



Month of Issue: DECEMBER 2022

Plant:	Richmond, British Columbia
Product:	Portland Cement Type I/II
Mill Test Report #	R-TI-22-12
Manufactured:	NOVEMBER 2022

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	6.4		
SiO2 (%)	---	20.3	Blaine Fineness (m2/kg) (C 204)***	260 - 430	414		
Al2O3 (%)	6.0 max	4.9					
Fe2O3 (%)	6.0 max	3.4					
CaO (%)	---	63.9	Passing 45 um (%) (C 430)	72 min	98.0		
MgO (%)	6.0 max	0.7	Autoclave expansion (%) (C 151)	0.80 max	0.05		
SO3 (%)	3.0 max*	3.0					
Loss on ignition (%)	3.5 max	2.7					
Insoluble residue (%)	1.5 max	0.5	Compressive strength (MPa, [PSI]) (C 109)				
CO2 (%)	---	1.7					
Limestone (%)	5.0 max	4.1					
CaCO3 in Limestone (%)	70 min	96					
Adjusted Potential Phase Composition (C 150)							
C3S (%)	---	60	Time of setting (minutes)				
C2S (%)	---	13	Vicat Initial (C 191)	45 - 375	92		
C3A (%)	8 max	7	False Set (%) (C451)	50 min	87		
C4AF (%)	---	10			Heat of Hydration (C186)** - 28 day (Kj/Kg)	399	
C3S+4.75*C3A (%)	100 max	94			Colour (L*)	62.323	
			Mortar Bar Expansion (%) (C 1038)**	0.020 max	0.005		
ASTM C 150 and AASHTO M 85 Optional Chemical Requirements:							
NaEq (Alkali) (%)	0.60 max	0.51					

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

** Current Production run not available - most recent provided. *** Maximum Blaine can be exceeded if $C3S + 4.75 \cdot C3A(\%)$ meets limit

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements of applicable DOT Specifications for Type I and Type II:

ASTM C 150-21 & AASHTO M 85-21 STANDARD SPECIFICATIONS FOR TYPE I AND TYPE II CEMENT;

ASTM C 150-21 & AASHTO M 85-21 OPTIONAL CHEMICAL REQUIREMENTS FOR TYPES I & II LOW ALKALI CEMENT.

Cement complies with NSF 61

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Questions or enquiries can be directed to Rob Shogren

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Certified By:

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12/13/2022