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Cement Mill Certificate of Analysis

Alaska Basic Industries hereby certify that cement represented by this analysis complies with the current requirements for Type I and Type II of ASTM C150-11 specifications, and AASHTO M85-11.

Portland Cement: Type I/II Low Alkali

Date Shipped: September 16, 2017

Meets: ASTM C150-11 AASHTO M85-11

Lot # / Ship: #000091617 MV Shikoku Island

<u>Chemical Composition:</u>	<u>Results:</u>	<u>Type I Requirements</u>	<u>Type II Requirements</u>
Silicon Dioxide (SiO ₂):	20.2%	---	---
Aluminum Oxide (Al ₂ O ₃): %Max	4.5%	---	6.0%
Ferric Oxide (Fe ₂ O ₃): % Max	3.2%	---	6.0%
Calcium Oxide (CaO):	63.1%	---	--
Magnesium Oxide (MgO): % Max	3.2%	6.0%	6.0%
Sulfur Trioxide (SO ₃):	2.7%	3.0%	3.0%
Loss On Ignition % Max:	1.6%	3.0%	3.0%
Insoluble Residue: % Max	0.67%	0.75%	0.75%
Tricalcium Silicate (C ₃ S):	58.8	--	--
Dicalcium Silicate (C ₂ S):	13.4	--	--
Tricalcium Aluminate (C ₃ A): % Max	6.5%	--	--
Tetracalcium Aluminoferrite (C ₄ AF):	9.70%	--	--
Total Alkali as NaEq: % Max	0.56%	0.60%	0.60%
Limestone, 5 % max	1.5%	5.0%	5.0%
CaCO ₃ in Limestone, 70% min	86%	70%	70%

Physical Properties:

Blaine (min m ² /kg.):	388	260	260
Vicat, Initial Set (mins.):	140	--	--
Vicat, Final Set (mins.):	290	45-375	45-375
Autoclave Expansion: % Max	0.03%	0.80%	0.80%
False Set:	97%	--	--
Air Content (% Max by vol.):	5.00%	12.00%	12.00%

Mortar Cube Breaks:

Compressive Strength (PSI):			
1 Day	2034	--	--
3 Days	3954	1740 min	1450 min
7 Days	4775	2760 min	2470 min

Notes

1. Test Results: This mill test represents typical data.
2. The percent of Limestone is slowly being increased, which has no effect on the performance of concrete
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Patrick Walter

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Type I/II

Terminals in
Anchorage • Fairbanks