



# Cement Mill Test Report

Date of Issue: February 12, 2025

Plant: Exshaw AB  
 Product: Portland Cement Type I/II  
 Mill Test Report Number: ESW\_Type I-II 2025-01  
 Manufactured during the month of: January 2025

## ASTM C 150-24 and AASHTO M 85-24 Standard Requirements

| CHEMICAL ANALYSIS                                     |            |             | PHYSICAL ANALYSIS                           |                 |             |
|---|------------|-------------|---|-----------------|-------------|
| Item  | Spec limit | Test Result | Item  | Spec limit      | Test Result |
| Rapid Method, X-Ray (C114)                            |            |             | Air content of mortar (%) (C185)            | 12 max          | 6           |
| SiO <sub>2</sub> (%)                                  | ---        | 19.2        | Blaine Fineness (m <sup>2</sup> /kg) (C204) | 260 min         | 403         |
| Al <sub>2</sub> O <sub>3</sub> (%)                    | 6.0 max    | 4.0         | Passing 45 μm (%) (C430)                    | ---             | 98.7        |
| Fe <sub>2</sub> O <sub>3</sub> (%)                    | 6.0 max    | 3.4         | Compressive strength (MPa, [psi]) (C 109)   |                 |             |
| CaO (%)   | ---        | 61.7        | 3 days                                      | 12.0 [1740] min | 28.8 [4178] |
| MgO (%)   | 6.0 max    | 4.7         | 7 days                                      | 19.0 [2760] min | 36.3 [5270] |
| SO <sub>3</sub> (%)*                                  | 3.0 max *  | 3.3         | 28 days (Previous Month's Result)           |                 | 44.4 [6438] |
| Loss on Ignition (%)                                  | 3.5 max    | 2.4         | Time of setting (minutes)                   |                 |             |
| Insoluble Residue (%)                                 | 1.5 max    | 0.4         | Vicat Initial (C191)                        | 45 - 375        | 115         |
| CO <sub>2</sub> (%)                                   | ---        | 1.7         | Mortar Bar Expansion (%) (C1038)**          | 0.020 max       | 0.013       |
| Limestone (%)   | 5.0 max    | 4.1         |   |                 |             |
| CaCO <sub>3</sub> in Limestone (%)                    | 70 min     | 96.0        |   |                 |             |
| Inorganic Process Addition (Lafarge Cement Kiln Dust) | 5.0 max    | --          |   |                 |             |
| Adjusted Potential Phase Composition (C50)            |            |             |   |                 |             |
| C <sub>3</sub> S (%)                                  | ---        | 57          |   |                 |             |
| C <sub>2</sub> S (%)                                  | ---        | 12          |   |                 |             |
| C <sub>3</sub> A (%)                                  | 8 max      | 5           |   |                 |             |
| C <sub>4</sub> AF (%)                                 | ---        | 10          |   |                 |             |
| C <sub>3</sub> S+4.75*C <sub>3</sub> A (%)            | 100 max    | 80          |   |                 |             |

### ASTM C 150-17 and AASHTO M 85-17 Optional Requirements:

|                                 |          |      |                      |        |    |
|---------------------------------|----------|------|----------------------|--------|----|
| Na <sub>2</sub> O <sub>eq</sub> | 0.60 max | 0.53 | False set (%) (C451) | 50 min | 90 |
|---------------------------------|----------|------|----------------------|--------|----|

\* May exceed the SO<sub>3</sub> maximum based on C 1038 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 150-24 & AASHTO M 85-24 STANDARD SPECIFICATIONS FOR TYPES I / II CEMENTS; and  
 ASTM C 150-24 & AASHTO M 85-24 OPTIONAL CHEMICAL REQUIREMENTS FOR TYPES I / II LOW ALKALI CEMENT.

AASHTO Accrediation Exceptions: C430

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 (%)                         | 4.1         | --   |
| SiO <sub>2</sub> (%)               | 1.9         | 13.6   |
| Al <sub>2</sub> O <sub>3</sub> (%) | 0.5         | 3.4  |
| Fe <sub>2</sub> O <sub>3</sub> (%) | 0.2         | 2.0  |
| CaO (%)                            | 49.6        | 50.2   |
| SO <sub>3</sub> (%)                | 0.3         | 4.7  |
| CO <sub>2</sub> (%)                | 42.3        | n/a  |

### Base Cement Phase Composition

| Item                  | Test Result |
|-----------------------|-------------|
| C <sub>3</sub> S (%)  | 59          |
| C <sub>2</sub> S (%)  | 12          |
| C <sub>3</sub> A (%)  | 5           |
| C <sub>4</sub> AF (%) | 11          |

Specific Gravity: 3.16 For information purposes only.

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

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Phone: 403-673-3815

Certified By:

John W Blair  
Quality Manager