



# Cement Mill Test Report

Date of Issue: February 12, 2024

Plant: Exshaw, AB  
 Product: Portland Cement Type III  
 Mill Test Report Number: MTR-III-2024-1  
 Manufactured during the month of: January 2024

## ASTM C 150-22 and AASHTO M 85-22 Standard Requirements

| CHEMICAL ANALYSIS                                     |            |             | PHYSICAL ANALYSIS                                |                 |             |
|---|------------|-------------|--|-----------------|-------------|
| Item  | Spec limit | Test Result | Item   | Spec limit      | Test Result |
| <b>Rapid Method, X-Ray (C114)</b>                     |            |             | <b>Air content of mortar (%) (C185)</b>          |                 |             |
| SiO <sub>2</sub> (%)                                  | ---        | 19.2        |  | 12 max          | 6           |
| Al <sub>2</sub> O <sub>3</sub> (%)                    | ---        | 3.9         | <b>Blaine Fineness (m<sup>2</sup>/kg) (C204)</b> |                 |             |
| Fe <sub>2</sub> O <sub>3</sub> (%)                    | ---        | 3.6         |  | ---             | 530         |
| CaO (%)   | ---        | 61.6        | <b>Passing 45 μm (%) (C430)</b>                  |                 |             |
| MgO (%)   | 6.0 max    | 4.8         |  | ---             | 99.0        |
| SO <sub>3</sub> (%) **                                | 3.5 max    | 3.3         | <b>Compressive strength (MPa, [psi]) (C109)</b>  |                 |             |
| Loss on Ignition (%)                                  | 3.5 max    | 2.6         | 1 day  | 12.0 [1740] min | 22.4 [3244] |
| Insoluble Residue (%)                                 | 1.5 max    | 0.4         | 3 days   | 24.0 [3480] min | 34.6 [5021] |
| CO <sub>2</sub> (%)                                   | ---        | 1.9         | 28 days (Previous Month's Result)                |                 | 48.8 [7073] |
| Limestone (%)   | 5.0 max    | 4.4         | <b>Time of setting (minutes)</b>                 |                 |             |
| CaCO <sub>3</sub> in Limestone (%)                    | 70 min     | 97.0        | Vicat Initial (C191)                             | 45 - 375        | 74          |
| Inorganic Process Addition (Lafarge Cement Kiln Dust) | 5.0 max    |             | <b>Mortar Bar Expansion (%) (C1038) *</b>        |                 |             |
| <b>Adjusted Potential Phase Composition (C150)</b>    |            |             |  | 0.020 max       | 0.015       |
| C <sub>3</sub> S (%)                                  | ---        | 56          |  |                 |             |
| C <sub>2</sub> S (%)                                  | ---        | 13          |  |                 |             |
| C <sub>3</sub> A (%)                                  | 15 max     | 4           |  |                 |             |
| C <sub>4</sub> AF (%)                                 | ---        | 11          |  |                 |             |

**ASTM C 150-22 and AASHTO M 85-22 Optional Chemical Requirements:**

NaEq (%) Weekly Averages:      Week 1 0.57      Week 2 0.56      Week 3 0.55      Week 4 0.56      Max 0.60

\* Latest available result.

\*\* May exceed 3.0% SO<sub>3</sub> maximum based on C1038 results of <0.020% expansion at 14 days.

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements of:

ASTM C 150-22 & AASHTO M 85-22 STANDARD SPECIFICATIONS FOR TYPE III CEMENT; and

ASTM C 150-22 & AASHTO M 85-22 OPTIONAL CHEMICAL REQUIREMENTS FOR TYPE III LOW ALKALI CEMENT.

Exceptions: C1038 is excluded from the scope of the AASHTO accreditation.

Western Canada BU - Exshaw Plant  
 P.O. Box 160, Highway 1A, Exshaw AB, T0L 2C0  
 Phone: 403-673-3815

Certified By:

  
 John W Blair  
 Quality Manager



Certified to  
NSF/ANSI/CAN 61



AASHTO  
ACCREDITED



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### Additional Data

| Item                               | Test Result |  |
|------------------------------------|-------------|--|
|                                    | Limestone   | Inorganic Process Addition<br>Lafarge Cement Kiln Dust |
| Amount (%)                         | 4.4         | -  |
| SiO <sub>2</sub> (%)               | 1.9         | n/a  |
| Al <sub>2</sub> O <sub>3</sub> (%) | 0.5         | n/a  |
| Fe <sub>2</sub> O <sub>3</sub> (%) | 0.2         | n/a  |
| CaO (%)                            | 49.9        | n/a  |
| SO <sub>3</sub> (%)                | 0.1         | n/a  |
| CO <sub>2</sub> (%)                | 42.5        | n/a  |

### Base Cement Phase Composition

| Item                  | Test Result |
|-----------------------|-------------|
| C <sub>3</sub> S (%)  | 58          |
| C <sub>2</sub> S (%)  | 13          |
| C <sub>3</sub> A (%)  | 4           |
| C <sub>4</sub> AF (%) | 11          |

We certify that the data above reflects the materials used in cement manufacture during the production period indicated.

Note: Specific Gravity for Portland Cements is 3.15

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