



Certified to  
NSF/ANSI/CAN 61

## Cement Mill Test Report

Month of Issue: JANUARY 2021

Plant: **Richmond, British Columbia**  
 Product: **Portland Cement Type IL(15) MS**  
 Mill Test Report #: **R-TIL-21-01**  
 Manufactured: **DECEMBER 2020**

### ASTM C595 - 20 Standard Requirements

CHEMICAL ANALYSIS			PHYSICAL ANALYSIS		
Item	Spec limit	Test Result	Item	Spec limit	Test Result
Rapid Method, X-Ray (C 114)			Air content of mortar (%) (C 185)	12 max	5.3
SiO2 (%)	---	19.4	Blaine Fineness (m2/kg) (C 204)	---	484
Al2O3 (%)	---	4.7	Passing 325 (%) (C 430)	---	98.6
Fe2O3 (%)	---	3.1	Autoclave expansion (%) (C 151)	[-0.2 - 0.8]	0.03
CaO (%)	---	63.0	Compressive strength (Mpa [PSI]) (C 109)		
MgO (%)	---	0.9			
SO3 (%)	3.0 max*	2.8			
Loss on ignition @ 950 (%)	10.0 max	5.1			
NaEq (Alkali) (%)	---	0.52			
Insoluble residue (%)	---	---			
Adjusted Potential Phase Composition***					
C3S (%)	---	45	3 days	13.0 [1890] min	30.7 4450
C2S (%)	---	21	7 days	20.0 [2900] min	36.6 5310
C3A (%)	---	7	28 days (Reflects previous month's data)	25.0 [3620] min	44.9 6510
C4AF (%)	---	9	Time of setting (minutes)		
			Vicat Initial (C 191)	45-420	94
			Mortar Bar Expansion (C 1038)*		
			14 days, % max	0.020 max	0.002
			Cement Density (C186)		3.09

Sulphate Resistance C1012 (Q4/2019) 0.045

\* May exceed 3.0% SO3 maximum based on our C 1038 results of <0.02% expansion at 14 days.

\*\*\* Corrected by using ASTM Calculation for Limestone Cement

Cement meets ASTM C 1157 Type MS

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements of:  
 ASTM C 595-20 & AASHTO M 240-20 STANDARD SPECIFICATIONS FOR TYPE IL(15), TYPE IL(15) MS CEMENT

Cement complies with NSF 61

Western BU - Richmond  
 7611 No 9 Rd Richmond, BC  
 604 244 4300

Questions or enquiries can be directed to Rob Shogren

Rob Shogren, PhD  
 Lafarge - Technical Director  
 5400 W Marginal Way SW, Seattle WA  
 P +1 206 923 9953  
 E Rob.Shogren@lafargeholcim.com

Certified By:

Harold Ptachyk B.Sc., PChem  
 Quality Manager  
 1/4/2021