



Cement Mill Test Report

Date of Issue: March 13, 2023

Plant: Exshaw, AB
 Product: Portland Cement Type GU
 Manufactured: February 1-28, 2023

CHEMICAL ANALYSIS

Item	Spec limit	Test Result
Rapid Method, X-Ray		
SiO ₂ (%)	---	19.3
Al ₂ O ₃ (%)	---	4.0
Fe ₂ O ₃ (%)	---	3.5
CaO (%)	---	62.1
MgO (%)	5.0 max	4.7
SO ₃ (%)	3.0 max **	2.9
Loss on ignition @ 950 (%)	3.0 (3.5) max ***	2.7
Loss on ignition @ 550(%)	3.0 max	0.9
Insoluble residue (%)*	1.5 max	0.34
Inorganic Process Addition (Cement Kiln Dust)	5.0 max	
Potential Phase Composition		
C ₃ S (%)	---	66.1
C ₂ S (%)	---	5.5
C ₃ A (%)	---	4.6
C ₄ AF (%)	---	10.5

PHYSICAL ANALYSIS

Item	Spec limit	Test Result
Blaine Fineness (m ² /kg)	---	414
Retained 45 um (%)	28 max	2.7
Autoclave expansion (%)	1.0 max	0.13
Compressive strength (MPa)		
1 day		17.3
3 day	14.5 min	29.7
7 day	20.0 min	35.2
28 day (January 2023 Results)	26.5 min	43.7
Time of setting (minutes)		
Vicat Initial	45 - 375	104
Mortar Bar Expansion (%) (C ₅)*	0.020 max	0.014
Colour (For Information Purposes Only)		33

Other Chemical Information:

NaEq (%) Weekly Average Wk1 --- Wk2 0.57 Wk3 0.56 Wk4 0.58

* Latest available value

** May exceed 3.0% SO₃ 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

Certified By:

Lorraine Johnson

Lafarge Canada Inc. - Exshaw Plant
 P.O. Box 160, Highway 1A, Exshaw AB T0L 2C0
 Phone: 403-673-3815

Lorraine Johnson
 Quality Manager