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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 III Low Alkali**

**Date Shipped: October 16, 2017**

**Meets: ASTM C150-11 AASHTO M85-11**

**Lot # / Ship: #000101617 MV Icy Bay**

<u>Chemical Composition:</u>	<u>Results:</u>	<u>Type III Requirements</u>
Silicon Dioxide (SiO <sub>2</sub> ):	20.4%	---
Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> ): %Max	4.5%	---
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> ):% Max	3.2%	---
Calcium Oxide (CaO):	63.3%	---
Magnesium Oxide (MgO): % Max	3.3%	6.0%
Sulfur Trioxide (SO <sub>3</sub> ):% Max	2.9%	3.5%
Loss On Ignition% Max:	1.0%	3.0%
Insoluble Residue:% Max	0.12%	0.75%
Tricalcium Silicate (C <sub>3</sub> S):	59	--
Dicalcium Silicate (C <sub>2</sub> S):	14	--
Tricalcium Aluminate (C <sub>3</sub> A):% Max	6.6%	15.0%
Tetracalcium Aluminoferrite (C <sub>4</sub> AF):	9.60%	--
Total Alkali as NaEq:% Max	0.57%	0.60%
Limestone, 5 % max	0.8%	5.0%
CaCO <sub>3</sub> in Limestone, 70% min	85%	70%

### Physical Properties:

Blaine (min m <sup>2</sup> /kg.):	538	260
Vicat, Initial Set (mins.) <b>N</b> Min	115	45
Vicat, Final Set (mins.): <b>Max</b>	265	375
Autoclave Expansion:% Max	0.04%	0.80%
False Set:	78%	--
Air Content (% Max by vol.):	3.40%	12.00%

### Mortar Cube Breaks:

Compressive Strength (PSI):		
1 Day _____	3200	1740
3 Days _____	4964	3480
7 Days _____	5988	0

### 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 III

Terminals in  
Anchorage • Fairbanks