



Cement Mill Test Report

Date of Issue: May 16, 2022

Plant: Exshaw, AB
 Product: Portland Limestone Cement Type IL(13) (HS)
 Mill Test Report Number: MTR-IL-2022-04
 Manufactured: April 1-30, 2022

CHEMICAL ANALYSIS

PHYSICAL ANALYSIS

Item	Spec limit	Test Result	Item	Spec limit	Test Result
Rapid Method, X-Ray (C114)			Blaine Fineness (m ² /kg) (C204)		520
SiO ₂ (%)		17.9	Passing 45 µm (%) (C430)		99.6
Al ₂ O ₃ (%)		3.6	Autoclave Expansion (%) (C151)	-0.20 to 0.80	0.12
Fe ₂ O ₃ (%)		3.4	Air Content (%) (C186)	12 max	4
CaO (%)		60.6	Compressive Strength (MPa[psi]) (C109)		
MgO (%)		4.5	1 day		21.1 [3070]
SO ₃ (%)	3.0 max*	3.3	3 days	13.0 [1890] min	33.3 [4830]
Loss on Ignition @ 950 (%)	10.0 max	5.9	7 days	20.0 [2900] min	39.2 [5680]
Loss on Ignition @ 550 (%)		0.8	28 days (Reflects previous month's data)	25.0 [3620] min	45.8 [6640]
Inorganic Process Addition (Lafarge Cement Kiln Dust)	5.0 max	-	Time of setting (minutes) (C191)		
Adjusted Potential Phase Composition (C 150 - For information only)			Vicat Initial	45 min.	118
C ₃ S (%)	---	49	ASTM C1012 Expansion %, (6 months)***		0.048
C ₂ S (%)	---	14	Mortar Bar Expansion (%) (C1038)	0.020 max	0.011
C ₃ A (%)	---	4			
C ₄ AF (%)	---	10			
NaEq (%)		0.50			

* 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:

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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 (%)	12.1	-
SiO ₂ (%)	0.9	n/a
Al ₂ O ₃ (%)	0.6	n/a
Fe ₂ O ₃ (%)	0.3	n/a
CaO (%)	50.4	n/a
SO ₃ (%)	0.2	n/a
CO ₂ (%)	42.4	n/a

Base Cement Phase Composition - C150 - For information only.

Item	Test Result
C ₃ S (%)	55
C ₂ S (%)	16
C ₃ A (%)	4
C ₄ AF (%)	12

Specific Gravity: 3.11**

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