भारतीय मानक ब्यूरो
(केंद्रीय मुहर विभाग III)

हमारा संदर्भ : सी एम डी - III/16 :8041 **26 नवम्बर 2018**

विषय : आई एस 8041 : 1990 के अनुपालन लिए एसआईटी ।

इसे उपरोक्त विषय का संदर्भ प्राप्त है।

सक्षम प्राधिकारी ने उपरोक्त के अनुपालन हेतु एसआईटी Doc: SIT/8041/1, November 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 : 8041 **26 November 2018**

Subject: SIT for certification of IS 8041 : 1990 'Rapid Hardening Portland Cement'.

This has reference to the subject mentioned above.

The Competent Authority has approved SIT Doc: SIT/8041/1, November 2018 for certification of IS 8041 : 1990.

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 RAPID HARDENING PORTLAND CEMENT ACCORDING TO IS 8041 : 1990

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 18 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 Rapid Hardening Portland 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 **160 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 8041.

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 **BLACK COLOUR**.

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 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 Rapid Hardening Portland Cement: The tests, as indicated in Table 1 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 Rapid Hardening Portland Cement at bulk cement terminal: The tests, as indicated in Table 2 attached and at the levels of control specified therein, shall be carried out on the whole packing of Rapid Hardening Portland 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 9.2 of IS 8041 : 1990. Such adjustments for each nozzle shall be recorded in Form 1 under remarks column.

4.3.1 For packing of Rapid hardening portland cement in bulk cement terminal 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 Rapid hardening portland 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 Rapid hardening portland cement at bulk cement terminal**.**

4.5. **PACKING** - The Cement shall be packed in bags as specified in clause 9.1 of IS 8041 : 1990. 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 clause 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 – Levels of Control (Grinding/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 sample**	**Frequency**		**Remark**
						Cement Grinding	**Cement Packing**	
5.1 Table 1	**Chemical requirement as per IS 8041**							
i)	Ratio of percentage of lime to percentage of silica, alumina and iron oxide when calculated by the formula (LSF) $\frac{CaO-0.7\,SO_3}{2.8SiO_2+1.2\,Al_2O_3+0.65\,Fe_2O_3}$	5.1	IS 8041 IS 4032	R	One	Daily Composite sample	Weekly composite sample	-
ii)	Ratio of percentage of alumina to that of the iron oxide (A/F)	5.1	IS 8041 IS 4032	R	One	Daily Composite sample	Weekly composite sample	-
iii)	Insoluble residue	5.1	IS 8041 IS 4032	R	One	Daily Composite sample	Weekly composite sample	-
iv)	Magnesia	5.1	IS 8041 IS 4032	R	One	Daily Composite sample	Weekly composite sample	-
v)	Total Sulphur content calculated as sulphuric anhydride (SO_3)	5.1	IS 8041 IS 4032	R	One	Daily Composite sample	Weekly composite sample	

vi)	Total loss on ignition	5.1	IS 8041 IS 4032	R	One	Daily Composite sample	Weekly composite sample	
6	**Physical requirement as per IS 8041**							
i)	Fineness	6.1	IS 8041 IS 4031 (Part 2)	R	One	1. Every alternate hourly from each mill separately. 2. Daily Composite sample	Daily Composite sample	-
ii)	Soundness (Le-Chatelier method and Autoclave method)	6.2	IS 8041 IS 4031(Part 3)	R	One	Daily Composite sample	Daily Composite sample	-
iii)	Setting Time	6.3	IS 8041 IS 4031 (Part 5)	R	One	One sample per shift (Composite sample).	Daily Composite sample	-
iv)	Compressive strength	6.4	IS 8041 IS 4031 (Part 6)	R	One	Daily Composite sample	Daily Composite sample	-
v)	Transverse strength (Optional)	6.5	IS 8041 IS 4031(Part 8)	S	One	Weekly composite sample	Weekly composite sample	-
8.2	Total Chloride Content	8.2	IS 8041	R	One	-	Weekly composite sample	This test shall also be carried out whenever there is any change in source of any raw material.

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 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.

2. For manufacturing units where there is no packing silo and cement is packed directly from cement grinding, 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.

Table 2 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**
5.1, Table 1 (iii)	Insoluble Residue	5.1	IS 8041 IS 4032	R	One	Each batch	To be tested in laboratory at bulk terminal packing unit.
5.1, Table 1 (vi)	Loss on Ignition	5.1	IS 8041 IS 4032	R	One	Each batch	
6.1	Fineness	6.1	IS 8041 IS 4031(Part 2)	S	One	Each batch	-
6.2	Soundness	6.2	IS 8041 IS 4031(Part 3)	S	One	Each batch	
6.3	Setting Time	6.3	IS 8041 IS 4031(Part 5)	S	One	Each batch	
6.4	Compressive strength	6.4	IS 8041 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

CLINKER CHEMICAL COMPOSITION (DAILY COMPOSITE SAMPLE)

Date of manufacture	Total loss on ignition	Insoluble residue	Alkali content as Na_2O	C_3S	C_3A	C_3S+C_2S	SO_3	MgO	Chloride	Free lime	LSF	Alumina factor	Sample Pass/Fail	Remarks

Form No. 5

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 6

RAPID HARDENING PORTLAND CEMENT (GRINDING) (Daily/Weekly Composite sample)

Date of grinding	LSF	A/F Ratio	IR	Total S as SO_3	MgO	LOI	Total Chloride	Fineness	Soundness (Le-chatelier & Autoclave)	Setting Time Initial & Final	Compressive strength	Sample Pass/Fail	Action taken if sample fails

Form No 7

RAPID HARDENING PORTLAND 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 8

RAPID HARDENING PORTLAND CEMENT PACKING STAGE (Daily/Weekly Composite Sample)

Date of Packing	LSF	A/F Ratio	IR	Total S as SO_3	MgO	LOI	Total Chloride	Fineness	Soundness (Le-chatelier & Autoclave)	Setting Time Initial & Final	Compressive strength	Sample Pass/ Fail	Mode of disposal or action taken if sample fails

Form No 9
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-2 OF SIT (BY BULK PACKING UNIT)

Form No. 10
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. 11
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.12
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. 13
RECEIPT OF CEMENTS

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

Form No. 14
CEMENT DESPATCH DATA FROM PACKING

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

Form No 15 & 16
TEST DONE AT FACTORY (At receipt stage and at bulk packing terminal)

Date	Batch No.	LOI	IR	Fineness	Setting Time	Remarks

Form No 17 & 18
RAPID HARDENING PORTLAND 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.