX – A
c)	**Sample Size**	:	5 Nos for all tests
d)	**Sampling Guidelines During Operation of Licence**		Please refer ANNEX – B
3.	**List of Test Equipment**	:	Please refer ANNEX – C
4.	**Scheme of Inspection and Testing**	:	Please refer ANNEX – D
5.	**Possible tests in a day :**		
	Please refer ANNEX – E		
6.	**Scope of the Licence :**		
	Please refer ANNEX – F		

BUREAU OF INDIAN STANDARDS
Manak Bhawan, 9, Bahadur Shah Zafar Marg,
New Delhi – 110002

ANNEX A

Grouping Guidelines

1. IS 8008:2022 covers requirements for various types of Injection Moulded/ Machined Polyethylene Fittings For Water Supply.

2. Each type of fittings are categorized into the following groups:

A) Based on Type –

i) 90° Bends
ii) 90° Tees
iii) Reducers
iv) Ferrule Reducers
v) Pipe Ends
vi) Sandwich Flanges
vii) Reducing Tees
viii) End Caps

B) Based on pressure ratings and sizes of PE fittings :

Material Grade	Pressure Rating Group (PN)			Size Group DN (mm)					
	Group-A	Group-B	Group-C	Group-I	Group-II	Group - III	Group-IV	Group-V	Group-VI
PE 63	PN 2, PN 2.5, PN 3.2, PN 4	PN 5, PN 6, PN 8	-	20 to 110	125 to 180	200 to 560	630 to 1000	1200 to 2000	2250 & 2500
PE 80	PN 2.5, PN 3.2, PN 4	PN 5, PN 6, PN 8, PN 10	PN 12.5, PN 16, PN 20	20 to 110	125 to 180	200 to 560	630 to 1000	1200 to 2000	2250 & 2500
PE 100	PN 3.2, PN 4	PN 5, PN 6, PN 8, PN 10	PN 12.5, PN 16, PN 20	20 to 110	125 to 180	200 to 560	630 to 1000	1200 to 2000	2250 & 2500

3. For considering GoL/CSoL, testing shall be done as follows:

a) Fittings with highest pressure rating from each pressure rating group (Group-A, Group-B and Group-C) shall be tested to cover fittings of all pressure ratings in that pressure rating group and manufactured from the same material grade.

b) Fitting with highest size from each size group and Type shall be tested to cover fittings of all sizes in that size group and Type tested.

c) In case of higher sizes for which test facilities are not available in independent laboratory, samples to be drawn for testing in independent laboratory for the following requirements – color (Cl 5), carbon black content and dispersion (Cl 10.2), melt flow rate (Cl 10.3), density (Cl 10.4), oxidation induction time (Cl 10.5) and overall migration (Cl 10.6). Remaining test requirements may be carried out at the factory premise.

Remaining tests, i.e. dimensions (Cl 9) and hydraulic characteristics (1h, 48h, 100h & 165h) (Cl 10.1) may be tested at the factory premise. Special visits to be made at the factory to check conformity of these tests as per the respective clauses at the end of 48h, 100h & 165h (4 mandays).

4. The Firm shall declare the varieties of fittings 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 Pressure ratings, Material Grades and Sizes covered in the Licence are tested in rotation, to the extent possible.

ANNEX B

Sampling Guidelines During Operation of Licence

(i) During an operative year of a licence, two Factory Samples and two Market Samples shall be drawn.

(ii) During Factory Surveillance inspection, sample of the sizes produced by the firm and for which testing facilities are available in independent lab has to be drawn for independent testing.

(iii) For other sizes for which test facilities are not available in independent laboratory, all possible tests in a day as given in Annex-E are to be carried out on at least one size of the fitting.

ANNEX C

List of Test Equipment

Major test equipment required to test as per the Indian Standard

S. No.	Test used in with Clause Reference	Test Equipment
1	Dimensions of fittings – (Clause 9)	- Vernier Caliper - Measuring Tape - Pi Tape or Circometer - Ball ended Micrometre - Measuring scale
2	Density (Clause 10.4)	- Digital Balance with holding attachment - Distilled water - Butyl Acetate - Hydrometer - Glass beaker of 250 ml capacity - Thermometer - Air conditioner - Heated press (Steam or Electrical)
3	Melt Flow rate (Clause 10.3)	Melt flow rate Apparatus with digital temperature controller and timer and load of 5 Kgf (as per 7.1 of IS 2530)
4	Carbon Black Content and Dispersion (Clause 10.2)	- Furnace - Combustion boats - Combustion tube - Nitrogen gas Cylinder with flow meter for nitrogen - Analytical balance - Desiccator, Trichloroethylene & solid carbon dioxide - Fume Hood - Hot plate - Projection Microscope with 100/200 times magnification - Glass Slides
5	Hydrostatic Characteristics (Clause 10.1)	As per E-3 of IS 4984 -Hydrostatic pressure testing apparatus with

		pressuring unit, and outlet stations - Thermostatically controlled water bath having 80 °C -End Plugs for each size of fittings
6	Oxidation Induction Time	- As per B-1 of IS 4984
7	Overall Migration	- Hot Air oven with digital temperature controller - Hot plate with temperature control regulators - Analytical balance or equivalent, capable of weighing to the nearest 0.1 mg - Platinum crucible or silica dish - Desiccator - Glassware & distilled water

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

ANNEX D

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 8008:2022.

4. **CONTROL UNIT** – All fittings of same type, size, pressure class and resin grade manufactured from same consignment of pipes or, from one mix of compound from one injection-moulding machine, in a maximum duration of 24 h 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	Material	4	IS 8008	S	One	From each lot received	No further testing is required if received with manufacturers test certificate or ISI marked
5	Colour	5	IS 8008	R	All	-	-
7	Welding Length	7	IS 8008	R	Ten *	Each Control Unit	Samples shall be selected at random to cover entire production evenly as far as possible. In case failure of sample in any requirement, double the initial sample shall selected and tested, control unit shall be rejected in case of failure of retested samples.
9.1	Mean outside diameter	7.4.1.1	IS 4984				
9.1	Wall Thickness	7.4.1.1	IS 4984				
9.2	Ovality	7.4.1.2	IS 4984				
9.3	Laying Length	9.3.1 to 9.3.8	IS 8008				
	Diameter for Manufacturing Reference		IS 8008				
	L_1 & L_2 (for reducer and ferrule reducer)	9.3.3 & 9.3.4	IS 8008				

	Collar diameter & Height	9.3.5	IS 8008				
	Dimensions of Sandwich Flanges	9.3.6	IS 8008				
	Z and Z_1	9.3.7	IS 8008				
	Tabular Length	9.3.8.1	IS 8008				
	Depth of end cap	9.3.8.2	IS 8008				
10	**Performance Requirements** -						
10.1	Internal Pressure Creep Rupture Test of Fitting (at 27º C for 1 h – acceptance test)	10.1	IS 8008	R	One	Every Control Unit	-
10.1	Internal Pressure Creep Rupture Test of Fitting (at 27º C for 100 h – acceptance test)	10.1	IS 8008	R	One	Once in a month or whenever there is any change in raw material composition or technique or a new size of a fitting is introduced, whichever is earlier	-

						#	
10.1	Internal Pressure Creep Rupture Test of Fitting (at 80º C for 48 h – acceptance test)	10.1	IS 8008	R	One	Once in a week	-
10.1	Internal Pressure Creep Rupture Test of Fitting (at 80º C for 165 h – Type test)	10.1	IS 8008	R	One	Once in three months or whenever there is any change in raw material composition or technique or a new size of a fitting is introduced, whichever is earlier #	*
10.2	Carbon Black Content and Dispersion	10.2	IS 8008	R	One	Each Control Unit	-
10.3	Melt Flow rate	7	IS 2530	R	One	Each Control Unit	The sample shall be composite sample of minimum three fittings drawn at regular interval.
10.4	Density	5.2.1.1	IS 7328	R	One	Each Control Unit	

10.5	Oxidation Induction Time	Annex-B	IS 4984	S	One	Once in three month or whenever there is any change in resin composition or method of manufacture # 	In case of failure of sample, additional sample of same size shall be drawn and tested. The sample shall be accepted, if no further failure is observed. In case of failure, marking shall be stopped and BIS shall be informed about the failure. Corrective actions shall be taken and marking shall be resumed only after satisfactory verification of corrective actions taken by manufacturer by testing of sample.
10.6	Overall Migration	-	IS 9845 IS 10146	S	Three	Once in three month or whenever there is any change in resin composition or method of manufacture # 	In case of failure of sample, additional sample of same size shall be drawn and tested. The sample shall be accepted, if no further failure is observed. In case of failure, marking shall be stopped and BIS shall be informed about the failure. Corrective actions shall be taken and marking shall be resumed only after satisfactory verification of corrective actions taken by manufacturer by testing of sample.

* Testing of dimensions of the fittings shall be 10 fittings at the start of production and then 2 fittings every hour.

Even if no change is envisaged, type test shall be done at last once in one year on each pressure rating and grade of fitting of the highest size manufactured during the period.

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 – E

Possible tests in a day

i) Color,
ii) Visual appearance & Dimensions
iii) Carbon Black Content & Dispersion
iv) MFR
v) Density
vi) Oxidation Induction Time

ANNEX – F

Scope of the Licence

Licence is granted to use Standard Mark as per IS 8008 : 2022 with the following scope :	
Name of the product	Injection Moulded/ Machined Polyethylene Fittings For Water Supply
Type of fittings	90° Bends / 90° Tees/ Reducers / Ferrule Reducers / Pipe Ends / Sandwich Flanges / Reducing tees / End Caps
Resin Grade	
Pressure Rating	
SDR	
Size	