



Cement Mill Test Report

Date of Issue: October 15, 2021

Plant: Exshaw AB
 Product: Portland Limestone Cement Type IL(10) (HS)
 Mill Test Report Number: MTR-IL-2021-09
 Manufactured: September 1-30, 2021

CHEMICAL ANALYSIS

Item	Spec limit	Test Result
Rapid Method, X-Ray (C114)		
SiO ₂ (%)		18.4
Al ₂ O ₃ (%)		3.6
Fe ₂ O ₃ (%)		3.4
CaO (%)		61.1
MgO (%)		4.3
SO ₃ (%)	3.0 max*	3.3
Loss on Ignition @ 950 (%)	10.0 max	5.0
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 (%)	---	51
C ₂ S (%)	---	14
C ₃ A (%)	---	4
C ₄ AF (%)	---	10

PHYSICAL ANALYSIS

Item	Spec limit	Test Result
Blaine Fineness (m ² /kg) (C204)		506
Passing 45 µm (%) (C430)		99.6
Autoclave Expansion (%) (C151)**	-0.20 to 0.80	0.10
Air Content (%) (C186)	12 max	5
Compressive Strength (MPa[psi]) (C109)		
1 day		20.2 [2940]
3 days	13.0 [1890] min	31.7 [4590]
7 days	20.0 [2900] min	37.0 [5370]
28 days (Reflects previous month's data)	25.0 [3620] min	42.9 [6220]
Time of setting (minutes) (C191)		
Vicat Initial	45 min.	99
ASTM C1012 Expansion %, (6 months)***		0.048
Mortar Bar Expansion (%) (C1038)**	0.020 max	0.006

NaEq (%) 0.53

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

** Current Production run not available - most recent 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 (%)	9.7	-
SiO ₂ (%)	1.3	n/a
Al ₂ O ₃ (%)	0.7	n/a
Fe ₂ O ₃ (%)	0.2	n/a
CaO (%)	52.6	n/a
SO ₃ (%)	0.2	n/a
CO ₂ (%)	42.3	n/a

Base Cement Phase Composition - C150 - For information only.

Item	Test Result
C ₃ S (%)	56
C ₂ S (%)	15
C ₃ A (%)	4
C ₄ AF (%)	11

Specific Gravity: 3.11

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