



Cement Mill Test Report

Date of Issue: June 10, 2024

Plant: Exshaw AB
 Product: Portland Cement Type I/II
 Mill Test Report Number: ESW_Type I-II 2024-5
 Manufactured during the month of: May 2024

ASTM C 150-22 and AASHTO M 85-22 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)	12 max	6
SiO ₂ (%)	---	19.3	Blaine Fineness (m ² /kg) (C204)	260 min	423
Al ₂ O ₃ (%)	6.0 max	4.4	Passing 45 μm (%) (C430)	---	98.3
Fe ₂ O ₃ (%)	6.0 max	3.1	Compressive strength (MPa, [psi]) (C 109)		
CaO (%)	---	62.3	3 days	12.0 [1740] min	29.9 [4338]
MgO (%)	6.0 max	4.5	7 days	19.0 [2760] min	37.0 [5368]
SO ₃ (%)*	3.0 max *	3.3	28 days (Previous Month's Result)		44.1 [6398]
Loss on Ignition (%)	3.5 max	2.4	Time of setting (minutes)		
Insoluble Residue (%)	1.5 max	0.2	Vicat Initial (C191)	45 - 375	74
CO ₂ (%)	---	1.7	Mortar Bar Expansion (%) (C1038)**	0.020 max	0.009
Limestone (%)	5.0 max	4.1			
CaCO ₃ in Limestone (%)	70 min	96.0			
Inorganic Process Addition (Lafarge Cement Kiln Dust)	5.0 max				
Adjusted Potential Phase Composition (C50)					
C ₃ S (%)	---	56			
C ₂ S (%)	---	12			
C ₃ A (%)	8 max	6			
C ₄ AF (%)	---	9			
C ₃ S+4.75*C ₃ A (%)	100 max	86			

ASTM C 150-17 and AASHTO M 85-17 Optional Requirements:

Na ₂ O _{eq}	0.60 max	0.57	False set (%) (C451)	50 min	85
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* May exceed the SO₃ maximum based on C 1038 results of <0.020% expansion at 14 days.

** Latest available results.

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements of:

ASTM C 150-22 & AASHTO M 85-22 STANDARD SPECIFICATIONS FOR TYPES I / II CEMENTS; and

ASTM C 150-22 & AASHTO M 85-22 OPTIONAL CHEMICAL REQUIREMENTS FOR TYPES I / II LOW ALKALI CEMENT.

AASHTO Accrediation Exceptions: C430

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



Certified to
NSF/ANSI/CAN 61



AASHTO
ACCREDITED



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Additional Data

Item	Test Result	
	Limestone	Inorganic Process Addition Lafarge Cement Kiln Dust
Amount (%)	4.1	-
SiO ₂ (%)	2.3	n/a
Al ₂ O ₃ (%)	0.7	n/a
Fe ₂ O ₃ (%)	0.2	n/a
CaO (%)	49.5	n/a
SO ₃ (%)	0.1	n/a
CO ₂ (%)	42.3	n/a

Base Cement Phase Composition

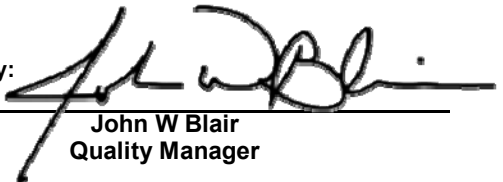
Item	Test Result
C ₃ S (%)	59
C ₂ S (%)	13
C ₃ A (%)	7
C ₄ AF (%)	10

Specific Gravity: 3.16 For information purposes only.

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

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