



## PRODUCT MANUAL FOR PULVERIZED FUEL ASH-CEMENT BRICKS ACCORDING TO IS 16720 : 2018

*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.	<b>Product</b>	:	IS 16720 : 2018
	<b>Title</b>	:	PULVERIZED FUEL ASH-CEMENT BRICKS
	<b>No. of Amendments</b>	:	NIL
2.	<b>Sampling Guidelines:</b>		
a)	<b>Raw material</b>	:	Please refer <a href="#">ANNEX – A</a>
b)	<b>Grouping guidelines</b>	:	Please refer <a href="#">ANNEX – B</a>
c)	<b>Sample Size</b>	:	30 bricks for all tests
3.	<b>List of Test Equipment</b>	:	Please refer <a href="#">ANNEX – C</a>
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer <a href="#">ANNEX – D</a>
5.	<b>Possible tests in a day :</b>		
	(i) General (Clause 8.1)		
	(ii) Dimensions (Clause 8.2)		
6.	<b>Scope of the Licence :</b>		
	“Licence is granted to use Standard Mark as per IS 16720 : 2018 with the following scope:		
	Name of the product	PULVERIZED FUEL ASH-CEMENT BRICKS	
	With/Without frog		
	Class designation		

**ANNEX A**

**DETAILS OF RAW MATERIAL**

1. Pulverized fuel ash - IS 3812 (Part 1) or IS 3812 (Part 2)
2. Fine aggregates – IS 383
3. Coarse aggregates – IS 383 and clause 6.2.2 of IS 16720
4. Cement – Clause 6.3 of IS 16720
5. Chemical admixture – IS 9103
6. Water – As per requirements specified in IS 456
7. Additives – Clause 6.6 of IS 16720

**ANNEX – B****Grouping Guidelines**

1. Pulverized fuel ash-cement bricks covered under IS 16720 are classified as under:
  - a) Size (maximum) – 300 mm x 150 mm x 100 mm  
Type – Modular and Non Modular  
(Bricks of any other size may be manufactured as per agreement between the purchaser and manufacturer)
  - b) With or without frog
  - c) Class designation – 15/ 12.5/ 10 /7.5 / 5 (Based on average 28 days Wet Compressive Strength)
2. Considering the different requirements for Water Absorption (i.e. for bricks upto and including class 10 and higher class above class 10), the class designation have been classified into two groups as below:

<b>Group</b>	<b>Class Designation</b>
I	5, 7.5, 10
II	12.5, 15

3. Considering the above, the following grouping guidelines for GoL/CSoL have been developed:
  - a) Any one size of brick from any class designation from each group shall be tested to cover all sizes of bricks in that class designation for that particular group. However, if bricks of higher class designation from a group is tested for all requirements, other lower class designation in that group may also be covered.
  - b) Separate sample of bricks, with and without frog shall be tested to cover that particular variety in the scope of the licence.
3. The Firm shall declare varieties of bricks they intend to cover in the Licence.
4. 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 varieties covered in the Licence are tested in rotation, to the extent possible.

**ANNEX C****List of Test Equipment***Major test equipment required to test as per the Indian Standard*

<b>S. No.</b>	<b>Tests used in with Clause Reference</b>	<b>Test Equipment</b>
1.	Dimensions (clause 8.2)	a) Measuring scale b) Steel Tape c) Radius gauge d) Vernier caliper
2.	Density (Clause 8.3 )	a) Measuring scale b) Vernier Caliper c) Drying oven d) Straight edge e) Balance
3.	Compressive strength (Clause 8.4 )	a) Preconditioning arrangement along with water bath (As per Cl 4.1.2 of IS 3495 (Pt 1)) b) 3-ply plywood sheets of 3 mm thickness c) Compression testing machine (As per Cl 4.1.1 of IS 3495 (Pt 1))
4.	Drying shrinkage (Clause 8.5 )	a) Measuring Apparatus & necessary arrangements as per IS 4139 b) Drying Oven c) Immersion /curing water tank ( to maintain temperature $27 \pm 2$ ° C d) Desiccator with Calcium Chloride. e) Thermometer f) Air Conditioner
5.	Water Absorption (Clause 8.6)	a) Weighing balance b) Immersion /curing water tank ( to maintain temperature $27 \pm 2$ ° C c) Hot air oven. d) Thermometer e) Air conditioner

**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 16720 : 2018.

In addition to the above, following marking shall be marked either on the bricks or on package of bricks:

- a) Batch/ Lot Number for traceability
- b) Licence number
- c) Class designation of bricks
- d) Size of bricks

**4. CONTROL UNIT** – All pulverised fuel ash – cement bricks manufactured from same lot and mix of raw materials with same class designation and size produced in a day subject to a maximum of 50000 bricks 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				
6	<b>Materials</b>						
6.1	Pulverized fuel ash	6.1	IS 16720 IS 3812 (Part 1) IS 3812 (Part 2)	S	One sample in a month or whenever there is change in source of supply.		No further testing is required, if received with test certificate or ISI marked
6.2	Aggregates	6.2.1 6.2.2	IS 16720 IS 383	S	One	Once in year for each size.	Additional sample shall be tested wherever there is change in source of raw material.
6.3	Cement	6.3	IS 16720	S	-	-	Cement received shall be ISI marked and accompanied with test certificate.
6.4	Chemical admixtures	6.4	IS 16720 IS 9103	S	1	Each consignment	No further testing is required if accompanied with test certificate or ISI marked.
6.5	Water	6.5	IS 16720 IS 456	S	1	Once in a year or whenever there is a change in source of water, whichever is earlier	
6.6	Additives	6.6	IS 16720	S	1	Each consignment	No further testing is required if accompanied with test certificate.
8.1	General	8.1	IS 16720	-	Each brick	-	-
8.2	Dimensions	8.2 4.1 to 4.3	IS 16720	R	10	Each control unit	-
8.3	Density	8.3 Annex-C	IS 16720 IS 2185 (Part 1)	R	3	Once in a week	Sample of each class shall be tested separately

8.4	Compressive strength	8.4	IS 16720 IS 3495 (Part 1)	R	3	Once in a week	Sample of each class shall be tested separately
8.5	Drying shrinkage	8.5	IS 16720 IS 4139	S	3	Once in six months	Sample of each class shall be tested separately
8.6	Water absorption	8.6	IS 16720 IS 3495 (Part 2)	R	3	Once in a month	Sample of each class shall be tested separately

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.