



Cement Mill Test Report

Date of Issue: October 13, 2023

Plant: Exshaw AB
 Product: OneCem
 Mill Test Report Number: MTR-IL-2023-09
 Manufactured during the month of: September 2023

CHEMICAL ANALYSIS

Item	Spec limit	Test Result
Rapid Method, X-Ray (C114)		
SiO ₂ (%)		18.3
Al ₂ O ₃ (%)		3.7
Fe ₂ O ₃ (%)		3.4
CaO (%)		61.0
MgO (%)		4.6
SO ₃ (%)	3.0 max*	3.2
K ₂ O (%)		0.54
Na ₂ O (%)		0.18
NaEq (%)		0.54
Loss on Ignition @ 950 (%)	10.0 max	4.6
Loss on Ignition @ 550 (%)		0.8
Inorganic Process Addition (Lafarge Cement Kiln Dust)	5.0 max	-
Adjusted Potential Phase Composition (C 150 - For information only)		
C ₃ S (%)	---	54
C ₂ S (%)	---	11
C ₃ A (%)	---	4
C ₄ AF (%)	---	10

PHYSICAL ANALYSIS

Item	Spec limit	Test Result
Blaine Fineness (m ² /kg) (C204)		472
Passing 45 μm (%) (C430)		99.1
Autoclave Expansion (%) (C151)**	-0.20 to 0.80	0.12
Air Content (%) (C186)	12 max	6
Compressive Strength (MPa[psi]) (C109)		
1 day		17.5 [2537]
3 days	13.0 [1890] min	30.3 [4397]
7 days	20.0 [2900] min	35.9 [5205]
28 days (Previous Month Results)	25.0 [3620] min	42.0 [6095]
Time of setting (minutes) (C191)		
Vicat Initial	45 min.	104
ASTM C1012 Expansion %, (6 months)***		0.05
Mortar Bar Expansion (%) (C1038)**	0.020 max	0.008

* 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 C595/C595M-23 & AASHTO M 240-23 STANDARD SPECIFICATIONS FOR TYPE IL (13) and (HS) CEMENT.

Our laboratory is AASHTO accredited. However, ASTM C1012 and C1038 are not within the current Scope of Accreditation.

Western BU - Exshaw Plant
 P.O. Box 160, Highway 1A, Exshaw AB T0L 2C0
 Phone: 403-673-3815



Certified By:

John W Blair
 Quality Manager



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Additional Data - For information only.

Item	Test Result	Test Result
	Limestone	Inorganic Process Addition Lafarge Cement Kiln Dust
Amount (%)	9.0	-
SiO ₂ (%)	2.2	n/a
Al ₂ O ₃ (%)	0.7	n/a
Fe ₂ O ₃ (%)	0.3	n/a
CaO (%)	48.7	n/a
SO ₃ (%)	0.2	n/a
CO ₂ (%)	42.2	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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