



# Cement Mill Test Report

Date of Issue: December 13, 2023

Plant: Exshaw, AB  
 Product: Portland Cement Type III  
 Mill Test Report Number: MTR-III-2023-09  
 Manufactured during the month of: November 2023

## 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)		
SiO <sub>2</sub> (%)	---	19.1		12 max	6
Al <sub>2</sub> O <sub>3</sub> (%)	---	3.9	Blaine Fineness (m <sup>2</sup> /kg) (C204)		
Fe <sub>2</sub> O <sub>3</sub> (%)	---	3.5		---	506
CaO (%)	---	61.8	Passing 45 µm (%) (C430)		
MgO (%)	6.0 max	4.7		---	99.4
SO <sub>3</sub> (%) **	3.5 max	3.3	Compressive strength (MPa, [psi]) (C109)		
Loss on Ignition (%)	3.5 max	2.6	1 day	12.0 [1740] min	22.2 [3215]
Insoluble Residue (%)	1.5 max	0.4	3 days	24.0 [3480] min	34.6 [5010]
CO <sub>2</sub> (%)	---	1.9	28 days (Previous Month Results)		49.3 [7142]
Limestone (%)	5.0 max	4.5	Time of setting (minutes)		
CaCO <sub>3</sub> in Limestone (%)	70 min	96.0	Vicat Initial (C191)	45 - 375	78
Inorganic Process Addition (Lafarge Cement Kiln Dust)	5.0 max		Mortar Bar Expansion (%) (C1038) *		
Adjusted Potential Phase Composition (C150)				0.020 max	0.013
C <sub>3</sub> S (%)	---	57			
C <sub>2</sub> S (%)	---	11			
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 0.58 Week 2 0.57 Week 3 0.54 Week 4 0.58 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.

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 (%)	4.5	-
SiO <sub>2</sub> (%)	2.0	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 (%)	50.0	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 3.15

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