



# Cement Mill Test Report

Date of Issue: October 15, 2021

Plant: Exshaw, AB  
 Product: Portland Cement Type III  
 Mill Test Report Number: MTR-III-2021-09  
 Manufactured: September 1-30, 2021

## 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	7
SiO <sub>2</sub> (%)	---	19.5	Blaine Fineness (m <sup>2</sup> /kg) (C204)	---	626
Al <sub>2</sub> O <sub>3</sub> (%)	---	3.9	Passing 45 μm (%) (C430)	---	99.4
Fe <sub>2</sub> O <sub>3</sub> (%)	---	3.5	Autoclave Expansion (%) (C151)**	0.80 max	0.09
CaO (%)	---	61.7	Compressive strength (MPa, [psi]) (C109)		
MgO (%)	6.0 max	4.5	1 day	12.0 [1740] min	26.7 [3870]
SO <sub>3</sub> (%)	3.5 max	3.3	3 days	24.0 [3480] min	36.2 [5240]
Loss on Ignition (%)	3.5 max	2.5	28 days (Reflects previous month's data)		47.2 [6850]
Insoluble Residue (%)**	1.5 max	0.39	Time of setting (minutes)		
CO <sub>2</sub> (%)	---	1.7	Vicat Initial (C191)	45 - 375	66
Limestone (%)	5.0 max	3.9			
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 (%)	---	55			
C <sub>2</sub> S (%)	---	14			
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	0.56			

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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 Phone: 403-673-3815

Lorraine Richards  
 Quality Control Coordinator



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### Additional Data

Item	Test Result	
	Limestone	Inorganic Process Addition Lafarge Cement Kiln Dust
Amount (%)	3.9	-
SiO <sub>2</sub> (%)	1.5	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 (%)	52.4	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 (%)	57
C <sub>2</sub> S (%)	15
C <sub>3</sub> A (%)	4
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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