



Cement Mill Test Report

Date of Issue: November 15, 2024

Plant: Exshaw AB
 Product: Portland Cement Type I/II
 Mill Test Report Number: ESW_Type I-II 2024-10
 Manufactured during the month of: October 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 (%)	---	19.4	Blaine Fineness (m ² /kg) (C204)	260 min	412
Al ₂ O ₃ (%)	6.0 max	4.1	Passing 45 μm (%) (C430)	---	98.7
Fe ₂ O ₃ (%)	6.0 max	3.4	Compressive strength (MPa, [psi]) (C 109)		
CaO (%)	---	61.6	3 days	12.0 [1740] min	28.7 [4161]
MgO (%)	6.0 max	4.7	7 days	19.0 [2760] min	35.6 [5156]
SO ₃ (%)*	3.0 max *	3.3	28 days (Previous Month's Result)		44.5 [6446]
Loss on Ignition (%)	3.5 max	2.6	Time of setting (minutes)		
Insoluble Residue (%)	1.5 max	0.3	Vicat Initial (C191)	45 - 375	89
CO ₂ (%)	---	1.8	Mortar Bar Expansion (%) (C1038)**	0.020 max	0.011
Limestone (%)	5.0 max	4.4			
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 (%)	---	55			
C ₂ S (%)	---	14			
C ₃ A (%)	8 max	5			
C ₄ AF (%)	---	10			
C ₃ S+4.75*C ₃ A (%)	100 max	78			

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

Na ₂ O _{eq}	0.60 max	0.58	False set (%) (C451)	50 min	86
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* May exceed the SO₃ maximum based on C 1038 results of <0.020% expansion at 14 days.


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

ASTM C 150-24 & AASHTO M 85-24 STANDARD SPECIFICATIONS FOR TYPES I / II CEMENTS; and
 ASTM C 150-24 & AASHTO M 85-24 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 (%)	4.4	-
SiO ₂ (%)	2.4	n/a
Al ₂ O ₃ (%)	0.6	n/a
Fe ₂ O ₃ (%)	0.2	n/a
CaO (%)	49.2	n/a
SO ₃ (%)	0.1	n/a
CO ₂ (%)	42.3	n/a

Base Cement Phase Composition

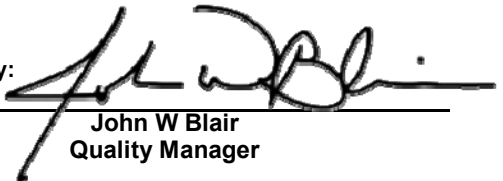
Item	Test Result
C ₃ S (%)	57
C ₂ S (%)	15
C ₃ A (%)	5
C ₄ AF (%)	11

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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