



# Cement Mill Test Report

Date of Issue: June 20, 2023

Plant: Exshaw AB  
 Product: Portland Limestone Cement Type IL(13) (HS)  
 Mill Test Report Number: MTR-IL-2023-05  
 Manufactured: May 1 - 31, 2023

CHEMICAL ANALYSIS			PHYSICAL ANALYSIS		
Item	Spec limit	Test Result	Item	Spec limit	Test Result
Rapid Method, X-Ray (C114)			Blaine Fineness (m <sup>2</sup> /kg) (C204)		
SiO <sub>2</sub> (%)		17.6			513
Al <sub>2</sub> O <sub>3</sub> (%)		3.6	Passing 45 μm (%) (C430)		
Fe <sub>2</sub> O <sub>3</sub> (%)		3.2			99.3
CaO (%)		60.6	Autoclave Expansion (%) (C151)**		
MgO (%)		4.6		-0.20 to 0.80	0.11
SO <sub>3</sub> (%)	3.0 max*	3.2	Air Content (%) (C186)		
Loss on Ignition @ 950 (%)	10.0 max	6.1		12 max	6
Loss on Ignition @ 550 (%)		0.8	Compressive Strength (MPa[psi]) (C109)		
Inorganic Process Addition (Lafarge Cement Kiln Dust)	5.0 max	-	1 day		18.8 [2733]
Adjusted Potential Phase Composition (C 150 - For information only)			3 days	13.0 [1890] min	31.9 [4631]
C <sub>3</sub> S (%)	---	52	7 days	20.0 [2900] min	37.0 [5365]
C <sub>2</sub> S (%)	---	11	28 days (Reflects previous month's data)	25.0 [3620] min	43.2 [6259]
C <sub>3</sub> A (%)	---	4	Time of setting (minutes) (C191)		
C <sub>4</sub> AF (%)	---	10	Vicat Initial	45 min.	96
			ASTM C1012 Expansion %, (6 months)***		
			Mortar Bar Expansion (%) (C1038)**		
				0.020 max	0.010

NaEq (%) 0.52

\* May exceed the SO<sub>3</sub> 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:

*John W Blair*

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 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 (%)	12.3	-
SiO <sub>2</sub> (%)	1.7	n/a
Al <sub>2</sub> O <sub>3</sub> (%)	0.4	n/a
Fe <sub>2</sub> O <sub>3</sub> (%)	0.2	n/a
CaO (%)	49.1	n/a
SO <sub>3</sub> (%)	0.1	n/a
CO <sub>2</sub> (%)	42.6	n/a

## Base Cement Phase Composition - C150 - For information only.

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

Specific Gravity: 3.11

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