



Cement Mill Test Report

Date of Issue: May 12, 2023

Plant: Exshaw, AB
 Product: Portland Cement Type HS
 Manufactured: April 1-30, 2023

CHEMICAL ANALYSIS			PHYSICAL ANALYSIS		
Item	Spec limit	Test Result	Item	Spec limit	Test Result
Rapid Method, X-Ray					
SiO ₂ (%)	---	19.4	Blaine Fineness (m ² /kg)	---	405
Al ₂ O ₃ (%)	---	3.9	Retained 45 um (%)	28 max	1.9
Fe ₂ O ₃ (%)	---	3.5	Autoclave expansion (%)	1.0 max	0.13
CaO (%)	---	62.0	Compressive strength (MPa)		
MgO (%)	5.0 max	4.7	1 day		17.1
SO ₃ (%)	2.5 max **	3.0	3 day	14.5 min	29.4
Loss on ignition @ 950 (%)	3.0 max	2.6	7 day	20.0 min	35.6
Loss on ignition @ 550(%)		0.8	28 day (March 2023 Results)	26.5 min	45.4
Insoluble residue (%)	0.75 max	0.28	Time of setting (minutes)		
Inorganic Process Addition (Cement Kiln Dust)	5.0 max		Vicat Initial	45 - 375	114
Potential Phase Composition			Mortar Bar Expansion (%) (C5)*	0.020 max	0.010
C3S (%)	---	65.5	Sulphate Resistance (%) (C6) *	0.035 max	0.026
C2S (%)	---	6.1	Colour (For Information Purposes Only)		33
C3A (%)	5 max	4.5			
C4AF (%)	---	10.7			

Other Chemical Information:

NaEq (%) Weekly Average Wk1 0.58 Wk2 0.58 Wk3 0.59 Wk4 0.58

* Latest available value

** May exceed 2.5% SO₃ maximum based on our A3004-C5 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 the applicable specification for Type HS.

CSA A3001-18 STANDARD SPECIFICATIONS FOR TYPE HS CEMENT.



Certified to NSF/ANSI/CAN 61

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Certified By: *Lorraine Johnson*

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