



# Cement Mill Test Report

Date of Issue: May 14, 2024

Plant: Exshaw AB  
 Product: Portland Cement Type I/II  
 Mill Test Report Number: ESW\_Type I-II 2024-4  
 Manufactured during the month of: April 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
Rapid Method, X-Ray (C114)			Air content of mortar (%) (C185)	12 max	6
SiO <sub>2</sub> (%)	---	19.3	Blaine Fineness (m <sup>2</sup> /kg) (C204)	260 min	445
Al <sub>2</sub> O <sub>3</sub> (%)	6.0 max	4.4	Passing 45 μm (%) (C430)	---	98.2
Fe <sub>2</sub> O <sub>3</sub> (%)	6.0 max	3.1	Compressive strength (MPa, [psi]) (C 109)		
CaO (%)	---	62.3	3 days	12.0 [1740] min	27.9 [4052]
MgO (%)	6.0 max	4.4	7 days	19.0 [2760] min	35.9 [5205]
SO <sub>3</sub> (%)*	3.0 max *	3.2	28 days (Previous Month's Result)		43.1 [6252]
Loss on Ignition (%)	3.5 max	2.4	Time of setting (minutes)		
Insoluble Residue (%)	1.5 max	0.2	Vicat Initial (C191)	45 - 375	67
CO <sub>2</sub> (%)	---	1.8	Mortar Bar Expansion (%) (C1038)**	0.020 max	0.008
Limestone (%)	5.0 max	4.1			
CaCO <sub>3</sub> in Limestone (%)	70 min	97.0			
Inorganic Process Addition (Lafarge Cement Kiln Dust)	5.0 max				
Adjusted Potential Phase Composition (C50)					
C <sub>3</sub> S (%)	---	56			
C <sub>2</sub> S (%)	---	13			
C <sub>3</sub> A (%)	8 max	6			
C <sub>4</sub> AF (%)	---	10			
C <sub>3</sub> S+4.75*C <sub>3</sub> A (%)	100 max	86			

### 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	81
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\* May exceed the SO<sub>3</sub> maximum based on C 1038 results of <0.020% expansion at 14 days.

\*\* Latest available results.

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 TYPES I / II CEMENTS; and

ASTM C 150-22 & AASHTO M 85-22 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 Lafarge Cement Kiln Dust
Amount (%)	4.1	-
SiO <sub>2</sub> (%)	1.8	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 (%)	49.0	n/a
SO <sub>3</sub> (%)	0.1	n/a
CO <sub>2</sub> (%)	42.5	n/a

### Base Cement Phase Composition

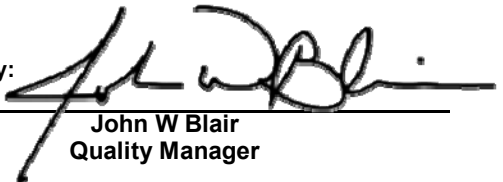
Item	Test Result
C <sub>3</sub> S (%)	59
C <sub>2</sub> S (%)	13
C <sub>3</sub> A (%)	7
C <sub>4</sub> AF (%)	10

Specific Gravity: 3.15 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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John W Blair  
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