



Cement Mill Test Report

Date of Issue: December 13, 2024

Plant: Exshaw AB
Product: Portland Cement Type I/II
Mill Test Report Number: ESW_Type I-II 2024-11
Manufactured during the month of: November 2024

ASTM C 150-24 and AASHTO M 85-24 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 (%)	---	19.2		12 max	6
Al ₂ O ₃ (%)	6.0 max	4.0	Blaine Fineness (m ² /kg) (C204)		
Fe ₂ O ₃ (%)	6.0 max	3.4		260 min	411
CaO (%)	---	61.7	Passing 45 µm (%) (C430)		
MgO (%)	6.0 max	4.7		---	98.5
SO ₃ (%)*	3.0 max *	3.3	Compressive strength (MPa, [psi]) (C 109)		
Loss on Ignition (%)	3.5 max	2.6	3 days	12.0 [1740] min	29.5 [4273]
Insoluble Residue (%)	1.5 max	0.2	7 days	19.0 [2760] min	35.8 [5185]
CO ₂ (%)	---	1.9	28 days (Previous Month's Result)		45.4 [6583]
Limestone (%)	5.0 max	4.5	Time of setting (minutes)		
CaCO ₃ in Limestone (%)	70 min	97.0	Vicat Initial (C191)	45 - 375	90
Inorganic Process Addition (Lafarge Cement Kiln Dust)	5.0 max	--	Mortar Bar Expansion (%) (C1038)**		
Adjusted Potential Phase Composition (C50)				0.020 max	0.012
C ₃ S (%)	---	56			
C ₂ S (%)	---	13			
C ₃ A (%)	8 max	5			
C ₄ AF (%)	---	10			
C ₃ S+4.75*C ₃ A (%)	100 max	80			

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

Na ₂ Oeq	0.60 max	0.54	False set (%) (C451)	50 min	84
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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 Accreditation 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





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Additional Data

Item	Test Result	
	Limestone	Inorganic Process Addition Lafarge Cement Kiln Dust
Amount (%)	4.5	--
SiO ₂ (%)	1.6	14.9
Al ₂ O ₃ (%)	0.4	3.8
Fe ₂ O ₃ (%)	0.2	2.1
CaO (%)	49.7	48.5
SO ₃ (%)	0.1	2.4
CO ₂ (%)	42.6	n/a

Base Cement Phase Composition

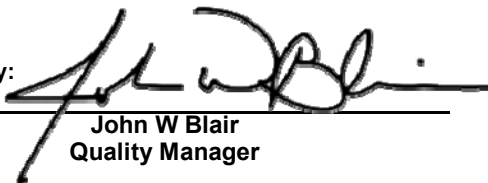
Item	Test Result
C ₃ S (%)	59
C ₂ S (%)	13
C ₃ A (%)	5
C ₄ AF (%)	11

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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