



PRODUCT MANUAL FOR BUILDING LIMES ACCORDING TO IS 712:1984

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 712: 1984
	Title	:	BUILDING LIMES
	No. of Amendments	:	1
2.	Sampling Guidelines:		
a)	Raw material	:	Not Applicable
b)	Grouping guidelines	:	Sample of each Class and Form of lime shall be tested for all requirements to consider that particular variety in the Scope of Licence.
c)	Sample Size	:	Building Lime – 10 kg
3.	List of Test Equipment	:	Please refer ANNEX –A
4.	Scheme of Inspection and Testing	:	Please refer ANNEX –B
5.	Possible tests in a day:		
	(i) Fineness [Clause 5.1, Table 2, Sl. No. (i)] (ii) Setting time [Clause 5.1, Table 2, Sl. No. (iii)] (ii) Volume yield [Clause 5.1, Table 2, Sl. No. (vii)] (iv) Determination of Carbon-di-oxide content [Clause 4.1, Table 1] (v) Insoluble residue [Clause 4.1, Table 1]		
6.	Scope of the Licence:		
	“Licence is granted to use Standard Mark as per IS 712 :1984 with the following scope:		
	Name of the product	Building Lime	
	Class	A/B/C/D/E/F	
	Form	Hydrated Lime/ Quick Lime	

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

Sl. No.	Tests used in with Clause Reference	Test Equipment
1	Fineness [Clause 5.1, Table 2, Sl. No. (i)] a) Residue on 2.36 mm IS sieve b) Residue on 300 micron IS sieve c) Residue on 212 micron IS sieve	Distilled water with jet arrangement IS Sieves of required sizes Hydrated lime Weighing balance Standard weights Flexible tube Drying oven (100 ± 10 °C)
2	Residue on slaking: [Clause 5.1, Table 2, Sl. No. (ii)] a) Residue on 850 micron IS sieve b) Residue on 300 micron IS sieve	Distilled water IS Sieve 2.36 mm, Hot water Metal vessel (Circular bin 45 cm dia and 50 cm deep) Thermometer (LC-1° C) Weighing balance Standard weights Wooden stirrer Temperature (100 ± 2° C) Supernatant liquid IS sieve 850 and 300 micron Cloth as Woven unbleached calico (1.0 × 1.5 m) Slaking vessel Flexible tube Drying oven (100 ± 10 °C)
3	Setting time: [Clause 5.1, Table 2, Sl. No. (iii)] a) Initial set b) Final set	Vicat Apparatus with Vicat Mould Rod Bearing Needle C, annual attachment F Stop watch/timer Test condition in laboratory: Temperature 27 ± 2 °C and Relative humidity 90 %
4	Compressive strength [Clause 5.1, Table 2, Sl. No. (iv)]	Distilled water Standard Sand Hydrated lime/quick lime Mixer

		<p>Drying oven (100 ± 10 °C) Weighing balance Standard weights Hot water Metal vessel (circular bin 45 cm dia and 5.0 cm deep) Wooden stirrer Wooden rod Filter cloth IS Sieve 2.36 mm IS Sieve 850 micron Metal vessel Bronze mould Test specimens –cubes of side 5.0 cm Compression Testing machine, proving ring Test condition in laboratory: Temperature 27 ± 2 °C and Relative humidity 90%</p>
5	<p>Transverse strength [Clause 5.1, Table 2, Sl. No. (v)]</p>	<p>Distilled water Sand Hydrated lime/quick lime Mixer Drying oven (100 ± 10 °C) Compression Testing machine, proving ring, roller set Weighing balance Hot water Metal vessel (circular bin 45 cm dia and 5.0 cm deep) Wooden stirrer Wooden rod Standard weights Filter cloth IS Sieve 2.36 mm IS Sieve 850 micron Metal vessel Test specimen-2.5cm square 10.0 cm long Petroleum jelly Bronze mould Palette knife Test condition in laboratory: Temperature 27 ± 2 °C and Relative humidity 90%</p>

6	Workability bumps [Clause 5.1, Table 2, Sl. No. (vi)]	Distilled water Standard flow table Truncated conical metallic mould Quick lime Weighing balance Standard weights Mixer Temperature (27 ± 2 °C)
7	Volume yield [Clause 5.1, Table 2, Sl. No. (vii)]	Distilled water Southward viscometer Filter cloth Mixer Lime putty density vessel Slaking temperature 50 and 100 °C
8	Soundness – Le-Chaterlier expansion [Clause 5.1, Table 2, Sl. No. (viii)]	Distilled water Portland cement Standard sand Le – Chaterlier apparatus Petroleum jelly Le – Chaterlier Mould Small weight, Vernier calliper Steam boiler/water bath
9	Popping and pitting [Clause 5.1, Table 2, Sl. No. (ix)]	Distilled water Gauging plaster Vicat needle Hydrated lime, Weighing balance Trowel Plaster of Paris Ring mould (10.0 cm diameter and 0.5 cm deep) Petroleum jelly Broad palette knife/Spatula Oven Steam boiler
10	Testing facility for chemical analysis [Clause 4.1, Table 1, Sl. No. (i to viii)]	Weighing balance Vacuum pump (76mmHg) Vacuum Desiccators Furnace (1100°Cto 1400°C) Autoclave Drying oven Evaporating dish

		<p>Hydrochloric acid Sod. Carbonate Beaker Agitator Hot plate Filter assembly with filter paper Porcelain dish with cover Crucible Platinum crucible with cover Water bath Sulphuric acid Hydrofluoric acid Nitric acid Methyl red indicator Ammonium hydroxide Ammonium chloride Benson valve/Jone's redactor Sod. Persulphate Pott permanganate Ammonium oxalate Sod thiosulphate Iodine solution Starch indicator Conical flask Rectified spirit Sod hydroxide Sugar solution Phenolphthalein indicator Diammonium hydrogen phosphate Ammonium nitrate Phosphorous pentaoxide Apparatus for CO₂ determination as per clause 3.1.1 and Fig 1 of IS 6932 (Part 2) Thermobalance (All chemicals and glassware required for complete chemical analysis as per IS 712)</p>
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The above list is indicative only and may not be treated as exhaustive.

ANNEX B

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 equipments.

2. TEST RECORDS – The manufacturer shall maintain test records for the tests carried out to establish conformity.

3. LABELLING AND MARKING – As per the requirement of IS 712: 1984.

4. CONTROL UNIT – Building lime of same class and form manufactured from same source of raw material under similar conditions of manufacturing in a day shall constitute a control of 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) Test Details				(2) Test equipment requirement R: required (or) S: Sub-contracting permitted	(3) Levels of Control		
Cl.	Requirement	Test Methods		No of sample **	Frequency	Remarks	
		Clause	IS Reference				
4.1, Table 1	Chemical requirements						
i)	Calcium and magnesium oxides percent	4.1, Table 1	IS 712 IS 6932(Part 1)	R	One	Each Control Unit	-
ii)	Magnesium oxides percent (on ignited basis)	4.1, Table 1	IS 712 IS 6932(Part 1)	R	One	Each Control Unit	-
iii)	Silica, alumina and ferric oxide percent (on ignited basis)	4.1, Table 1	IS 712 IS 6932(Part 1)	R	One	Each Control Unit	-
iv)	Unhydrated magnesium oxide percent (on ignited basis)	4.1, Table 1	IS 712 IS 6932(Part 5)	R	One	Each Control Unit	-
v)	Insoluble residue in dilute acid and alkali percent (on ignited basis)	4.1, Table 1	IS 712 IS 6932(Part 1)	R	One	Each Control unit	-
vi)	Carbon dioxide percent (On oven dry basis)	4.1, Table 1	IS 712 IS 6932(Part 2)	R	One	Each Control Unit	-
vii)	Free moisture content	4.1, Table 1	IS 712 IS 1514	R	One	Each Control Unit	-
viii)	Available lime as CaO percent (Dry basis)	4.1, Table 1	IS 712 IS 1514	R	One	Each Control Unit	-

5.1, Table 2	Physical requirements						
i)	Fineness a) Residue on 2.36 mm Sieve, percent IS b) Residue on 300 micron Sieve, percent IS c) Residue on 212 micron Sieve, percent IS	5.1, Table 1	IS 712 IS 6932 (Part 4)	R	One	Each Control Unit	-
ii)	Residue on slaking a) Residue on 850 micron Sieve percent IS b) Residue on 300 micron Sieve, percent IS	5.1, Table 1	IS 712 IS 6932 (Part 3)	R	One	Each Control Unit	-
iii)	Setting time a) Initial set b) Final set	5.1, Table 1	IS 712 IS 6932 (Part 11)	R	One	Each Control Unit	-
iv)	Compressive Strength a) At 14 days b) At 28 days	5.1, Table 1	IS 712 IS 6932 (Part 7)	R	One	Each Control Unit	-
v)	Transverse strength at 28 days	5.1, Table 1	IS 712 IS 6932 (Part 7)	R	One	Each Control Unit	-
vi)	Workability pumps	5.1, Table 1	IS 712 IS 6932 (Part 8)	R	One	Each Control Unit	-
vii)	Volume yield	5.1, Table 1	IS 712 IS 6932 (Part 6)	R	One	Each Control Unit	-
viii)	Soundness, LeChatelier expansion	5.1, Table 1	IS 712 IS 6932 (Part 9)	R	One	Each Control Unit	-
ix)	Popping & Pitting	5.1, Table 1	IS 712 IS 6932 (Part 10)	R	One	Each Control Unit	-

** Sample shall be composite sample representing production of building lime in a day.

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.