CENTRAL MARKS DEPARTMENT-III

Ref: CMD-III/16: IS 269 **03 June 2020**

Subject: Use of marble slurry as performance improver in Ordinary Portland Cement as per IS 269 : 2015.

1. This has reference to the above subject and email dated 02/07/2020 is received from M/s Shree Cement Ltd which is self-explanatory.

2. $CaCO_3$ content in marble slurry is more than requirement specified in IS 269 : 2015 but same is not included in list of performance improver permitted as per Table 1 of IS 269 : 2015 .

3. In view of the above, CED is requested to examine the matter and confirm whether marble slurry can be used as per performance improver in OPC as per IS 269 : 2015.

3/7/2020

(S D Rane)
Sc-E

Head (CMD-III)
Head (CED)

3/7/2020

CIN No. : L26943RJ1979PLC001935
Phone : 01462 228101-6
Toll Free : 1800 180 6003 / 6004
Fax : 01462 228117 / 228119
E-Mail : shreebwr@shreecementltd.com
Website : www.shreecement.in

SHREE CEMENT LTD.

Regd. Office:
BANGUR NAGAR, POST BOX NO.33, BEAWAR 305 901, RAJASTHAN, INDIA

SCL/BIS/RAS/2019-20/

Date: 30.06.2020

To,
The Director& Head
Bureau of Indian Standards,
Manak Bhawan,Bahadur Shah Zafar Marg
New Delhi

Sub: Utilization of Marble Slurry as Performance Improver in OPC as per IS 269: 2015

Sir,

This has refer to above subject, we wish to submit that Marble Slurry from Makrana / Kishangarh contains % $CaCO_3$ and $MgCO_3$ around 80% and 9 % respectively. Marble slurry waste, consisting in fine-grained residues resulting from operations of cutting and polishing of different types of limestone, and it can be re-used as raw materials suitable for applications in cement sectors as a replacement of limestone for clinker manufacturing as well as performance improver in OPC manufacturing.

Marble slurry chemically, physically, mineralogically and morphologically demonstrate high content of calcium oxide and comparable with cement grade limestone ($CaCO_3$), which shows that marble slurry can be re-used as a Limestone raw material with no treatments.Besides the economic benefits, transforming a waste into an important economic resource involves environmental advantages. Since it implies a reduction in the need for landfill storages and in the consequent associated detriments. Marble slurry can be an important economic resource capable of promoting the sustainability.

We have send samples of Marble Slurry and OPC-43 (with use of 5% Marble Slurry prepared in Lab Ball Mill) to National Test House Jaipur for testing (Reports are attached herewith).

We wish to submit that BIS has already approved use of marble / dolomite as performance improver up to 8% in revised specification of White Portland Cement as per IS 8042 : 2015

In view of above, kindly accord your permission to utilize Marble Slurry as performance improver in limestone category for manufacturing of OPC as per specification IS 269: 2015.

Your's faithfully
For: Shree Cement Ltd.

Shailesh Hawa 30-6-20
A.V.P-(Q.C)
Shree Cement Ltd
Bangur City, Village & Post-Ras
Tehsil-Jaitaran, Distt:-Pali (Raj.)-306107

SHREE CEMENT LTD. • RAS (PALI) •

भारत सरकार
राष्ट्रीय परीक्षण शाला, (उ.प. क्षे)
ई-763, रोड नं. 9 एफ 1, वी.के.आई. एरिया,
जयपुर - 302013

Government of India
National Test House (NWR)
E-763, Road No. 9 F 1, VKIA,
Jaipur- 302 013

Certificate No: TC-5391

परीक्षण प्रमाण पत्र
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Number of Copies issued Single

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परीक्षण प्रमाण पत्र सं. Test Certificate No	जारी होने की तिथि Date of Issue	कोड नं Code No	पृष्ठ Page	पृष्ठों की संख्या No of Pages
NTH(NWR)/CH(G)/2020/00152	26/02/2020	1581400286331	1	2

जिसे जारी करना है Issued To : **SHREE CEMENT LTD, BEAWAR**

पता Address : **BANGUR NAGAR, POST BOX NO. 33, BEAWAR-305901**

ग्राहक का सन्दर्भ सं एवं दिनांक Customer's Ref. No. : **SCL/BWR/NTH/2019-20/** **Date: 10/02/2020**

पंजिका सं एवं दिनांक Register No & Date : **00152/NTH(NWR)/CH(G)/11/02/2020**

परीक्षण सामग्री का विवरण Description of Test Item : **One sample described as "Marble Slurry"**

परीक्षण सामग्री का पहचान Identification of Test Item : -

नमुना का विशिष्टि (यदि हों) Product Specification (If any) : -

नमुना प्राप्ति की तिथि Date of Receipt of the Test Item : **11/02/2020**

कार्य सम्पादन की तिथि Date(s) of Performance of Tests : **From: 11/02/2020** **To: 26/02/2020**

व्यावहृत प्रणाली का पहचान Method(s) used for Test : **IS 1760 & ASTM C25**

नमुना प्रकिया जहाँ प्रासंगिक हों Sampling Procedure where relevant : -

Tested By	Checked By	Approved By
H. AKBAR 26/2/2020	Sumath Kumar Laha 26/2/2020	Rakesh Saini

भारत सरकार
राष्ट्रीय परीक्षण शाला, (उ.प. क्षे)
ई-763, रोड नं. 9 एफ 1, वी.के.आई. एरिया,
जयपुर - 302013

Government of India
National Test House (NWR)
E-763, Road No. 9 F 1, VKIA,
Jaipur- 302 013

Certificate No: TC-5391

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NTH(NWR)/CH(G)/2020/00152	26/02/2020	1581400286331	2	2

Sl. No.	Test Name	Test Result	Limit
1	Test result	As per Annexure	-

टिप्पणी
Note : -

कैफियत
Remarks : -

Tested By	Checked By	Approved By
H. AKBAR	Sumath Kumar Laha	Rakesh Saini
SO (Chemical)	Scientist- B (Chemical)	Scientist- D (Mechanical)

सूचनार्थ / Note : कृपया पृष्ठ के पीछे देखें / Please See Overleaf

भारत सरकार
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ई-763, रोड नं. 9 एफ 1, वी.के.आई. एरिया,
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TEST CERTIFICATE

Test certificate no	Date of Issue	Code No	No. of page
NTH(NWR)/CH(G)/2020/00152	26/02/2020	1581400286331	1 of 1

ANNEXURE

Sr. No.	Test Parameters	IS: Clause	Observed Value	Specified Value	Test Protocol
1	**Chemical Composition** (% by mass)				
1.1	Loss on ignition	-	40.6	-	IS 1760 (part 1)
1.1	Silica as (SiO_2)	-	5.47	-	ASTM C25 Cl.10
1.2	Iron oxide as (Fe_2O_3)	-	1.58	-	ASTM C25 Cl.13
1.3	Alumina as (Al_2O_3)	-	1.02	-	ASTM C25 Cl.15
1.4	Lime as (CaO)	-	44.6	-	ASTM C25 Cl.16
1.5	Magnesia as (MgO)	-	5.74	-	ASTM C25 Cl.18
1.6	Chloride as (Cl)	-	0.02	-	IS 1760 (part 5)

----- END OF TEST REPORT-----

Tested By
Akbar H 26/2/2020
SO (Chemical)

Checked By
Sumath Kumar Laha
Scientist B (Chemical)

Approved By
Rakesh Saini 26/02/20
Scientist D (Mechanical)

सूचनार्थ / Note : कृपया पृष्ठ का पीछे अवलोकन दें / Please See Overleaf

ULR-TC539120000018 2F

037263

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ई-763, रोड नं. 9 एफ 1, वी.के.आई. एरिया,
जयपुर - 302013

Government of India
National Test House (NWR)
E-763, Road No. 9 F 1, VKIA,
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NTH(NWR)/CIV(G)/2020/00272	13/03/2020	1581398597868	1	2

जिसे जारी करना है Issued To	:	SHREE CEMENT LTD, BEAWAR
पता Address	:	BANGUR NAGAR, POST BOX NO. 33, BEAWAR-305901
ग्राहक का सन्दर्भ सं एवं दिनांक Customer's Ref. No.	:	SCL/BWR/NTH/2019-20/ Date: 10/02/2020
पंजिका सं एवं दिनांक Register No & Date	:	00272/NTH(NWR)/CIV(G)/11/02/2020
परीक्षण सामग्री का विवरण Description of Test Item	:	One sample of OPC 43 grade cement received in a polythene bag .
परीक्षण सामग्री का पहचान Identification of Test Item	:	OPC 43 with 5% MARBLE SLURRY
नमूना का विशिष्टि (यदि हों) Product Specification (If any)	:	IS 269:2015
नमूना प्राप्ति की तिथि Date of Receipt of the Test Item	:	11/02/2020
कार्य सम्पादन की तिथि Date(s) of Performance of Tests	:	From: 11/02/2020 To: 13/03/2020
व्यावहृत प्रणाली का पहचान Method(s) used for Test	:	IS 4031:1988 & IS 4032:1985
नमूना प्रकिया जहाँ प्रासंगिक हों Sampling Procedure where relevant	:	–

Tested By
13/03/2020
Deepak Srivastava
SO Civil

Checked By
13/03/20
Vivek Sharma
Scientist- C (Civil)

Approved By
13/03/20
Rakesh Saini
Scientist- D (Mechanical)

सूचनार्थ / Note : कृप्या उल्टा पृष्ठ देखें / Please See Overleaf

ULR-TC539120000002677F 037363

भारत सरकार
राष्ट्रीय परीक्षण शाला, (उ.प. क्षे)
ई-763, रोड नं. 9 एफ 1, वी.के.आई. एरिया,
जयपुर - 302013

Government of India
National Test House (NWR)
E-763, Road No. 9 F 1, VKIA,
Jaipur- 302 013

Certificate No: TC-5391

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NTH(NWR)/CIV(G)/2020/00272	13/03/2020	1581398597868	2	2

Sl. No.	Test Name	Test Result	Limit
1	Full Tests	As per Annexure attached.	As per Annexure

टिप्पणी
Note : -

: The sample complies with the requirements of IS 269:2015 for 43 Grade Ordinary Portland Cement in respect of the physical tests & chemical analysis carried out.

केफियत
Remarks

Tested By
13/03/2020
Deepak Srivastava
SO Civil

Checked By
13/03/20
Vivek Sharma
Scientist-C (Civil)

Approved By
13/03/20
Rakesh Saini
Scientist- D (Mechanical)

सूचनार्थ / Note : कृप्या पृष्ठ देखें / Please See Overleaf

ULR-TC539120000026 7F

0137363

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Government of India
National Test House (NWR)
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Jaipur- 302 013

Certificate No: TC-5391

परीक्षण प्रमाण पत्र
TEST CERTIFICATE

Test certificate no	Date of Issue	Code No	No. of page
NTH(NWR)/CIV(G)/2020/00272	13/03/2020	1581398597868	1 of 1

ANNEXURE

Sr. No.	Tests	IS:Clause	Observed Value	Specified Requirement	Test Protocol
1.	**Chemical Composition**	6.1			
1.1	Ratio of percentage of Lime to percentages of Silica, Alumina and Iron Oxide		0.86	0.66 to 1.02	IS: 4032 - 1985
1.2	Ratio of percentage of Alumina to that of Iron Oxide		1.83	0.66 Min	IS: 4032-1985
1.3	Insoluble residue, (% by mass)		2.36	5.0 Max	IS: 4032-1985
1.4	Magnesia, (% by mass)		2.83	6.0 Max	IS: 4032-1985
1.5	Total Sulphur Content, calculated as Sulphuric anhydride (SO_3) , (% by mass)		3.03	3.5 Max	IS: 4032-1985
1.6	Total loss on ignition, (% by mass)		2.91	5.0 Max	IS: 4032-1985
1.7	Total Chloride Content, (% by mass)		0.01	0.1 Max	IS: 4032-1985
2.	**Physical Tests**	7			
2.1	Fineness Specific Surface(m^2/kg)		335	225 Min	IS: 4031(Pt -2)-1999
2.2	Compressive Strength (MPa) (Cement and standard sand mortar 1:3)				
2.2.1	3 days		30.5	23 Min	IS: 4031(Pt -6)-1988
2.2.2	7 days		37.5	33 Min	
2.2.3	28days		57.5	43 Min 58 Max.	
2.3	Setting Time (minutes)				
2.3.1	Initial		135	30 Min	IS: 4031(Pt -5)-1988
2.3.2	Final		220	600 Max	
2.4	Soundness				
2.4.1	Expansion after Le chatelier test (mm)		0.50	10 Max	IS: 4031(Pt -3) – 1988
2.4.2	Expansion after Autoclave Test (%)		(-)0.02	0.8 Max	

Water required for paste of Standard Consistency (%) : 27.5
Temperature during period of testing (°C) : 27±2

..... END OF TEST REPORT .....

Tested By	Checked By	Approved By
13/03/2020	13/03/20	13/03/20
Deepak Srivastava	Vivek Sharma	Rakesh Saini
S.O (Civil)	Scientist-C(Civil)	Scientist-D(Mechanical)

सूचनार्थ / Notice ध्यान दें / Please See Overleaf

ULR-TC539120000002 67 F

0137363

राष्ट्रीय सीमेन्ट एवं भवन सामग्री परिषद्
(भारत सरकार के वाणिज्य एवं उद्योग मंत्रालय के शासनाधीन)
NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS
(Under the Administrative Control of Ministry of Commerce & Industry, Government of India)

TESTING LABORATORIES

(NCB/TL/QM/TR5201)

INDEPENDENT TESTING LABORATORIES

TEST REPORT

ULR - TC529620100000557F
No. : ITL/005380
Date : 07/08/2020

Customer Address	**SHREE CEMENT LTD. (BEAWAR)** BANGUR NAGAR, POST BOX NO. 33, BEAWAR-305901, RAJASTHAN, INDIA
Reference	SCL/NCCBM/RAS, DTD.30/06/2020
Sample	*Said to be* Lime Stone
Identification	MARBLE SLURRY
Condition of Sample	UnSealed with ID Tag
Date of Receipt	02/07/2020
Laboratory Mark -	ITLL3437/3/1
Period of Testing	07/07/2020 - 21/07/2020
Tested for Conformity to	
Discipline	Chemical Testing
Group	Building Materials

SI No	Test Name		Test Method	Test Results	
1	Loss on Ignition		IS:1760(Pt-1):1991	39.79	% by mass
2	Silica		IS:1760(Pt-2):1991	5.06	% by mass
3	Iron Oxide		IS:1760(Pt-3):1992	0.50	% by mass
4	Alumina		IS:1760(Pt-3):1992	0.96	% by mass
5	Calcium Oxide		IS:1760(Pt-3):1992	46.47	% by mass
6	Magnesium Oxide		IS:1760(Pt-3):1992	4.86	% by mass
7	Sulphuric Anhydride		ASTM C-25: 2017	1.18	% by mass
8	Alkalies	Sodium Oxide	NCB STD(MS-13-2010)	0.24	% by mass
		Potassium Oxide	NCB STD(MS-13-2010)	0.19	% by mass
		Eq. as Na2O	NCB STD(MS-13-2010)	0.37	% by mass
9	Chloride		IS:1760(Pt-5):1991	0.018	% by mass

********** ********* END OF THE TEST REPORT **********

Conditions

1. Results given above refer only to the sample supplied.
2. The Report is being issued on the specific understanding that NCB will not in any way be involved in any action following the interpretation of the above results.
3. This report shall not be reproduced except in full without written approval from NCB.
4. Sample shall be retained for 90 days after reporting the results.
5. This report does not imply that the sample/material is approved or endorsed by NCB or NABL

Scientist/s Pinky Pandey

Dr D Yadav
Authorised Signatory

Centre for Cement Research and Independent Testing

राष्ट्रीय सीमेन्ट एवं भवन सामग्री परिषद्

(भारत सरकार के वाणिज्य एवं उद्योग मंत्रालय के शासनाधीन)

NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS

(Under the Administrative Control of Ministry of Commerce & Industry, Government of India)

TESTING LABORATORIES

(NCB/TL/QM/TRF-5298)

INDEPENDENT TESTING LABORATORIES

TEST REPORT

ULR - TC529620100000554F
No. : ITL/005377
Date : 07/08/2020

Customer Address	**SHREE CEMENT LTD. (BEAWAR)** BANGUR NAGAR, POST BOX NO. 33, BEAWAR-305901, RAJASTHAN, INDIA
Reference	SCL/NCCBM/RAS, DTD.30/06/2020
Sample	*Said to be* Ordinary Portland Cement-43 Grade
Identification	OPC-43 (WITH 5% MARBLE SLURRY)
Condition of Sample	UnSealed with ID Tag
Date of Receipt	02/07/2020 **Laboratory Mark -** ITLL3437/1/1
Period of Testing	07/07/2020 - 07/08/2020
Tested for Conformity to	IS:269-2015
Discipline	Mechanical Testing **Group** Building Materials

SI No	Test Name		Test Method	Test Results		Lower Limit As Per IS:269-2015	Upper Limit
1	Fineness (Blaine)		IS:4031(Pt-2):1999	319	m2/Kg	***225***	--
2	Setting Time	Initial	IS:4031(Pt-5):1988	80	Minutes	***30***	--
		Final	IS:4031(Pt-5):1988	125	Minutes	--	***600***
3	Soundness	Lechatelier Exp.	IS:4031(Pt-3):1988	2.0	mm	--	***10***
		Autoclave Exp.	IS:4031(Pt-3):1988	Before aeration bar collapsed& After aeration 0.04	%	--	***0.8***
4	Comp.Strength at 72±1h		IS:4031(Pt-6):1988	39.5	MPa	***23***	--
5	Comp.Strength at 168±2h		IS:4031(Pt-6):1988	49.5	MPa	***33***	--
6	Comp.Strength at 672±4h		IS:4031(Pt-6):1988	57.5	MPa	***43***	***58***

********** ********** END OF THE TEST REPORT **********

Conditions

1. Results given above refer only to the sample supplied.
2. The Report is being issued on the specific understanding that NCB will not in any way be involved in any action following the interpretation of the above results.
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4. Sample shall be retained for 90 days after reporting the results.
5. This report does not imply that the sample/material is appoved or endorsed by NCB or NABL

Pinky Pandey
Scientist/s

Dr D Yadav
Authorised Signatory

TESTING LABORATORIES

(NCB/TL/QM/TRF-194)

INDEPENDENT TESTING LABORATORIES

TEST REPORT

ULR - TC529620100000555F
No. : ITL/005378
Date : 07/08/2020

Customer Address	**SHREE CEMENT LTD. (BEAWAR)** BANGUR NAGAR, POST BOX NO. 33, BEAWAR-305901, RAJASTHAN, INDIA
Reference	SCL/NCCBM/RAS, DTD.30/06/2020
Sample	*Said to be* Ordinary Portland Cement-43 Grade
Identification	OPC-43 (WITH 5% MARBLE SLURRY)
Condition of Sample	UnSealed with ID Tag
Date of Receipt	02/07/2020 **Laboratory Mark -** ITLL3437/2/1
Period of Testing	07/07/2020 - 21/07/2020
Tested for Conformity to	IS:269-2015
Discipline	Chemical Testing **Group** Building Materials

SI No	Test Name		Test Method	Test Results		Lower Limit	Upper Limit As Per IS:269-2015
1	Loss on Ignition		IS 4032:1985	1.55	% by mass	--	***5***
2	Silica		IS 4032:1985	19.91	% by mass	--	--
3	Iron Oxide		IS 4032:1985	5.26	% by mass	--	--
4	Alumina		IS 4032:1985	5.21	% by mass	--	--
5	Calcium Oxide		IS 4032:1985	63.23	% by mass	--	--
6	Magnesium Oxide		IS 4032:1985	0.70	% by mass	--	***6***
7	Sulphuric Anhydride		IS 4032:1985	2.89	% by mass	--	***3.5***
8	Insoluble Residue		IS 4032:1985	1.13	% by mass	--	***5***
9	Alkalies.	Sodium Oxide	NCB STD(MS-13-2010)	0.20	% by mass	--	--
		Potassium Oxide	NCB STD(MS-13-2010)	0.30	% by mass	--	--
		Eq. as Na2O	NCB STD(MS-13-2010)	0.40	% by mass	--	*
10	Chloride		IS 4032:1985	0.026	% by mass	--	***0.1/0.05***
11	LSF		Calculated	0.94		***0.66***	***1.02***
12	Ratio of % of Alumina to Iron Oxide		Calculated	0.99		***0.66***	--

*************** ************* END OF THE TEST REPORT ***************************

*Reference: See NOTE-1 of Table-2 in IS: 269:2015
**For Prestressed Structures

Conditions

1. Results given above refer only to the sample supplied.
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3. This report shall not be reproduced except in full without written approval from NCB.
4. Sample shall be retained for 90 days after reporting the results.
5. This report does not imply that the sample/material is appoved or endorsed by NCB or NABL

Pinky Pandey
Scientist/s

Dr D Yadav
Authorised Signatory
Centre for Cement Research and Independent Testing