



Cement Mill Test Report

Date of Issue: June 14, 2022

Plant: Exshaw, AB
 Product: Portland Limestone Cement Type IL(13) (HS)
 Mill Test Report Number: MTR-IL-2022-05
 Manufactured: May 1-31, 2022

CHEMICAL ANALYSIS

Item	Spec limit	Test Result
Rapid Method, X-Ray (C114)		
SiO ₂ (%)		117.7
Al ₂ O ₃ (%)		3.6
Fe ₂ O ₃ (%)		3.3
CaO (%)		60.9
MgO (%)		4.6
SO ₃ (%)	3.0 max*	3.2
Loss on Ignition @ 950 (%)	10.0 max	6.4
Loss on Ignition @ 550 (%)		0.9
Inorganic Process Addition (Lafarge Cement Kiln Dust)	5.0 max	-
Adjusted Potential Phase Composition (C 150 - For information only)		
C ₃ S (%)	---	52
C ₂ S (%)	---	10
C ₃ A (%)	---	4
C ₄ AF (%)	---	10

PHYSICAL ANALYSIS

Item	Spec limit	Test Result
Blaine Fineness (m ² /kg) (C204)		503
Passing 45 µm (%) (C430)		99.4
Autoclave Expansion (%) (C151)	-0.20 to 0.80	0.07
Air Content (%) (C186)	12 max	6
Compressive Strength (MPa[psi]) (C109)		
1 day		20.6 [2990]
3 days	13.0 [1890] min	33.5 [4850]
7 days	20.0 [2900] min	38.4 [5570]
28 days (Reflects previous month's data)	25.0 [3620] min	47.2 [6840]
Time of setting (minutes) (C191)		
Vicat Initial	45 min.	112
ASTM C1012 Expansion %, (6 months)***		0.048
Mortar Bar Expansion (%) (C1038)	0.020 max	0.011

NaEq (%) 0.49

* May exceed the SO₃ maximum based on C1038 results of <0.020% expansion at 14 days.

** Most recent result provided

*** Performed by Lafarge Edmonton and/or Seattle Labs

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements of ASTM C 595-20 & AASHTO M 240-20 STANDARD SPECIFICATIONS FOR TYPE IL CEMENT.

Prepared By:

Lorraine Richards

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Lorraine Richards
 Quality Control Coordinator



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Additional Data - For information only.

Item	Test Result	Test Result
	Limestone	Inorganic Process Addition Lafarge Cement Kiln Dust
Amount (%)	13.4	-
SiO ₂ (%)	2.7	n/a
Al ₂ O ₃ (%)	0.9	n/a
Fe ₂ O ₃ (%)	0.5	n/a
CaO (%)	50.5	n/a
SO ₃ (%)	0.2	n/a
CO ₂ (%)	41.2	n/a

Base Cement Phase Composition - C150 - For information only.

Item	Test Result
C ₃ S (%)	60
C ₂ S (%)	12
C ₃ A (%)	4
C ₄ AF (%)	11

Specific Gravity: 3.11**

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