



# Cement Mill Test Report

Date of Issue: May 12, 2023

Plant: Exshaw, AB  
 Product: Portland Cement Type I/II/V  
 Mill Test Report Number: MTR-I/II/V-2023-04  
 Manufactured: April 1-30, 2023

## ASTM C 150-21 and AASHTO M 85-18 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> (%)	---	19.4	Blaine Fineness (m <sup>2</sup> /kg) (C204)	260 min	405
Al <sub>2</sub> O <sub>3</sub> (%)	6.0 max	3.9	Passing 45 μm (%) (C430)	---	98.1
Fe <sub>2</sub> O <sub>3</sub> (%)	6.0 max	3.5	Autoclave Expansion (%) (C151)*	0.80 max	0.13
CaO (%)	---	62.0	Compressive strength (MPa, [psi]) (C 109)		
MgO (%)	6.0 max	4.7	3 days	12.0 [1740] min	29.4 [4270]
SO <sub>3</sub> (%)	2.3 max *	3.0	7 days	19.0 [2760] min	35.6 [5170]
Loss on Ignition (%)	3.5 max	2.6	28 days (Reflects previous month's data)		45.4 [6590]
Insoluble Residue (%)*	1.5 max	0.28	Time of setting (minutes)		
CO <sub>2</sub> (%)	---	1.8	Vicat Initial (C191)	45 - 375	114
Limestone (%)	5.0 max	4.3	Sulfate Resistance (%) (C452)*	0.040 max	0.026
CaCO <sub>3</sub> in Limestone (%)	70 min	87	Mortar Bar Expansion (%) (C1038)	0.020 max	0.009
Inorganic Process Addition (Lafarge Cement Kiln Dust)	5.0 max	-			
Adjusted Potential Phase Composition (C 50)					
C <sub>3</sub> S (%)	---	58			
C <sub>2</sub> S (%)	---	12			
C <sub>3</sub> A (%)	5 max	4			
C <sub>4</sub> AF (%)	---	11			
C <sub>4</sub> AF + 2(C <sub>3</sub> A)	25 max	20			
C <sub>3</sub> S+4.75*C <sub>3</sub> A (%)	100 max	79			
ASTM C 150-17 and AASHTO M 85-17 Optional Requirements:					
NaEq (%)	0.60 max	0.58	False set (%) (C451)	50 min	75

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

\*\* Current Production run not available - most recent provided

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements of ASTM C 150-21 & AASHTO M 85-18 STANDARD SPECIFICATIONS FOR TYPES I, II & V CEMENTS; and ASTM C 150-21 & AASHTO M 85-18 OPTIONAL CHEMICAL REQUIREMENTS FOR TYPES I, II & V LOW ALKALI CEMENT.

Our laboratory is AASHTO accredited. Grey highlighted tests are not within current Scope of Accreditation.



Certified to NSF/ANSI/CAN 61



AASHTO ACCREDITED

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Certified By:

*Lorraine Johnson*

Lorraine Johnson  
 Quality Manager



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### Additional Data

Item	Test Result	
	Limestone	Inorganic Process Addition Lafarge Cement Kiln Dust
Amount (%)	4.3	-
SiO <sub>2</sub> (%)	2.1	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 (%)	48.9	n/a
SO <sub>3</sub> (%)	0.1	n/a
CO <sub>2</sub> (%)	42.4	n/a

### Base Cement Phase Composition

Item	Test Result
C <sub>3</sub> S (%)	60
C <sub>2</sub> S (%)	12
C <sub>3</sub> A (%)	5
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 3.14

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