



उत्पाद मैनुअल
ताप रोधन के लिए अनबॉन्डेड शैल तथा धातुमल-ऊन
भारतीय मानक 3677: 2026 के अनुसार
**PRODUCT MANUAL
FOR
UNBONDED ROCK AND SLAG WOOL
FOR THERMAL INSULATION
ACCORDING to IS 3677: 2026**

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 3677: 2026
	शीर्षक Title	:	ताप रोधन के लिए अनबॉन्डेड शैल तथा धातुमल-ऊन Unbonded Rock and Slag Wool for Thermal Insulation.
	संशोधनों की संख्या No. of amendments	:	Nil
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	No specific requirement.
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Please refer to Annex-A .
c)	नमूने का परिमाण Sample Quantity	:	15 kg. <i>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</i>

		<i>required quantity of product sample, as far as possible since raw material sample may not be available in market)</i>
d)	निगरानी के लिए दिशानिर्देश Sampling guidelines for surveillance	: Only one Factory sample and one Market sample shall be tested in an operative year for all requirements of the IS.
e)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	: - Type. - For Type 2 - Confining Medium – with/without metallic cage. - Apparent Density - Thickness - Mean temperature and Specified apparent density for thermal conductivity (or <i>k</i>-value) determination. - Optional requirement – as applicable <i>Note: Apart from the above, any other requirements/parameters may also be declared as per the standard, as applicable.</i>
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	
	(Cl. 5.1) Description, (Cl. 5.2) Apparent Density, (Cl. 5.3) Apparent Density Under Specified Load, (5.4) Shot Content, (5.6) Incombustibility, (Cl. 5.9, 5.10, 5.11.9) Dimensions, (5.8) Sulphur Content, (5.11.10) Alkalinity, (5.11.4) Oil Content, (5.11.5) Carbon Content. <i>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.</i>	
6.	लाइसेंस का दायरा/Scope of the Licence:	
	“Licence is granted to use Standard Mark as per IS 3677: 2026 with the following scope:	
	Name of the product	Unbonded Rock and Slag Wool for Thermal Insulation
	Type(s)	1 / 2
	Mean Temperature(s) for Thermal Conductivity (at Specified Apparent Density(ies))	50 °C (200 kg/m ³ , 150 kg/m ³ ,) 100 °C (....., 150 kg/m ³ , 120 kg/m ³ ,)

	Optional Requirement(s)	With / without Moisture content With / without Resistance to Micro-organisms With / without Heat Resistance at ... °C as maximum temperature of use With / without Leachable Chloride Content
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ANNEX - A
GROUPING GUIDELINES

1. IS 3677: 2026 classifies Unbonded rock and slag wool for thermal insulation according to:
 - i. Types 1 & 2
 - ii. Mean Temperature(s) for Thermal Conductivity: 50/100/150/200/250 °C
 - iii. Sizes/Dimensions (for Type 2 only): Width and Thickness
 - iv. Confining Medium (for Type 2 only): Metallic Cage, Hessian Cloth etc.
2. For the purpose of grant of licence, and change in scope of licence, the following grouping guidelines shall apply:
 - i. Sample(s) of each Type (1/2) of Unbounded Rock and Slag Wool for Thermal Insulation at each Mean Temperature(s) for Thermal Conductivity (50/100/150/200/250 °C) shall be drawn.
 - ii. Manufacturer shall declare the apparent density(ies) at which the Thermal Conductivity measurement is to be carried out, against each mean temperature.
 - iii. For optional requirements (Cl. 5.11.1 to 5.11.11), manufacturer shall declare the optional requirements intended to be covered in the licence and accordingly, any one of the above samples shall also be tested for the applicable optional requirements.
 - i. Variety tested with optional requirement(s) will also cover the variety without optional requirement(s).
3. However, scope of licence shall be restricted according to the manufacturing and testing facilities available.
4. During operation of licence, samples of all varieties covered in the scope of licence, shall be drawn in rotation, to the extent possible.

ANNEX - B
LIST OF TEST EQUIPMENT

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Cl. No.	Test	Method of Test	Test Facilities
5.1	Description	IS 3677	1. Vernier or digital calliper
5.2	Apparent Density	9 of IS 3144	1. Container of known dimensions (for loose fill material) 2. Weighing Balance 3. Appropriate Scale or Vernier
5.3	Apparent Density Under Specified Load	10 of IS 3144 (Felted Material)	1. Cutter 2. Thickness measuring instrument as per IS 3144 3. Steel scale, Steel rule 4. Glass sheet or Mild Steel Sheet 5. Timer 6. Weighing Balance
		10 of IS 3144 (Loose Material)	1. Cylindrical vessel 2. Plunger 3. Lifting device 4. Metre scale 5. Weighing Balance 6. Timer
5.4	Shot Content	13 of IS 3144	1. Elutriator 2. Muffle Furnace 3. Laboratory Balance 4. Sieves 5. Weighing Balance 6. Timer 7. Knife 8. Glassware 9. Oven
5.5	Moisture Absorption	15 of IS 3144	1. Drying Unit 2. Humidity Chamber — thermostatically controlled 3. Cutter 4. Oven 5. Timer
5.6	Incombustibility	16 of IS 3144	1. Apparatus as per Fig. 3 of IS 3144 2. Thermocouple for above apparatus 3. Oven 4. Timer 5. Wire gauze or thin metal sheet box, if and as applicable

5.7	Thermal Conductivity or k-value	IS 3346	1. Low-Temperature Guarded Hot Plate 2. High-Temperature Guarded Hot Plate 3. Single Specimen Hot Plate Apparatus 4. Thermocouple 5. Ventilated Oven 6. Desiccator
5.8	Sulphur Content	19 of IS 3144	1. Apparatus as per Fig 4 of IS 3144 2. Glassware 3. Reagents 4. Weighing Balance 5. Hot plate 6. Timer
5.11.1	Moisture Content	14 of IS 3144	1. Thermostat fitted drying Oven with a suitable vent for escape of moisture 2. Chicken gauze 3. Cutter 4. Weighing Balance
5.11.2	Resistance to Micro-organisms	17 of IS 3144	1. Hot-air Oven 2. Incubator 3. Autoclave 4. Analytical balance 5. Stereoscopic Microscope 6. Test Organism — <i>Aspergillus niger</i> and <i>Bacillus subtilis</i> 7. Glassware 8. Microbial Solutions 9. Reagents 10. Soyabean Casein Digest Agar (SCDA) 11. Potato Dextrose Agar (PDA)
5.11.3	Odour Emission Test	18 of IS 3144	1. Refrigerator 2. Timer 3. Pans 4. Glass squares 5. Butter
5.11.4	Oil Content	20 of IS 3144	1. Soxhlet Extraction Apparatus 2. Reagent 3. Desiccator 4. Timer 5. Well ventilated Oven 6. Weighing Balance 7. Glassware arrangement 8. Reagents
5.11.5	Carbon Content	21 of IS 3144 (Volumetric Method)	1. Porcelain or silica boat 2. Combustion tube 3. Electric furnace 4. Absorption assembly 5. Reagents 6. Weighing Balance 7. Thermocouple

			- Oxygen gas - Glassware
		21 of IS 3144 (Direct Method)	- Carbon determination apparatus as per Fig 5 of IS 3144 - Reagents - Glassware
5.11.6	Resistance to Vibration	22.3 of IS 3144	- Apparatus as per Fig 6 of IS 3144 - Timer
5.11.7	Resistance to Jolting	22.4 of IS 3144	- Apparatus as per Fig 6 and Fig 9 of IS 3144 - Timer
5.11.8	Heat Resistance	12 of IS 3144	- Ventilated oven / Desiccator - Hot plate - Pipe mandrel - Thermocouples - Weighing Balance - Timer
5.11.10	Alkalinity	25 of IS 3144	- pH meter conforming to IS 2711 - Weighing Balance - Timer
5.11.11	Leachable Chloride Content	Annex C of IS 8183	- Reagents - Electronic Balance - Blender - Glassware - Buchner Funnel — with suitable filter paper - Timer - Hot plate - Cold water bath - Amperometric – Coulometric / Specific Ion Electrode / Ion Chromatography – apparatus.

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

ANNEX - C
**SCHEME OF INSPECTION AND
TESTING**

1. QUALITY ASSURANCE PLAN

1.1 It is expected that during operation of BIS licence, manufacturers will implement a Quality Assurance Plan (QAP) 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 (QAP) defining the control unit (i.e. lot/batch etc.), the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and declare the arrangement for testing i.e. whether in-house or subcontracting/sharing for each applicable test and submit the same to BIS Branch Office for information. The manufacturer shall comply with the QAP and maintain test records in accordance with para 2.1.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is: *all unbonded rock and slag wool for thermal insulation of the same type produced under essentially the same conditions of manufacture 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](#). Manufacturer has the discretion of declaring their own levels of control or accept the levels of control given in this document.

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.

2. ENSURING COMPLIANCE THROUGH TESTING- manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard for which they may have in-house test facilities. However, there is no obligation to maintain in-house laboratory. Licensee may use alternative arrangements for tests of the production as per the declared QAP. Various alternatives are available for operation of BIS certification as given below and the relevant guidelines for availing such relaxations by the manufacturers, as amended from time to time, are to be referred:

- i) Shared testing resources like common facility,
- ii) Cluster based testing facility,
- iii) Sub-contracting to outside laboratories which may either be:
 - a) BIS recognised/empanelled laboratories, or
 - b) Any accredited laboratory as per ISO/IEC 17025

2.1 TEST RECORDS- The manufacturers shall maintain test records for the tests carried out (either in-house or at a sub-contracted or at shared test facility) to establish conformity of the

product to the Standard for operation of licence. For the tests being subcontracted or conducted at a shared test facility, test results issued by the laboratories or test facilities, shall be made 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 package of Unbonded Rock and Slag Wool for Thermal Insulation, provided always that the material so marked, conform to every requirement of the specification.

3.1 Packing and marking shall be done as per the provision of the Indian Standard. In addition, the package shall also be marked with the following additional requirement:

a) BIS Licence No. CM/L _____.

b) BIS website details: "For BIS certification details please visit www.bis.gov.in"

4. REJECTION - 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
(Recommended Levels of Control by BIS - For Guidance Only)

(1)				(2)	
Test Details				Levels of Control	
<i>Clause</i>	<i>Requirement</i>	<i>Test Methods</i>		<i>No. of Sample</i>	<i>Frequency</i>
		<i>Clause</i>	<i>Reference</i>		
5.1	Description	5.1	IS 3677	One	Each Control Unit
5.2	Apparent Density	9	IS 3144	One	-do-
5.3	Apparent Density Under Specified Load	10	IS 3144	Five	-do-
5.4	Shot Content	13	IS 3144	One	-do-
5.5	Moisture Absorption	15	IS 3144	One	Once in a month
5.6	Incombustibility	16	IS 3144	One	Each Control Unit
5.7	Thermal Conductivity or k-value	-	IS 3346	One for each density	Once in a year
5.8	Sulphur Content	19	IS 3144	One	Each Control Unit
5.9, 5.10, 5.11.9	Dimensions	5.9, 5.10, 5.11.9	3677	Five	-do-
Optional Requirements:					
5.11.1	Moisture Content	14	IS 3144	Three	As agreed between manufacturer and purchaser
5.11.2	Resistance to Micro-organisms	17	IS 3144	One	
5.11.3	Odour Emission Test	18	IS 3144	Three	
5.11.4	Oil Content	20	IS 3144	One	
5.11.5	Carbon Content	21	IS 3144	One	
5.11.6	Resistance to Vibration	22.3	IS 3144	One	
5.11.7	Resistance to Jolting	22.4	IS 3144	One	
5.11.8	Heat Resistance	12	IS 3144	Two	
5.11.10	Alkalinity	25	IS 3144	One	
5.11.11	Leachable Chloride Content	Annex C	IS 8183	One	