



**PRODUCT MANUAL FOR
PULVERIZED FUEL ASH-LIME BRICKS
ACCORDING TO IS 12894 : 2002**

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.	Product	:	IS 12894 : 2002
	Title	:	PULVERIZED FUEL ASH-LIME BRICKS
	No. of Amendments	:	2
2.	Sampling Guidelines:		
a)	Raw material	:	Please refer ANNEX – A
b)	Grouping guidelines	:	Please refer ANNEX – B
c)	Sample Size	:	50 bricks for all tests
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 :		
	(i) General (Clause 3)		
	(ii) Dimensions (Clause 5)		
6.	Scope of the Licence :		
	“Licence is granted to use Standard Mark as per IS 12894 : 2002 with the following scope:		
	Name of the product	PULVERIZED FUEL ASH-LIME BRICKS	
	With/Without frog		
	Class designation		

ANNEX A

DETAILS OF RAW MATERIAL

1. Pulverized fuel ash - IS 15648
2. Bottom Ash – Clause 6.2 of IS 12894 : 2002
3. Sand – Clause 6.3 of 12894 : 2002
4. Lime – Class C of IS 712
5. Additives – Clause 6.5 of IS 12894 : 2002

ANNEX – B
Grouping Guidelines

1. Pulverized fuel ash-lime bricks covered under IS 12984 are classified as under:

a) Size

- Modular – 190 mm x 90 mm x 90 mm
190 mm x 90 mm x 40 mm
- Non-Modular – 230 mm x 110 mm x 70 mm
230 mm x 110 mm x 30 mm
- For proper bond – 70 mm x 110 mm x 70^{1/3} mm
230 mm x 50 mm x 70^{1/2} mm

(Bricks of any other size may be manufactured as per agreement between the purchaser and manufacturer)

b) With or without frog

c) Class designation – 30/25/ 20/ 17.5/ 15/ 12.5/ 10 /7.5 / 5 /3.5

(Based on average 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 three groups as given below:

Group	Class Designation
I	3.5, 5, 7.5, 10
II	12.5, 15, 17.5, 20
III	25, 30

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. 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 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*

S. No.	Tests used in with Clause Reference	Test Equipment
1.	Dimensions (clause 5)	a) Measuring scale b) Steel Tape c) Radius gauge d) Vernier caliper e) Right angle
2.	Compressive strength (Clause 7.1)	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))
3.	Drying shrinkage (Clause 7.2)	a) Measuring Apparatus & necessary arrangements as per IS 4139 b) Drying Oven c) Immersion /curing water tank (to maintain temperature 27 ± 2 ° C d) Desiccator with Calcium Chloride. e) Thermometer f) Air Conditioner
4.	Efflorescence test (Clause 7.3)	a) Shallow flat bottom dish of size 180 mm × 180 mm × 40 mm or 200 mm dia × 40 mm made from glass/porcelain/glazed stoneware b) Distilled water
5.	Water Absorption (Clause 7.4)	a) Weighing balance b) Immersion /curing water tank (to maintain temperature 27 ± 2 ° C c) Hot air oven. d) Thermometer e) Air conditioner

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 12894: 2002.

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 – lime 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 10000 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					
3	General requirements	3.1 to 3.5	IS 12894	R	All bricks	-	-	
5	Dimensions and Tolerances	5.1, 5.2, 8	IS 12894 IS 5454	R	40	Each control unit	-	
6	Materials							
6.1	Pulverized fuel ash	6.1	IS 12894 IS 15648	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	Bottom Ash	6.2	IS 12894 IS 1727	S				
6.3	Sand	6.3	IS 12894	S	One	Each consignment		
6.4	Lime	6.4	IS 12894 IS 712	S	One	Each consignment		
6.5	Additives	6.5	IS 12894 IS 269	S	One	Each consignment		
7	Physical characteristics							
7.1	Compressive strength	4.1, 7.1	IS 12894 IS 3495 (Part 1)	R	5	Once in a week		Sample of each class shall be tested separately
7.2	Drying shrinkage	7.2	IS 12894 IS 4139	S	3	Once in six months	Sample of each class shall be tested separately	

7.3	Efflorescence test	7.3	IS 12894 IS 3495 (Part 3)	S	5	Once in six months	Sample of each class shall be tested separately
7.4	Water absorption	7.4	IS 12894 IS 3495 (Part 2)	R	5	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.