



# Cement Mill Test Report

Date of Issue: April 12 , 2023

Plant: Exshaw, AB  
 Product: Portland Cement Type GU  
 Manufactured: March 1-31, 2023

## CHEMICAL ANALYSIS

Item	Spec limit	Test Result
Rapid Method, X-Ray		
SiO <sub>2</sub> (%)	---	19.3
Al <sub>2</sub> O <sub>3</sub> (%)	---	4.0
Fe <sub>2</sub> O <sub>3</sub> (%)	---	3.5
CaO (%)	---	62.2
MgO (%)	5.0 max	4.7
SO <sub>3</sub> (%)	3.0 max **	2.9
Loss on ignition @ 950 (%)	3.0 (3.5) max ***	2.7
Loss on ignition @ 550(%)	3.0 max	0.6
Insoluble residue (%)*	1.5 max	0.31
Inorganic Process Addition (Cement Kiln Dust)	5.0 max	
Potential Phase Composition		
C <sub>3</sub> S (%)	---	65.3
C <sub>2</sub> S (%)	---	6.4
C <sub>3</sub> A (%)	---	4.7
C <sub>4</sub> AF (%)	---	10.7

## PHYSICAL ANALYSIS

Item	Spec limit	Test Result
Blaine Fineness (m <sup>2</sup> /kg)	---	416
Retained 45 um (%)	28 max	2.0
Autoclave expansion (%)	1.0 max	0.14
Compressive strength (MPa)		
1 day		19.0
3 day	14.5 min	30.4
7 day	20.0 min	37.0
28 day (February 2023 Results)	26.5 min	42.2
Time of setting (minutes)		
Vicat Initial	45 - 375	103
Mortar Bar Expansion (%) (C <sub>5</sub> )*	0.020 max	0.010
Colour (For Information Purposes Only)		33

### Other Chemical Information:

NaEq (%) Weekly Average Wk1 0.58 Wk2 --- Wk3 0.58 Wk4 0.57

\* Latest available value

\*\* May exceed 3.0% SO<sub>3</sub> maximum based on our A3004-C5 results of <0.020% expansion at 14 days.

\*\*\* May exceed 3.0% LOI maximum based on our LOI at 550C <3.0%.

We certify that the above described data, at the time of shipment, meets the chemical and physical requirements of the applicable specification for Type GU.

CSA A3001-18 STANDARD SPECIFICATIONS FOR TYPE GU CEMENT.



Certified to NSF/ANSI/CAN 61

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Certified By:

*Lorraine Johnson*

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 Quality Manager