



National Council for Cement and Building Materials

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

NCB Bhavan, Old Mumbai Road, Near Gachibowli, Hyderabad - 500 008. (A.P.) India

(ISO 9001 : 2008 Certified)

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NCB's Centres and Phone Nos.

- Continuing Education Services (CCE) 23180439, 23180413
- Cement Research & Independent Testing (CRT) 23180412, 416, 418 & 406
- Construction Development & Research (CDR) 23180403
- Mining, Environment, Plant Engineering (CME) 23180413 & 419
- Industrial Information Services (CIS) 23001933
- Quality Management, Standard and Calibration Services (QCS) 23180410, 418

E-mail:ncbhcert@rediffmail.com

**CENTRE FOR CEMENT RESEARCH &
INDEPENDENT TESTING**

**Ref: NCB-H/CRT/2017-18
Date: 25.09.2017**

CONFIDENTIAL

To
M/s. Emami Cement Limited,
Panagarh Industrial Park,
Kotagram,
Dist - Burdwan,
West Bengal - 713148.

Kind attn: Sh. Kailash Nath Pandey
Manager (P & QC)

Dear Sir,

Sub: Testing of PPC & PSC Sample/s

With reference to your ltr ref. No. Nil dated 17.07.2017. sample/s received on 10.08.2017, we are enclosing our test report/s on the sample/s sent for testing.

Thanking you,

Yours faithfully
For National Council for Cement and
Building Materials


K.S. Durga Prasad
Quality Manager

Encl: Test Report/s No.H

30042
TO
30045

Corporate Office : 34 Km Stone, Delhi - Mathura Road (NH-2), Ballabgarh - 121004, Haryana (India)

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Visit us at : www.ncbindia.com

emami* **DOUBLE BULL** CEMENT



Mazbooti Ummeed Se Zyada.

No : H 130044

Date : 25.09.2017



NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS
INDEPENDENT TESTING LABORATORIES, HYDERABAD



C.No.T-0954

TEST CERTIFICATE

Sample : Said to be PSC Condition of sample : Satisfactory
 Customer's Name & Address : M/s. Emami Cement Limited, Panagarh Industrial Park, Kotagram,
 Dist – Burdwan, West Bengal - 713148.
 Laboratory Mark : TSH-170337 Identification : Yr ltr dated 17.07.2017
 Date of performance of Test : 16.08.2017 to 14.09.2017 Date of Receipt : 10.08.2017
 Tested as per : IS: 4031-1988 Specification : IS: 455-2015

| Sl.No | Tests Carried Out | Results Obtained | | |
|-------|-------------------------|--------------------------|------------------|--------------------|
| | | Specific requirements | Results obtained | |
| 1. | Fineness (Blaine) | 225 (min) | 394 | m ² /kg |
| 2. | Setting Time | - Initial | 30 (min) | 210 Minutes |
| | | - Final | 600 (max) | 250 minutes |
| 3. | Soundness | - Le Chatelier Expansion | 10 (max) | Nil mm |
| | | - Autoclave Expansion | 0.8 (max) | -0.03 Percent |
| 4. | Compressive strength at | - 72 ± 1 hrs | 16 (min) | 29.5 MPa |
| | | - 168 ± 2 hrs | 22 (min) | 42.0 MPa |
| | | - 672 ± 4 hrs | 33 (min) | 55.0 MPa |

Conditions:

- 1 Results given above refer only to the sample supplied.
- 2 This report is being issued on the specific understanding that NCB will not in any way be involved in any action following interpretation of the above results.
- 3 This report shall not be reproduced except in full without written approval from NCB.
- 4 Corresponding requirements in accordance with recognised standards are available from NCB on specific request.
- 5 The balance quantity of the tested sample wherever possible shall be retained only for a period of **Two months** from the date of issue of the Test Certificate.

-- End --

T. Mohan Rao
(T. MOHAN RAO)
Authorised Signatory

K.S. Durga Prasad
K.S. DURGA PRASAD
QUALITY MANAGER
Centre for Cement Research
and Independent Testing

NCB Bhavan, Old Bombay Road, Hyderabad 500 008 (TS), INDIA

emami **DOUBLE BULL** CEMENT

Mazbooti Ummeed Se Zyada.

No : H 130045
Date : 25.09.2017



NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS
INDEPENDENT TESTING LABORATORIES, HYDERABAD



C.No.T-0953

TEST CERTIFICATE

Sample : Said to be PSC Condition of sample : Satisfactory
Customer's Name & Address : M/s. Emami Cement Limited, Panagarh Industrial Park, Kotagram,
Dist – Burdwan, West Bengal - 713148.
Laboratory Mark : TSH-170338 Identification : Yr ltr dated 17.07.2017
Date of performance of Test : 04.09.2017 to 12.09.2017 Date of Receipt : 10.08.2017
Tested as per : IS: 4032-1985 Specification : IS : 455-2015

| Sl.No. | Tests Carried Out | Results Obtained |
|--------|-------------------|------------------|
|--------|-------------------|------------------|

CHEMICAL ANALYSIS


| Constituents Determined | Percentage by Weight | |
|--|-----------------------|------------------|
| | Specific requirements | Results obtained |
| 1 Magnesia (MgO) | 10.0 (max) | 4.36 |
| 2 Sulphuric Anhydride (SO ₃) | 3.50 (max) | 2.72 |
| 3 Sulphide Sulphur (S) | 1.50 (max) | 0.18 |
| 4 Loss on Ignition | 5.0 (max) | 0.78 |
| 5 Insoluble Residue | 4.0 (max) | 1.51 |
| 6 Total Chlorides | 0.1 (max) | 0.006 |

Conditions:

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3. This report shall not be reproduced except in full without written approval from NCB.
4. Corresponding requirements in accordance with recognized standards are available from NCB on specific request.
5. The balance quantity of the tested sample wherever possible shall be retained only for a period of **Two months** from the date of issue of the Test Certificate.

-- End --


(T. MOHAN RAO)
Authorised Signatory


K.S. DURGA PRASAD
QUALITY MANAGER
Centre for Cement Research
and Independent Testing

NCB Bhavan, Old Bombay Road, Hyderabad 500 008 (TS), INDIA

emami **DOUBLE BULL** CEMENT



Mazbooti Ummeed Se Zyada.

No : H 30042

Date : 25.09.2017



NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS
INDEPENDENT TESTING LABORATORIES, HYDERABAD



TEST CERTIFICATE

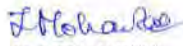
Sample : Said to be PPC Condition of sample : Satisfactory
Customer's Name & Address : M/s. Emami Cement Limited, Panagarh Industrial Park, Kotagram, Dist – Burdwan
West Bengal - 713148.
Laboratory Mark : TSH-170335 Identification : Yr ltr dated 17.07.2017
Date of performance of Test : 16.08.2017 to 20.09.2017 Date of Receipt : 10.08.2017
Tested as per : IS: 4031-1988 Specification : 1489(Part-1)-2015


| Sl.No. | Tests Carried Out | Specified requirements | Results obtained |
|--------|-------------------------|--------------------------|------------------------|
| 1 | Fineness (Blaine) | 300 (Min) | 392 m ² /kg |
| 2 | Setting Time | - Initial | 30 (Min) |
| | | - Final | 600 (Max) |
| 3 | Soundness | - Le Chatelier Expansion | 10 (Max) |
| | | - Autoclave Expansion | 0.8 (Max) |
| 4 | Compressive strength at | - 72 ± 1 hrs | 16.0 (Min) |
| | | - 168 ± 2 hrs | 22.0 (Min) |
| | | - 672 ± 4 hrs | 33.0 (Min) |
| 5 | Drying shrinkage | 0.15 (Max) | 49.5 MPa |
| | | | 0.05 Percent |

Conditions:

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5. The balance quantity of the tested sample wherever possible shall be retained only for a period of **Two months** from the date of issue of the Test Certificate.

-- End --


(T. MOHAN RAO)
Authorised Signatory


K.S. DURGA PRASAD
QUALITY MANAGER
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and Independent Testing

NCB Bhavan, Old Bombay Road, Hyderabad 500 104 (TS), INDIA

emami **DOUBLE BULL** CEMENT



Mazbooti Ummeed Se Zyada.

No : H 30043
Date : 25.09.2017



NATIONAL COUNCIL FOR CEMENT AND BUILDING MATERIALS
INDEPENDENT TESTING LABORATORIES, HYDERABAD



C.No.T-0953

TEST CERTIFICATE

Sample : Said to be PPC Condition of sample : Satisfactory
Customer's Name & Address : M/s. Emami Cement Limited, Panagarh Industrial Park, Kotagram,
Dist - Burdwan, West Bengal - 713148.
Laboratory Mark : TSH-170336 Identification : Yr ltr dated 17.07.2017
Date of performance of Test : 21.08.2017 to 04.09.2017 Date of Receipt : 10.08.2017
Tested as per : IS: 4032-1985 Specification : 1489(Part-1)-2015

Sl.No Tests Carried Out Results Obtained

CHEMICAL ANALYSIS


| Constituents Determined | Percentage by Weight | |
|---|------------------------------|------------------|
| | Specified requirements | Results obtained |
| 1 Loss on Ignition .. | 5.0 (max) | 1.76 |
| 2 Magnesia (MgO) .. | 6.0 (max) | 2.40 |
| 3 Insoluble Residue .. | $X + (4.0(100-x)/100)$ (max) | 27.07 |
| 4 Sulphuric anhydride (SO ₃) .. | 0.6 x (min) 3.5 (max) | 2.89 |
| 5 Total Chlorides .. | 0.1 (max) | 0.009 |

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- 5 The balance quantity of the tested sample wherever possible shall be retained only for a period of **Two months** from the date of issue of the Test Certificate.

-End-


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emami **DOUBLE BULL** CEMENT



Mazbooti Ummeed Se Zyada.

EMAMI CEMENT LIMITED, PANAGARH

(A Unit of Emami Group)

Village : - Kotagram, Panagarh



TEST CERTIFICATE

PORTLAND SLAG CEMENT (SUBH)

Date of Issue : 17/12/2017

Sample Description : Week No.- 46/ 2017

Despatch Period : 12/11/2017 to 18/11/2017

| S.No. | Test Carried Out | Requirement as Per IS: 455-2015 | Result Obtained |
|-------------------------|--|------------------------------------|-----------------|
| CHEMICAL TESTING | | | |
| 1 | Total Loss on Ignition (% by mass) | 5.0 % Max | 1.49 |
| | Magnesia (% by mass) | 10.0 % Max | 5.70 |
| | Sulphuric Anhydride(SO ₃) (% by mass) | 3.50 % Max | 2.08 |
| | Chloride (% by mass) | 0.10 % Max | 0.004 |
| | Sulphide Sulphur (S) | 1.5% Max | 0.56 |
| | Insoluble Residue (% by mass) | 4.0% Max | 1.52 |
| PHYSICAL TESTING | | | |
| 2 | Fineness | | |
| | Specific Surface (m ² / Kg) | Minimum 225 | 381 |
| 3 | Normal Consistency (%) | - | 29.00 |
| 4 | Setting Time (minutes) | | |
| | a) Initial | Minimum 30 | 185 |
| | b) Final | Maximum 600 | 255 |
| 5 | Soundness | | |
| | a) Le-Chatlier Expansion (mm) | Maximum 10 | 0.5 |
| | b) Autoclave Expansion (%) | Maximum 0.8 | 0.04 |
| 6 | Compressive Strength (Mpa) | | |
| | a. 24.0 hr. (1 day) | NA | 16.5 |
| | b. 72 +/- 1 hr. (3 days) | Minimum 16 | 30.1 |
| | c. 168 +/- 2 hr. (7 days) | Minimum 22 | 44.0 |
| | d. 672 +/- 4 hr. (28 days) | Minimum 33 | 60.6 |
| 7 | Slag in Cement (%) | Minimum 25 % and Maximum 70 % | 60 |

Environment condition during test , Temperature =27±2°C and RH >65%

The above cement complies with the requirements of IS 455 : 2015 for Portland Slag Cement.

Prepared by

Authorised Signatory

Regd. Office : Emami Tower , 2nd Floor , 687 Anandpur, E.M. Bypass, Kolkata- 700107

emami **DOUBLE BULL** CEMENT

Mazbooti Ummeed Se Zyada.

EMAMI CEMENT LIMITED, PANAGARH

(A Unit of Emami Group)

Village : - Kotagram, Panagarh

Dist : Burdwan, West Bengal, Pin: 713148



TEST CERTIFICATE PORTLAND SLAG CEMENT

Date of Issue : 17/12/2017

Sample Description : Week No.- 46/ 2017

Despatch Period : 12/11/2017 to 18/11/2017

| S.No. | Test Carried Out | Requirement as Per IS: 455-2015 | Result Obtained |
|-------------------------|--|----------------------------------|-----------------|
| CHEMICAL TESTING | | | |
| 1 | Total Loss on Ignition (% by mass) | 5.0 % Max | 1.80 |
| | Magnesia (% by mass) | 10.0 % Max | 5.16 |
| | Sulphuric Anhydride(SO ₃) (% by mass) | 3.50 % Max | 2.12 |
| | Chloride (% by mass) | 0.10 % Max | 0.006 |
| | Sulphide Sulphur (S) | 1.5% Max | 0.45 |
| | Insoluble Residue (% by mass) | 4.0% Max | 2.10 |
| PHYSICAL TESTING | | | |
| 2 | Fineness | | |
| | Specific Surface (m ² / Kg) | Minimum 225 | 371 |
| 3 | Normal Consistency (%) | - | 28.75 |
| 4 | Setting Time (minutes) | | |
| | a) Initial | Minimum 30 | 155 |
| | b) Final | Maximum 600 | 215 |
| 5 | Soundness | | |
| | a) Le-Chatlier Expansion (mm) | Maximum 10 | 0.5 |
| | b) Autoclave Expansion (%) | Maximum 0.8 | 0.04 |
| 6 | Compressive Strength (Mpa) | | |
| | a. 24.0 hr. (1 day) | NA | 14.5 |
| | b. 72 +/- 1 hr. (3 days) | Minimum 16 | 29.2 |
| | c. 168 +/- 2 hr.(7 days) | Minimum 22 | 40.5 |
| | d. 672 +/- 4 hr. (28 days) | Minimum 33 | 56.4 |
| 7 | Slag in Cement (%) | Minimum 25 % and Maximum 70 % | 65 |

Environment condition during test , Temperature =27±2°C and RH >65%

The above cement complies with the requirements of IS 455 : 2015 for Portland Slag Cement.

Prepared by

Authorised Signatory

Regd. Office : Emami Tower , 2nd Floor , 687 Anandpur, E.M. Bypass, Kolkata- 700107

emami **DOUBLE BULL** CEMENT



Mazbooti Ummeed Se Zyada.

EMAMI CEMENT LIMITED, PANAGARH

(A Unit of Emami Group)



Village : - Kotagram, Panagarh

Dist : Burdwan, West Bengal, Pin: 713148

TEST CERTIFICATE PORTLAND POZZOLANA CEMENT

Date of Issue : 17/12/2017

Sample Description : Week No.- 46/ 2017

Despatch Period : 12/11/2017 to 18/11/2017

| S.No. | Test Carried Out | Requirement as Per IS: 1489 (Part-1)- 2015 | Result Obtained |
|-------------------------|--|--|-----------------|
| CHEMICAL TESTING | | | |
| 1 | Total Loss on Ignition (% by mass) | 5.0 % Max | 2.63 |
| | Magnesia (% by mass) | 6.0 % Max | 2.24 |
| | Sulphuric Anhydride (% by mass) | 3.50 % Max | 2.10 |
| | Chloride (% by mass) | 0.10 % Max | 0.007 |
| | Insoluble Residue (% by mass) | Maximum $X + (4.0 (100-X) / 100)$ Minimum 0.6X Where "X" is the declared % of Fly Ash in given Portland Pozzolana Cement. | 30.70 |
| PHYSICAL TESTING | | | |
| 2 | Fineness | | |
| | Specific Surface (m ² / Kg) | Minimum 300 | 358 |
| 3 | Normal Consistency (%) | - | 32.00 |
| 4 | Setting Time (minutes) | | |
| | a) Initial | Minimum 30 | 180 |
| | b) Final | Maximum 600 | 240 |
| 5 | Soundness | | |
| | a) Le-Chatlier Expansion (mm) | Maximum 10 | 0.50 |
| | b) Autoclave Expansion (%) | Maximum 0.8 | 0.03 |
| 6 | Compressive Strength (Mpa) | | |
| | a. 24.0 hr. (1 day) | NA | 16.8 |
| | b. 72 +/- 1 hr. (3 days) | Minimum 16 | 33.1 |
| | c. 168 +/- 2 hr.(7 days) | Minimum 22 | 39.8 |
| | d. 672 +/- 4hr. (28 days) | Minimum 33 | 57.0 |
| 7 | Drying Shrinkage (%) | Maximum 0.15 | RA |
| 8 | Fly Ash in Cement (%) | Minimum 15 % and Maximum 35 % | 34.2 |

Environment condition during test , Temperature =27±2°C and RH >65%

The above cement complies with the requirements of IS 1489 (Part-1) : 2015 for Portland Pozzolana Cement.

Prepared by

Authorised Signatory

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emami **DOUBLE BULL** CEMENT



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