



उत्पाद मानुयल
थर्मल इन्सुलेशन के लिए पूर्वनिर्मित कठोर पॉलीयूरेथेन
(पीयूआर) और पॉलीसोसायन्युरेट (पीआईआर) फोम के
लिए विशिष्ट
IS 12436 : 1988 के अनुसार

PRODUCT MANUAL FOR
Specification for preformed rigid polyurethane
(PUR) and polyisocyanurate (PIR) foams for
thermal insulation
According to IS 12436 : 1988

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 क्षेत्रीयशाखा कार्यालयों एवं लाइसेंस धारियों द्वारासंदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस लाइसेंसप्रमाण पत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज़ का उपयोग किया जा सकता है।

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.

1.	मानक संख्या IS No.	:	IS 12436 : 1988
	शीर्षक Title	:	Specification for preformed rigid polyurethane (PUR) and polyisocyanurate (PIR) foams for thermal insulation
	संशोधनों की संख्या No. of amendments	:	1
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	The material shall consist of rigid polyurethane or rigid polyisocyanurate foam with substantially closed cell structure.
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Please refer to Annex-A
c)	नमूने का परिमाण Sample Quantity	:	700 mm X 700 mm- 3 pieces
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		
	Thermal conductivity, Sizes and Dimensions, Thickness, Workmanship		
6.	लाइसेंस का दायरा /Scope of the License:		
	IS 12436 : 1988 के अनुसार मानक मुहर का उपयोग करने के लिए लाइसेन्स निम्नलिखित कार्यक्षेत्रके लिए प्रदान किया जाता है Licence is granted to use Standard Mark as per IS 12436 : 1988 with the following scope:		
	उत्पाद का नाम Name of the product		Preformed rigid polyurethane (PUR) and polyisocyanurate (PIR) foams for thermal insulation
	Type		Type 1/ Type 2
	Grade		PUR/ PIR

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ANNEX – A
GROUPING GUIDELINES

1. The IS classifies the product into following two types:
 - a. Type 1 - for General use
 - b. Type 2 – For use where there is a requirement for greater resistance to compressive forces
2. Based on material the product is classified into following two Grades:
 - a. PUR — Rigid polyurethane foam whose maximum recommended operating temperature is up to 110°C.
 - b. PIR — Rigid polyisocyanurate foam whose maximum recommended operating temperature is up to 140°C
3. For the purpose of GOL and CSoL, the following Grouping Guideline may be considered:
 - a. Each grade to tested to be covered in the scope of licence
 - b. If Type 2 is tested for a grade, Type 1 may also be included for the same grade.

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

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

ANNEX – B

LIST OF TEST EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl No.	Test Used in with Clause Reference	Test equipment
1	Dimensional Stability, Clause 5.1, and Table 1	1. Weighing balance 2. Measuring Scale 3. Conditioning chamber
2	Water vapour transmission, Clause 5.1, and Table 1	1. Shallow circular open containers 2. Measuring Scale 3. Vernier calliper 4. Circular template (with edge tapered) 5. Pot or dish 6. Humidity Chamber 7. Sealant wax 8. Anhydrous calcium chloride desiccant 9. Limiting ring 10. Analytical balance
3	Closed cell content, Clause 5.1, and Table 1	1. Air Pyknometer/ Glass-tubing manometer assembly as per Cl 9.2.1 with draught free case as per Cl 9.2.2 of IS 11239 (part 5) 2. Humidity Chamber 3. Arrangement to carry out test at $27 \pm 2^{\circ}\text{C}$ and 65 ± 5 percent relative humidity 4. Arrangement to measure surface area of the specimen
4	Compressive strength, Clause 5.1, and Table 1	1. Any Compression Testing Machine with movable head (as per Cl 5.1 of IS 11239 (Part 11)) 2. Conditioning Chamber 3. Arrangement to carry out test at $27 \pm 2^{\circ}\text{C}$ 4. Arrangement for measurement of dimensions of test sample
5	Thermal conductivity, Clause 5.1, and Table 1	1. Apparatus as per IS 3346,
6	Horizontal burning, Clause 5.1, and Table 1	1. Test Chamber with: a. Constructed of asbestos insulating board b. Fuel Supply c. Burner d. Wing top e. Support Gauze f. Gauze Holder 2. Timing Device 3. Measuring Scale
7	Standard Sizes and Dimensions, Clause 5.2	1. Scale
8	Thickness, Clause 5.3	1. Micrometer

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: Entire quantity of the PREFORMED RIGID FOAMS FOR THERMAL INSULATION of each type, grade, shape and dimension, produced in a continuous run on the same line in a day.

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/empaneled 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 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.

2.3.1. 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.

2.4. 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/empaneled 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 incorporated legibly and indelibly on each panel or on the packaging of the panel/panels, 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 product/packaging shall also be marked with the following additional requirement:

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)

TEST DETAILS				Test equipment requirement R: required (or) S: Subcontracting permitted	LEVELS OF CONTROL		REMARKS
Clause	Requirements	Test Method			No. of Samples	Frequency	
		Clause	Reference				
5.1	Dimensional Stability	-	IS 11239 (Part 3): 2019	R	1	Each Control Unit	-----
5.1	Water vapour transmission	-	IS 11239 (Part 4): 2014	S	1	Once in a month	
5.1	Closed cell content	-	IS 11239 (Part 5) : 2019	S	1	Once in a month	
5.1	Compressive strength	-	IS 11239 (Part 11) - 1985	R	1	Each Control Unit	
5.1	Thermal conductivity	-	IS 3346:1980	S	1	Once in a month	
5.1	Horizontal burning	-	IS 11239 (Part 12): 1988	S	1	Once in a month	
5.2	Sizes and Dimensions	5.2	IS 12436 : 1988	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		
5.3	Thickness	5.3	IS 12436 : 1988	R			
6	Workmanship and Finish	6	IS 12436 : 1988	R	Firm to have adequate in-process controls to check compliance of this parameter given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		