



Cement Mill Test Report

Date of Issue: July 7, 2023

Plant: Exshaw AB
 Product: Portland Cement Type I/II/V
 Mill Test Report Number: MTR-I/II/V-2023-06
 Manufactured: June 1 - 30, 2023

ASTM C 150-20 and AASHTO M 85-18 Standard Requirements

CHEMICAL ANALYSIS			PHYSICAL ANALYSIS		
Item	Spec limit	Test Result	Item	Spec limit	Test Result
Rapid Method, X-Ray (C114)			Air content of mortar (%) (C185)		
SiO ₂ (%)	---	19.5		12 max	6
Al ₂ O ₃ (%)	6.0 max	3.9	Blaine Fineness (m ² /kg) (C204)		
Fe ₂ O ₃ (%)	6.0 max	3.5		260 min	409
CaO (%)	---	62.1	Passing 45 μm (%) (C430)		
MgO (%)	6.0 max	4.7		---	98.6
SO ₃ (%)	2.3 max *	3.0	Autoclave Expansion (%) (C151)**		
Loss on Ignition (%)	3.5 max	2.6		0.80 max	0.17
Insoluble Residue (%)	1.5 max		Compressive strength (MPa, [psi]) (C 109)		
CO ₂ (%)	---	1.8			
Limestone (%)	5.0 max	4.3	3 days	12.0 [1740] min	28.8 [4177]
CaCO ₃ in Limestone (%)	70 min	96.0	7 days	19.0 [2760] min	34.9 [5065]
Inorganic Process Addition (Lafarge Cement Kiln Dust)	5.0 max		28 days (Reflects previous month's data)		44.6 [6471]
Adjusted Potential Phase Composition (C 50)			Time of setting (minutes)		
C ₃ S (%)	---	57	Vicat Initial (C191)		
C ₂ S (%)	---	13		45 - 375	90
C ₃ A (%)	5 max	4	Sulfate Resistance (%) (C452)**		
C ₄ AF (%)	---	11		0.040 max	0.026
C ₄ AF + 2(C ₃ A)	25 max	77	Mortar Bar Expansion (%) (C1038)**		
C ₃ S+4.75*C ₃ A (%)	100 max	20		0.020 max	0.009
ASTM C 150-17 and AASHTO M 85-17 Optional Requirements:			False set (%) (C451)		
NaEq (%)	0.60 max	0.55		50 min	79

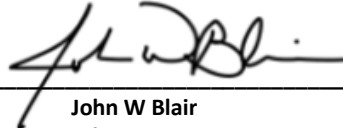
* May exceed the SO₃ maximum based on C 1038 results of <0.020% expansion at 14 days.

** Current Production run not available - most recent provided

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements of ASTM C 150-20 & AASHTO M 85-18 STANDARD SPECIFICATIONS FOR TYPES I, II & V CEMENTS; and ASTM C 150-20 & AASHTO M 85-18 OPTIONAL CHEMICAL REQUIREMENTS FOR TYPES I, II & V LOW ALKALI CEMENT.

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

Certified By:


 John W Blair
 Quality Manager



Cement Mill Test Report

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ASTM C 150-20 and AASHTO M 85-18 Standard Requirements

Additional Data

Item	Test Result	
	Limestone	Inorganic Process Addition Lafarge Cement Kiln Dust
Amount (%)	4.3	-
SiO ₂ (%)	1.6	n/a
Al ₂ O ₃ (%)	0.5	n/a
Fe ₂ O ₃ (%)	0.2	n/a
CaO (%)	49.9	n/a
SO ₃ (%)	0.2	n/a
CO ₂ (%)	42.4	n/a

Base Cement Phase Composition

Item	Test Result
C ₃ S (%)	59
C ₂ S (%)	13
C ₃ A (%)	5
C ₄ AF (%)	11

We certify that the data above reflects the materials used in cement manufacture during the production period indicated.

Note: Specific Gravity for Portland Cements is 3.14

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