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उत्पाद मैन्युअल
दीवारों के लिए ऑटोक्लेवित प्रबलित कोशिकीय कंक्रीट स्लैब के लिए
आई एस 6072:2023 के अनुसार

PRODUCT MANUAL
AUTOCLAVED REINFORCED CELLULAR CONCRETE WALL SLABS
ACCORDINGTO IS 6072 : 2023

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 6072 : 2023
	शीर्षक **Title**	:	Autoclaved Reinforced Cellular Concrete Wall Slabs
	संशोधनों की संख्या **No. of amendments**	:	Nil
2.	**नमूना दिशानिर्देश** **Sampling Guidelines**		
a)	**कच्चा माल** **Raw material**	:	Please refer to Annex-A Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be establishedduring Grant of Licence/Change in Scope of Licence/ Factory Surveillance
b)	**समूहीकरण दिशानिर्देश Grouping Guidelines**	:	Please refer to Annex-B

c)	**नमूने का परिमाण** **Sample Quantity**	:	- 15 Slabs & 30 Blocks 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 (incase of market surveillance, effort may be made to procure therequired 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-C
4.	**निरीक्षण और परीक्षण की स्कीम** **Scheme of Inspection and Testing**	:	Please refer to Annex-D
5.	**एक दिन में संभावित परीक्षण** **Possible tests in a day**		
	(i) Sizes - Cl. 6.1, (ii) Form Tolerances - Cl. 6.3, (iii) Manufacture and Finish - Cl. 7 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 readyreference 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 6072:2023 with the following scope:		
	Name of the product	Autoclaved Reinforced Cellular Concrete Wall Slabs	
	Class	A/ B/ C/ D/ E	
	Dimensions – Height x Width x Thickness, mm	Sizes upto & including -----	

ANNEX- A

Details of Raw Materials

Raw Material	Mode of Establishing Compliance
Cement (Cl 4.1)	Shall be ISI marked alongwith supplier test certificate as per Clause 4.1 of IS 6072:2023
Lime (Cl 4.2)	supplier test certificate/test report from BIS recognized lab/ empaneled lab or any other lab having accreditation as per IS/ISO/IEC 17025 or in house testing/combination thereof, as per Clause 4.2 of IS 6072:2023
Sand (Cl 4.3)	supplier test certificate/test report from BIS recognized lab/ empanelled lab or in house testing/combination thereof, as per Clause 4.3 of IS 2191 (Part 2)
Fly Ash (Cl 4.4)	supplier test certificate/test report from BIS recognized lab/ empanelled lab or in house testing/combination thereof, as per Clause 4.4 of IS 2191 (Part 2)
Granulated Blast Furnace Slag (Cl 4.5)	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, as per Clause 4.5 of IS 6072:2023
Water (Cl 4.6)	supplier test certificate/test report from BIS recognized lab/ empanelled lab or in house testing/combination thereof, as per Clause 4.6 of IS 2191 (Part 2)
Reinforcement (Cl 4.7)	Shall be ISI marked alongwith supplier test certificate as per Clause 4.7 of IS 6072:2023
Aluminium Powder (Cl 4.8 & 4.8.1)	supplier test certificate/test report from BIS recognized lab/ empaneled lab or any other lab having accreditation as per IS/ISO/IEC 17025 or in house testing/combination thereof; as per the specifications given in Clause 4.8 of IS 6072:2023, or specifications as suggested by wall slab manufacturer as per Clause 4.8.1 of IS 6072:2023.

ANNEX B

Grouping Guidelines

1. Autoclaved reinforced cellular concrete wall slabs as per IS 6072:2023 are categorized as given below:

    a) Classification - Five Classes A/ B/ C/ D/ E, based on Oven-dry density (without reinforcement) and Compressive Strength.

    b) Dimensions - Length x Width (Breadth) x Thickness:

        (i) Preferred Dimensions:

        - Height - 1 000 to 6 000 mm
        - Width – 600 mm
        - Thickness - 150 to 250 mm with increments of 25mm

        (ii) Sizes other than those specified at (i) above may also be used by mutual agreement between the purchaser and the supplier.

2. Considering the above, the guidelines given below shall be followed for GoL/ CSoL:

    - Sample of highest Dimension from each Class shall be tested for all requirements to cover wall slabs of all Dimensions upto and including the Dimension tested for that particular Class.

3. The Firm shall declare the varieties of wall slabs they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer

4. During the operation of the Licence, BO shall ensure that all the types and sizes covered in the Licence are tested in rotation, to the extent possible.

ANNEX C

List of Test Equipment

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl.no	Test used in with clause reference	Test equipment
1.	Size, Form Tolerances & Finish Cl. No 6.1, 6.3 & 7	- Measuring scale - Vernier calliper - Straight edge - Right angles - Measuring Tape - Flat inspection table - feeler gauge - Saw for cutting (rotating carborundum or steel or similar device) [this is required for all tests which need unreinforced blocks]
2.	Density of Element, (Excluding Reinforcement) - Cl. No 8.1(a)	- Hot air oven - Balance -Vernier calliper - Straight edge
3	Drying Shrinkage - Cl. No 8.1(b)	- Suitable length measuring equipment - Gauge plugs - Immersion /curing water tank with the arrangement to maintain water temperature at 27 ± 2 deg C - Humidity cabinet / Storage room with Potassium Carbonate
4.	Residual water content at the time of delivery to the use - Cl. No 8.1(c)	- Hot air oven - Balance -Vernier calliper
5	Compressive strength & Thermal Conductivity - Cl. No 8.1(d)	-Steel Scale -Vernier Calliper -Drying Oven -Digital Balance -Conditioning chamber -Straight edge -Digital Compression Testing Machine -Thermal conductivity test apparatus as per clause 3 or 4 of IS 3346
6	Protective coating test of reinforcement – Cl. No 7.1	-Conditioning chamber as per IS 6441 (Pt 4) -Moisture or Vapour Barrier (e.g. asphalt or bitumen emulsion layer) -arrangement to remove concrete from reinforcement

7	Fire resistance test – Cl. No 8.1(e)	-Fire resistance test apparatus -Loading equipment -Thermocouples -Equipment for measurement of overpressure in furnace
8	Structural Requirements: Loading - Cl. No 9.1 Design load and Deflection - Cl. No 9.2 Ultimate load - Cl. No 9.3	-Load and Deflection test apparatus with load arrangement. -Bearing Support steel plate 25 mm -Digital indicator with frame -Porous fibre board thickness 12 mm

ANNEX D
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 : Autoclaved reinforced cellular concrete wall slabs of the same Class and Dimensions manufactured from the same mix design in a 48 hour period shall constitute a control unit.

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 testingfacility 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/empanelled laboratoryor 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 clearly and permanently on each slab 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 additionalrequirement on <insert the place where marking can be done>:

a) "For BIS certification details please visit www.bis.gov.in"
b) Any other requirement not specified in the Indian Standard

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 No	**Requirement**	**Test Methods**			**No. of Sample**	**Frequency**	**Remarks**
		Clause	**Reference**				
4.1	Cement	4.1	IS 6072	S	Cement used shall be ISI marked and received with test certificate of manufacturer		
4.2	Lime	4.2	IS 6072	S	One	Once in a month	No further testing is required if received with test certificate or ISI marked. Additional sample shall be tested, whenever there is change of source of supply.
4.3	Sand	4.3	IS 6072	S	One	Once in a month	
4.4	Fly Ash	4.4	IS 6072	S	One	Once in a month	
4.5	Granulated blast furnace slag	4.5	IS 6072	S	One	Once in a month	
4.6	Water	4.6	IS 6072	S	One	Once in a year	
4.8	Aluminium Powder	4.8		S	One	Each Consignment	No further testing is required if received with test certificate
4.7	Reinforcement	4.7	IS 6072	S	Reinforcement material used shall be ISI marked and received with test certificate of manufacturer		
6.1	Sizes	6.1, 6.2	IS 6072	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		
6.3	Form Tolerances	6.3	IS 6072	R			
7	Manufacture and Finish (except Protective Coating)	7	IS 6072	R			
7.1	Reinforcement - Protective Coating	7.1	IS 6072 & IS 6441 (Pt 4)	R	One	Once in three months	

8.	**PHYSICAL PROPERTIES**						
	Density of Element (Excluding Reinforcement)	8.1(a)	IS 6072 & IS 6441 (Pt 1)	R	One	Each Control Unit	
	Drying Shrinkage	8.1(b)	IS 6072 & IS 6441 (Pt 2)	S	One	Once in three months for each Class	
	Residual water content at the time of delivery to the user	8.1(c)	IS 6072& IS 6441 (Pt 1)	R	As declared by the manufacturer		
	Compressive Strength	8.1(d)	IS 6072& IS 6441 (Pt 5)	R	One	Each Control Unit	
	Thermal Conductivity		IS 6072 & IS 3346	S	One	Once in six months or whenever there is any change in compressive strength or density, whichever is earlier	
	Fire Resistance	8.1(e)	IS 6072 & IS 3809	S	One	Once in two years or whenever there is any change in the composition/structural design, whichever is earlier	
9.	Structural Requirement - Loading Design Load and Deflection	9.1 to 9.3	IS 6072 & IS 875 (Pt 1 to 5)	R	Two	Each Control Unit	
	Ultimate Load				One	Once in a month	