



Cement Mill Test Report

Date of Re-issue: March 13, 2023

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

CHEMICAL ANALYSIS

Item	Spec limit	Test Result
Rapid Method, X-Ray		
SiO ₂ (%)	---	17.4
Al ₂ O ₃ (%)	---	3.6
Fe ₂ O ₃ (%)	---	3.1
CaO (%)	---	60.4
MgO (%)	---	4.5
SO ₃ (%)	3.0 max **	3.3
Loss on ignition @ 950 (%)	10.0 max	6.5
Loss on ignition @ 550(%)		0.9
Insoluble residue (%)*	1.5 max	0.44
Specific Gravity		3.11
Limestone Addition		13.1
<u>Clinker chemistry</u> used in the manufacture of above Type GUL. (For information purposes only.)		
C ₃ S (%)	---	66.4
C ₂ S (%)	---	10.6
C ₃ A (%)	---	4.9
C ₄ AF (%)	---	11.7

PHYSICAL ANALYSIS

Item	Spec limit	Test Result
Blaine Fineness (m ² /kg)	---	532
Retained 45 um (%)	28 max	0.5
Autoclave expansion (%)*	1.0 max	0.11
Compressive strength (MPa)		
1 Day		19.3
3 day	14.5 min	31.3
7 day	20.0 min	35.3
28 day (January 2023 Results)	26.5 min	44.3
Time of setting (minutes)		
Vicat Initial	45 - 375	105
Mortar Bar Expansion (%) (C ₅)*	0.020 max	0.012
Colour (For Information Purposes Only)		33

Other Chemical Information:

NaEq (%) Weekly Average Wk1 0.52 Wk2 0.53 Wk3 0.51 Wk4 0.52

* Latest available value

** May exceed 3.0% SO₃ maximum based on 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 GUL.

CSA A3001-18 STANDARD SPECIFICATIONS FOR TYPE GUL CEMENT.



Certified to
NSF/ANSI/CAN 61

Certified By:

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