



# Cement Mill Test Report

Date of Issue: May 12, 2023

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

CHEMICAL ANALYSIS			PHYSICAL ANALYSIS		
Item	Spec limit	Test Result	Item	Spec limit	Test Result
<b>Rapid Method, X-Ray</b>					
SiO <sub>2</sub> (%)	---	19.3	Blaine Fineness (m <sup>2</sup> /kg)	---	535
Al <sub>2</sub> O <sub>3</sub> (%)	---	4.0	Retained 45 um (%)	---	0.7
Fe <sub>2</sub> O <sub>3</sub> (%)	---	3.5	Autoclave expansion (%)*	1.0 max	0.12
CaO (%)	---	61.8	Compressive strength (MPa)		
MgO (%)	5.0 max	4.7	1 day	13.5 min	24.9
SO <sub>3</sub> (%)	3.5 max **	3.2	3 day	24.0 min	36.8
Loss on ignition @ 950 (%)	3.0 (3.5) max ***	2.6	28 day (March 2023 Results)	---	48.7
Loss on ignition @ 550(%)	3.0 max	0.6	Time of setting (minutes)		
Insoluble residue (%)*	1.5 max	0.3	Vicat Initial	45 - 375	80
Inorganic Process Addition (Cement Kiln Dust)	5.0 max	-	Mortar Bar Expansion (%) (C <sub>5</sub> )*	0.020 max	0.010
Potential Phase Composition			Colour (For Information Purposes Only)		31
C <sub>3</sub> S (%)	---	64			
C <sub>2</sub> S (%)	---	7			
C <sub>3</sub> A (%)	---	5			
C <sub>4</sub> AF (%)	---	11			
<b>Other Chemical Information:</b>					
NaEq (%)		0.57			

\* Latest available value

\*\* May exceed 3.5% 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 cement, at the time of shipment, meets the chemical and physical requirements of the applicable specification for Type HE.

CSA A3001-18 STANDARD SPECIFICATIONS FOR TYPE HE CEMENT.



Certified to NSF/ANSI/CAN 61

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Certified By:

*Lorraine Johnson*

Lorraine Johnson  
 Quality Manager