



# Cement Mill Test Report

Date of Issue: September 11, 2023

Plant: Exshaw, AB  
 Product: Portland Cement Type III  
 Mill Test Report Number: MTR-III-2023-08  
 Manufactured during the month of: August 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)	12 max	7	
SiO <sub>2</sub> (%)	---	19.3	Blaine Fineness (m <sup>2</sup> /kg) (C204)	---	533	
Al <sub>2</sub> O <sub>3</sub> (%)	---	3.9	Passing 45 μm (%) (C430)	---	99.1	
Fe <sub>2</sub> O <sub>3</sub> (%)	---	3.5	Autoclave Expansion (%) (C151)**	0.80 max	0.15	
CaO (%)	---	61.4	Compressive strength (MPa, [psi]) (C109)			
MgO (%)	6.0 max	4.8		1 day	12.0 [1740] min	24.0 [3487]
SO <sub>3</sub> (%)**	3.5 max	3.3		3 days	24.0 [3480] min	35.9 [5199]
Loss on Ignition (%)	3.5 max	2.6	28 days (Previous Month Results)		52.3 [7584]	
Insoluble Residue (%)	1.5 max	0.3	Time of setting (minutes)			
CO <sub>2</sub> (%)	---	1.8	Vicat Initial (C191)	45 - 375	73	
Limestone (%)	5.0 max	4.2	Mortar Bar Expansion (%) (1038)*	0.020 max	0.013	
CaCO <sub>3</sub> in Limestone (%)	70 min	96.0				
Inorganic Process Addition (Lafarge Cement Kiln Dust)	5.0 max					
Adjusted Potential Phase Composition (C150)						
C <sub>3</sub> S (%)	---	55				
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	0.56	Week 2	0.56	Week 3	0.57	Week 4		Max 0.60
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\* Latest available result.

\*\* May exceed 3.0% SO<sub>3</sub> maximum based on A3004-C5 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



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### Additional Data

Item	Test Result	
	Limestone	Inorganic Process Addition Lafarge Cement Kiln Dust
Amount (%)	4.2	-
SiO <sub>2</sub> (%)	2.2	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 (%)	49.1	n/a
SO <sub>3</sub> (%)	0.1	n/a
CO <sub>2</sub> (%)	42.2	n/a

### Base Cement Phase Composition

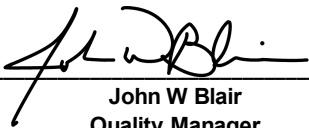
Item	Test Result
C <sub>3</sub> S (%)	58
C <sub>2</sub> S (%)	14
C <sub>3</sub> A (%)	5
C <sub>4</sub> AF (%)	11

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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