



Cement Mill Test Report

Date of Issue: January 13, 2021

Plant: Exshaw AB
 Product: Portland Limestone Cement Type IL(10) (HS)
 Mill Test Report Number: MTR-IL-2020-12
 Manufactured: December 2020

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)		495
SiO ₂ (%)		18.8	Passing 45 µm (%) (C430)		99.6
Al ₂ O ₃ (%)		3.7	Autoclave Expansion (%) (C151)	-0.20 to 0.80	0.08
Fe ₂ O ₃ (%)		3.4	Air Content (%) (C186)	12 max	6
CaO (%)		61.2	Compressive Strength (MPa[psi]) (C109)		
MgO (%)		4.6	1 day		20.1 [2910]
SO ₃ (%)	3.0 max*	3.3	3 days	13.0 [1890] min	30.7 [4450]
Loss on Ignition @ 950 (%)	10.0 max	4.4	7 days	20.0 [2900] min	35.8 [5200]
Loss on Ignition @ 550 (%)		1.0	28 days (Reflects previous month's data)	25.0 [3620] min	41.9 [6070]
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.	116
C ₃ S (%)	---	51	ASTM C1012 Expansion %, (6 months)***		0.043
C ₂ S (%)	---	15	Mortar Bar Expansion (%) (C1038)**	0.020 max	0.010
C ₃ A (%)	---	4			
C ₄ AF (%)	---	10			

NaEq (%) 0.55

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

** Current Production run not available - most recent provided (Q3)

*** 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 595-17 & AASHTO M 240-17 STANDARD SPECIFICATIONS FOR TYPE IL CEMENT.

Prepared By:

Lorraine Richards

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

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 (%)	8	-
SiO ₂ (%)	1.5	n/a
Al ₂ O ₃ (%)	0.8	n/a
Fe ₂ O ₃ (%)	0.3	n/a
CaO (%)	51.4	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 (%)	55
C ₂ S (%)	17
C ₃ A (%)	4
C ₄ AF (%)	11

Specific Gravity: 3.14

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