



# Cement Mill Test Report

Date of Issue: March 11, 2022

Plant: Exshaw, AB  
 Product: Portland Cement Type III  
 Mill Test Report Number: MTR-III-2022-02  
 Manufactured: February 1-28, 2022

## ASTM C 150-20 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	5
SiO <sub>2</sub> (%)	---	19.8	Blaine Fineness (m <sup>2</sup> /kg) (C204)	---	628
Al <sub>2</sub> O <sub>3</sub> (%)	---	4.0	Passing 45 μm (%) (C430)	---	99.1
Fe <sub>2</sub> O <sub>3</sub> (%)	---	3.7	Autoclave Expansion (%) (C151)**	0.80 max	0.22
CaO (%)	---	61.8	Compressive strength (MPa, [psi]) (C109)		
MgO (%)	6.0 max	4.5	1 day	12.0 [1740] min	26.4 [3820]
SO <sub>3</sub> (%)	3.5 max	3.4	3 days	24.0 [3480] min	38.0 [5510]
Loss on Ignition (%)	3.5 max	2.5	28 days (Reflects previous month's data)		53.1 [7690]
Insoluble Residue (%)**	1.5 max	0.27	Time of setting (minutes)		
CO <sub>2</sub> (%)	---	1.8	Vicat Initial (C191)	45 - 375	62
Limestone (%)	5.0 max	4.2			
CaCO <sub>3</sub> in Limestone (%)	70 min	82			
Inorganic Process Addition (Lafarge Cement Kiln Dust)	5.0 max	-			
Adjusted Potential Phase Composition (C150)					
C <sub>3</sub> S (%)	---	53			
C <sub>2</sub> S (%)	---	17			
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			

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements of ASTM C 150-20 & AASHTO M 85-18 STANDARD SPECIFICATIONS FOR TYPE III CEMENT; and ASTM C 150-20 & AASHTO M 85-18 OPTIONAL CHEMICAL REQUIREMENTS FOR TYPE III LOW ALKALI CEMENT.

Certified By:

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Lorraine Richards  
 Quality Control Coordinator



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### Additional Data

Item	Test Result	
	Limestone	Inorganic Process Addition Lafarge Cement Kiln Dust
Amount (%)	4.2	-
SiO <sub>2</sub> (%)	1.8	n/a
Al <sub>2</sub> O <sub>3</sub> (%)	0.7	n/a
Fe <sub>2</sub> O <sub>3</sub> (%)	0.3	n/a
CaO (%)	47.1	n/a
SO <sub>3</sub> (%)	0.2	n/a
CO <sub>2</sub> (%)	42.2	n/a

### Base Cement Phase Composition

Item	Test Result
C <sub>3</sub> S (%)	55
C <sub>2</sub> S (%)	18
C <sub>3</sub> A (%)	4
C <sub>4</sub> AF (%)	12

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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