



# Cement Mill Test Report

Date of Issue: May 12, 2023

Plant: Exshaw, AB  
 Product: Portland Cement Type III  
 Mill Test Report Number: MTR-III-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> (%)	---	19.3	Blaine Fineness (m <sup>2</sup> /kg) (C204)	---	535
Al <sub>2</sub> O <sub>3</sub> (%)	---	4.0	Passing 45 μm (%) (C430)	---	99.3
Fe <sub>2</sub> O <sub>3</sub> (%)	---	3.5	Autoclave Expansion (%) (C151)**	0.80 max	0.12
CaO (%)	---	61.8	Compressive strength (MPa, [psi]) (C109)		
MgO (%)	6.0 max	4.7	1 day	12.0 [1740] min	24.9 [3610]
SO <sub>3</sub> (%)	3.5 max	3.2	3 days	24.0 [3480] min	36.8 [5340]
Loss on Ignition (%)	3.5 max	2.6	28 days (Reflects previous month's data)		48.7 [7060]
Insoluble Residue (%)*	1.5 max	0.31	Time of setting (minutes)		
CO <sub>2</sub> (%)	---	1.9	Vicat Initial (C191)	45 - 375	80
Limestone (%)	5.0 max	4.6	Mortar Expansion (%) (C1038)	0.02 max	0.010
CaCO <sub>3</sub> in Limestone (%)	70 min	96			
Inorganic Process Addition (Lafarge Cement Kiln Dust)	5.0 max	-			
Adjusted Potential Phase Composition (C150)					
C <sub>3</sub> S (%)	---	56			
C <sub>2</sub> S (%)	---	13			
C <sub>3</sub> A (%)	15 max	4			
C <sub>4</sub> AF (%)	---	11			

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

NaEq (%)	0.60 max	0.57
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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 TYPE III CEMENT; and ASTM C 150-21 & AASHTO M 85-18 OPTIONAL CHEMICAL REQUIREMENTS FOR TYPE III LOW ALKALI CEMENT.



Certified to NSF/ANSI/CAN 61

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



AASHTO ACCREDITED  
 Western Canada BU - Exshaw Plant  
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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 (%)	4.6	-
SiO <sub>2</sub> (%)	2.1	n/a
Al <sub>2</sub> O <sub>3</sub> (%)	0.6	n/a
Fe <sub>2</sub> O <sub>3</sub> (%)	0.2	n/a
CaO (%)	48.4	n/a
SO <sub>3</sub> (%)	0.1	n/a
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 (%)	13
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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