भारतीय मानक ब्यूरो
(केंद्रीय मुहर विभाग III)

हमारा संदर्भ : सी एम डी - III/16 : 1489 (Part 1) **07 अगस्त 2018**

विषय : आई एस 1489 (Part 1) : 2015 के अनुपालन लिए एसआईटी ।

इसे उपरोक्त विषय का संदर्भ प्राप्त है।

सक्षम प्राधिकारी ने उपरोक्त के अनुपालन हेतु एसआईटी Doc: SIT/1489(Part 1)/1, July 2018 को अनुमोदित कर दिया है।

सभी क्षेत्रीय और शाखा कार्यालयों से अनुरोध है की उपरोक्त एसआईटी का अनुपालन तत्काल प्रभाव से सुनिश्चित करें।

(एस डी राणे)
वैज्ञानिक ई (सी एम डी-III)

प्रमुख (सी एम डी- III)

सभी क्षेत्रीय /शाखा कार्यालय

प्रतिलिपि : आई टी एस विभाग - बी आई एस इंट्रानेट पर डालने हेतु।

BUREAU OF INDIAN STANDARDS
(Central Marks Department-III)

Our Ref: CMD-III/16 : 1489 (Part 1) **07 August 2018**

Subject: SIT for certification of IS 1489 (Part 1) : 2015 'Portland Pozzolana Cement – Fly ash Based'.

This has reference to the subject mentioned above.

The Competent Authority has approved SIT Doc: SIT/1489(Part 1)/1, July 2018 for certification of IS 1489 (Part 1) : 2015.

All ROs/BOs are requested to ensure the implementation of the above SIT with immediate effect.

(S. D. Rane)
Sc-E (CMD-III)

Head (CMD-III)

Circulated to: All ROs/BOs

Copy to: ITS – for hosting on Intranet please

SCHEME OF INSPECTION AND TESTING FOR PORTLAND POZZOLANA CEMENT- FLY ASH BASED ACCORDING TO IS 1489 (PART 1) : 2015

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. The following equipments shall be calibrated at a frequency shown against each and records kept.

Sl No.	**TEST EQUIPMENT**	**FREQUENCY OF CALIBRATION**
1.	Blaine's apparatus	Daily with licensee's own Standard cement sample and monthly with standard cement samples supplied by NCCBM.
2.	Compressive strength Testing machine	Once in a month with Licensee's own Proving Ring and the Proving Ring shall be Calibrated once in two years from a NPL/NABL Accredited Calibrating body or NPL or NPL accredited Proving Ring manufacturer.
3.	Autoclave pressure gauge	Once in a month by licensee's own dead weight pressure gauge tester OR once in six months from accredited calibrating body or NPL/NABL accredited manufacturer of such gauges.
4.	Vibration machine	Once in a month by licensee's own Tachometer. The tachometer shall be calibrated once in a year from NPL/NABL accredited outside agency.
5.	Dead weight pressure gauge Tester (if available)	Once in four years from NABL accredited Tester (if available) Lab or OEM (original Equipment manufacturer) having NPL/NABL accredited calibrator.

2. TEST RECORDS – The manufacturer shall maintain test records in various formats, Form 1 to Form 20 for the tests carried out to establish conformity.

3. LABELLING AND MARKING – Labeling and marking shall be as given below:

3.1 STANDARD MARK - The Standard Mark, as specified by BIS, shall be printed or stenciled on each bag or drum of Portland Pozzolana Cement or on the label applied to it, provided the material in each bag or package to which the mark thus applied conforms to the specification. The size of the Standard Mark shall be either 1**60 x 120** mm or **80 x 60** mm for packing in quantity of 50 kg and above. For other packings of lower quantity, a photographic reduction is permitted.

3.2 MARKING - As per the requirements of IS 1489 (Part 1).

3.2.1 In addition to above, following marking shall also be marked:

a) Name of original manufacturer of cement with BIS licence number in case of repacking unit.

b) Any other marking required under provisions of Legal Metrology Act, 2009 and Legal Metrology (Packaged Commodities) Rules, 2011 framed thereunder.

3.2.2 All the information including BIS Standard Mark except Manufacturers Registered Trade Mark shall be applied on each bag in RED COLOUR.

3.2.3 Marking of variable parameters on cement bags which are changing with production schedule and done online (such as Date of manufacturing/Week number/Batch number, MRP, Percentage of addition of Flyash) is permitted in BLACK COLOUR. However, all such marking shall be conspicuous.

Note :

1. For each calendar year the first week shall be counted as 7 days from 1st of January and subsequent weeks numbered serially accordingly. The bags shall be marked as W 0l/MM/YY…… W 51/MM/YY……. etc.
2. Label mentioned at 3.1 and 3.2 above shall be attached to the seal of the container. The seal shall be of such a design that it shall automatically get destroyed on opening.
3. The colour of the bag (other than Red) and background colours should be in contrast to the colour of the Standard Mark and the details so that the markings are conspicuous.

4. CONTROL UNIT –

4.1 For manufacturing units of Portland Pozzolana Cement: The tests, as indicated in Table 1 and Table 2 attached and at the levels of control specified therein, shall be carried out on the whole production of the factory which is covered by this scheme and appropriate records maintained in accordance with clause 2 above.

4.2 For packing of Portland Pozzolana Cement at bulk cement terminal: The tests, as indicated in Table 3 attached and at the levels of control specified therein, shall be carried out on the whole packing of Portland Pozzolana cement and appropriate records maintained in accordance with clause 2 above.

4.2.1 For bulk packing units as per clause 4**.2**, all cement of one consignment received shall constitute one batch.

4.2.2 Batch mixing may be permitted for packing units, which are extended packing terminals of the same cement manufacturer (licensee) subject to packing units obtaining test certificates from the manufacturer and keeping proper records. If the cement is received from different units of the same manufacturer (different licensees) batch mixing of cement is not permitted. The Batch integrity shall be ensured at all stages of packing and the packer shall maintain appropriate controls and checks to ensure that there is no chance of mix up of different batches. Adequate care shall be taken to avoid spoilage during handling, packing and storage.

4.2.3 If bulk packing unit is instructed by BIS for suspension of licence due to the failure of the samples, such instruction will automatically apply to the original manufacturer of the cement, as per relevant suspension of licence guidelines. An undertaking to this effect shall be obtained from the bulk packers and the original cement manufacturer.

4.2.4 Test Certificate of each original batch of cement shall be obtained from the supplier and test results recorded. On the basis of tests and inspection, the decision regarding conformity or otherwise of the consignment/batch to a given requirement shall be taken.

4.3 WEIGHMENT – One filled bag from each nozzle shall be taken at random twice in each shift of operation and weight checked in case of electronic packers with recorders. In all other cases one filled bag from each nozzle shall be checked once in two hours. The records shall be maintained in Form 1. The bag shall be so chosen for weighment such that bags from each

nozzle are taken for weighment. The weighing and packing machines shall be adjusted as and when necessary in such a way that net quantity of each bag shall be in accordance with the tolerances given in Annex B and clause 10.1.1 of IS 1489(Part 1): 2015. Such adjustments for each nozzle shall be recorded in Form 1 under remarks column.

4.3.1 For packing of Portland Pozzolana cement in bulk cement terminal the weighment of hourly check of mass of drums also shall be done in addition to weighment of bags mentioned in para 4.3 above. The records of weighments shall be maintained in Forms 12 and 14.

4.4 RAW MATERIALS

4.4.1 Routine analysis of various raw materials used in the manufacture of Portland Pozzolana cement shall be made at intervals of a month or whenever there is a change in the source/mine area stratification whichever is earlier and appropriate records of the analysis and of the Physical composition of the mixtures shall be maintained in Form 2. This analysis is not applicable for Packing Units of Portland Pozzolana Cement at bulk cement terminal**.**

4.5. HOMOGENEITY - Homogeneity of the mixture in a consignment shall be guaranteed within the stipulated percent of fly ash addition. Percentage of fly ash addition shall be marked on the bags/package accordingly.

4.6. **PACKING** - The Cement shall be packed in bags as specified in clause 10 of IS 1489(Part-1) : 2015. A test certificate either from the manufacturer or from any recognized testing laboratory shall be received along with each consignment of bags. Alternatively the samples of bags from each consignment shall be tested by the cement manufacturer either in his own laboratory or any other BIS recognized laboratory before they are used for packing cement. No testing would be necessary if the bags carry BIS Certification Mark. The bag shall be in good condition at the time of packing.

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. PRODUCTION DATA - The licensee shall send to BIS a statement of quantity produced, marked and exported by him and the value thereof at the end of each quarter of the operative period as per the enclosed proforma and shall also submit these details to BIS at the end of the operative year duly authenticated by a Chartered Accountant.

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
Level of control (Raw material)

(1)				(2)	(3)		
TEST DETAILS				**Test equipment requirement R: required (or) S: Sub-contracting permitted**	**RECOMMENDED LEVELS OF CONTROL**		
Clause	**Requirement**	**Test Methods Clause Reference**			**Number of samples**	**Frequency**	**Remark**
4.1	Pozzolana	4.1	IS 1489 (Part 1) IS 1727	R	One	Once in a week	Fly ash shall conform to IS 3812(Pt- 1)
4.2	Portland Cement Clinker	4.2	IS 1489 (Part 1) IS 4032 IS 4031	R	One	Daily composite sample	Portland Cement Clinker shall conform to IS 16353
4.3	Ordinary Portland Cement	4.3	IS 1489 (Part 1) IS 269	-	-	-	OPC shall be ISI marked and shall be accompanied with manufacturer certificate. If OPC is produced in the same factory, records as per relevant SIT shall be maintained.

Table 2 – Levels of Control (Grinding/Blending Unit)

(1)				(2)	(3)			
TEST DETAILS				**Test equipment requirement R: required (or) S: Sub-contracting permitted**	**RECOMMENDED LEVELS OF CONTROL**			
Clause	**Requirement**	**Test Methods Clause Reference**			**Number of sample**	**Frequency**		**Remark**
						Cement Grinding/Blending	**Cement Packing**	
6 Table 1		**Chemical requirement as per IS 1489 (Part 1)**						
i)	Insoluble Residue	6	IS 1489 (Part 1) IS 4032	R	One	Daily Composite sample	-	-
ii)	Magnesia	6	IS 1489 (Part 1) IS 4032	R	One	Daily Composite sample	-	-

iii)	Sulphuric anhydride (SO_3)	6	IS 1489 (Part 1) IS 4032	R	One	Daily Composite sample	-	-
iv)	Loss on Ignition	6	IS 1489 (Part 1) IS 4032	R	One	Daily Composite sample	-	-
v)	Chloride Content	6	IS 1489 (Part 1) IS 4032	R	One	-	Weekly composite sample	This test shall also be carried out whenever there is any change in source of any raw material.
vi)	Alkali Content		-	R	One	-	-	Pl see note under Table 1 of IS 1489 (Part 1) : 2015.
7 Table 2	**Physical requirement as per IS 1489 (Part 1)**							
i)	Fineness	7	IS 1489 (Part 1) IS 4031 (Part 2)	R	One	1. Every alternate hourly from each mill/ blender separately. 2. Daily Composite sample	Daily Composite sample	-
ii)	Soundness (Le-Chatelier method and Autoclave method)	7	IS 1489 (Part 1) IS 4031(Part 3)	R	One	Daily Composite sample	Daily Composite sample	-
iii)	Setting Time	7	IS 1489 (Part 1) IS 4031 (Part 5)	R	One	One sample per shift (Composite sample).	Daily Composite sample	-
iv)	Compressive strength	7	IS 1489 (Part 1) IS 4031 (Part 6)	R	One	Daily Composite sample	Daily Composite sample	-
v)	Transverse strength (Optional)	7	IS 1489 (Part 1) IS 4031(Part 8)	S	One	Weekly composite sample	Weekly composite sample	Pl see Note 3 and 4 under Table 2 of IS 1489 (Part 1)
vii)	Drying shrinkage	7	IS 1489 (Part 1) IS 4031 (Part 10)	R	One	-	Weekly composite sample	-

NOTES –

1. Composite sample shall be made out of hourly samples for the required period (Pl See IS 3535 Methods of sampling hydraulic cements).
   If clinker is manufactured from more than one kiln, clinker sample from each kiln shall be tested as per the above table. If clinker is manufactured using different proportion of raw materials such different clinkers shall be tested considering it as separate production.
   If cement is manufactured using same proportion of raw materials from more than one cement mill, sample from each mill shall be tested for fineness as per the above table. For all other parameters composite samples from all the mills shall be tested.
   If cement is manufactured using different proportion of raw materials from more than one cement mill, sample from each mill shall be tested for all requirements as per the above table.
   If blending of ingredients is adopted, sample at 'Cement blending stage' shall be drawn after blending all such ingredients.
2. For manufacturing units where there is no packing silo and cement is packed directly from cement grinding /blending stage, the frequency of tests specified for cement grinding stage would apply for the various tests to be carried out on samples taken from cement mill spouts along with weekly chloride content test.
3. Limit of additives shall be as given in clause 5 of the standard.

Table 3 Level of Control (Bulk Packing Unit)

(1)				(2)	(3)		
TEST DETAILS				**Test equipment requirement R: required (or) S: Sub-contracting permitted**	**RECOMMENDED LEVELS OF CONTROL**		
Clause	**Requirement**	**Test Methods Clause Reference**			**Number of samples**	**Frequency**	**Remarks**
6, Table 1 (i)	Insoluble Residue	6	IS 1489 (Part 1) IS 4032	R	One	Each batch	To be tested in laboratory at bulk terminal packing unit.
6, Table 1 (iv)	Loss on Ignition	6	IS 1489 (Part 1) IS 4032	R	One	Each batch	
7, Table 2 (i)	Fineness	6	IS 1489 (Part 1) IS 4031(Part 2)	S	One	Each batch	-
7, Table 2 (ii)	Soundness	6	IS 1489 (Part 1) IS 4031(Part 3)	S	One	Each batch	
7, Table 2 (iii)	Setting Time	6	IS 1489 (Part 1) IS 4031(Part 5)	S	One	Each batch	
7, Table 2 (iv)	Compressive strength	6	IS 1489 (Part 1) IS 4031(Part 6)	S	One	Each batch	

Form No. 1

FORMAT FOR MAINTENANCE OF TEST RECORDS WEIGHMENT CONTROL AT PACKING STAGE

Date	Shift	Time (Hourly)	No. of Bags	Net mass of bags from nozzles							Remark.

Form No. 2

RAW MATERIAL TESTING

Date of receipt of material	Date of testing	Name of Material	Source of supply and consignment No.	Details of analysis for specified requirements

Form 3

PRODUCTION DATA

(POST GRINDING DETAILS OF PRODUCTION ACCEPTED AND REJECTED FOR STANDARD MARK)

Shift	Quantity	Passed for Standard mark	Rejected	Remark

Form No. 4

Pozzolana (One sample per week)

Fly ash Pozzolana

Date	CHEMICAL								PHYSICAL				
	$SiO_2 + Al_2O_3 + Fe_2O_3$	SiO_2	Reactive Silica	MgO	SO_3	Na_2O	Total Chloride	LOI	Fineness	Lime Reactivity	Comp. Strength at 28 Days	Soundness by autoclave	Particle retained on 45 µ sieve (Optional)

Form No. 5

CLINKER CHEMICAL COMPOSITION (DAILY COMPOSITE SAMPLE)

Date of manufacture	Total loss on ignition	Insoluble residue	SiO_2	C_3S	C_3A	C_3S+C_3A	SO_3	MgO	Chloride	Free lime	LSF	Alumina factor	Sample Pass/Fail	Remarks

Form No. 6

CLINKER GROUND WITH GYPSUM (DAILY COMPOSITE SAMPLE)

Date of grinding	Fineness	Soundness		Setting time		Compressive strength			Sample Pass/Fail	Remark
		Le-Chatelier	Autoclave	Initial	Final	3 days	7 days	28 days		

Form 7

CLINKER GROUND WITH GYPSUM & POZZOLANA

Date of grinding	Fineness	Soundness		Setting Time		Compressive strength			Drying Shrinkage	Sample Pass/ Fail	Mode of disposal or action taken if sample fails
		Le-Chatelier	Autoclave	Initial	Final	3 days	7 days	28 days			

Form 8

PORTLAND POZZOLANA CEMENT/GRINDING/BLENDING (Daily/Weekly Composite sample)

Date of grinding	LOI	MgO	IR	SO_3	Chloride	Fineness	Soundness (Le-chatelier & Autoclave)	Setting Time Initial & Final	Compressive strength	Drying Shrinkage	Sample Pass/Fail	Action taken if sample fails

Form No 9

PORTLAND POZZOLANA CEMENT GRINDING (For Alternate Hourly Sample)

Date of grinding	Time	Fineness	Setting Time Initial & Final	Sample Pass/Fail	Mode of disposal or action taken if sample fails

Form No 10

PORTLAND POZZOLANA CEMENT PACKING STAGE (Daily/Weekly Composite Sample)

Date of Packing	LOI	MgO	IR	SO_3	Chloride Content (Weekly)	Fineness	Soundness (Lechatelier &Autoclave)	Setting Time Initial & Final	Compressive strength	Drying Shrinkage	Sample Pass/ Fail	Mode of disposal or action taken if sample fails

Form No 11

CALIBRATION

Sl. No	Date of calibration	Result of Calibration (Test records indicating details of standard values and observed values for each equipment to be kept in proforma for which various columns be devised; as required)	Name of equipment Action taken if equipment found defective	Sl.No. (If any) & Remarks

Note : The above records are to be kept separately for each equipment.

RECORDS TO BE MAINTAINED AS PER TABLE-3 OF SIT (BY BULK PACKING UNIT)

Form No. 12

FORMAT FOR MAINTENANCE OF TEST RECORDS WEIGHMENT CONTROL AT PACKING STAGE

HOURLY CHECK OF MASS OF DRUMS

Date	Time (Hourly)	Condition of Drums	Net quantity of cement	Record of calibration of weighing scale and Date of calibration.

Form No. 13

FORMAT FOR MAINTENANCE OF RECORDS FOR THE CONDITIONS OF THE EMPTY DRUMS/BULKERS FOR PACKING CEMENT

Date	No. of empty drums/Bulkers checked	No. of empty drums/Bulkers rejected	Reasons/Remarks	Sign of firms inspector

Form No.14

FORMAT FOR MAINTENANCE OF TEST RECORDS WEIGHMENT CONTROL AT PACKING STAGE

HOURLY CHECK OF MASS OF BAGS

Date	Shift	Time(Hourly)	No of Bags	Net quantity of Bags from Nozzles	Records of calibration/date of calibration of nozzles

Form No. 15

RECEIPT OF CEMENTS

Date of receipt	Batch No.	Supply received from	Test Certificate No

Form No. 16

CEMENT DESPATCH DATA FROM PACKING

Date	Quantity	Passed for Standard Mark	Rejected (if any)	Reasons for not marking/Method of disposal

Form No. 17 & 18

TEST DONE AT FACTORY (At receipt stage and at bulk packing terminal)

Date	Batch No.	LOI	IR	Fineness	Setting Time	Remarks

Form No 19 & 20

PORTLAND POZZOLANA CEMENT (PHYSICAL TEST REPORT) (At receipt stage and at bulk packing terminal)

Date	Batch No.	Test Report	Soundness		Compressive Strength			Remarks
			LC	AC	3 days	7 days	28 days	

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: The control unit and levels of control as decided by the Bureau are obligatory to which the licensee shall comply with.