



Cement Mill Test Report

Date of issue: May 12, 2023

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

| CHEMICAL ANALYSIS | | | PHYSICAL ANALYSIS | | |
|--|------------|-------------|--|------------|-------------|
| Item | Spec limit | Test Result | Item | Spec limit | Test Result |
| Rapid Method, X-Ray | | | | | |
| SiO2 (%) | --- | 17.7 | Blaine Fineness (m2/kg) | --- | 515 |
| Al2O3 (%) | --- | 3.6 | Retained 45 um (%) | 28 max | 0.5 |
| Fe2O3 (%) | --- | 3.2 | Autoclave expansion (%)* | 1.0 max | 0.09 |
| CaO (%) | --- | 60.5 | Compressive strength (MPa) | | |
| MgO (%) | --- | 4.6 | 1 Day | | 19.0 |
| SO3 (%) | 3.0 max ** | 3.3 | 3 day | 14.5 min | 32.0 |
| Loss on ignition @ 950 (%) | 10.0 max | 6.0 | 7 day | 20.0 min | 36.7 |
| Loss on ignition @ 550(%) | | 0.9 | 28 day (March 2023 Results) | 26.5 min | 43.8 |
| Insoluble residue (%)* | 1.5 max | 0.41 | Time of setting (minutes) | | |
| Specific Gravity | | 3.11 | Vicat Initial | 45 - 375 | 106 |
| Limestone Addition | | 12.1 | Mortar Bar Expansion (%) (C5)* | 0.020 max | 0.010 |
| <i>Clinker chemistry used in the manufacture of above Type GUL. (For information purposes only.)</i> | | | Colour (For Information Purposes Only) | | 33 |
| C3S (%) | --- | 66.0 | | | |
| C2S (%) | --- | 10.8 | | | |
| C3A (%) | --- | 4.9 | | | |
| C4AF (%) | --- | 11.8 | | | |

Other Chemical Information:

NaEq (%) Weekly Average Wk1 0.54 Wk2 0.53 Wk3 0.53 Wk4 0.54

* 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:

Lorraine Johnson

Lorraine Johnson
Quality Manager

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