



Corporate Office  
1040 O'Malley Road  
Anchorage, Alaska 99515  
Main Office: (907) 349-3333  
WWW.AIKSIAHS.COM

Fairbanks Terminal  
1501 West Street  
Fairbanks, AK 99701  
Phone: (907) 459-4840  
Fax: (907) 459-4841

Anchorage Port Terminal  
1300 Ocean Dock Road  
Anchorage, AK 99501  
Phone: (907) 348-6780  
Fax: (907) 348-6781

Anchorage South Terminal  
11155 Long Street  
Anchorage, AK 99515  
Phone: (907) 267-5150  
Fax: (907) 344-2844

## 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: March 31, 2022

Meets: ASTM C150-11 AASHTO M85-18

Lot # / Ship: #00003222022 MV ISHIZUCHI Star

<u>Chemical Composition:</u>	<u>Results:</u>	<u>Type I Requirements</u>	<u>Type II Requirements</u>
Silicon Dioxide (SiO <sub>2</sub> ):	20.0%	---	---
Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> ): %Max	4.7%	---	6.0%
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> ):% Max	3.2%	---	6.0%
Calcium Oxide (CaO):	62.3%	---	--
Magnesium Oxide (MgO): % Max	4.1%	6.0%	6.0%
Sulfur Trioxide (SO <sub>3</sub> ):% Max	2.9%	3.0%	3.0%
Loss On Ignition% Max:	1.6%	3.5%	3.5%
Insoluble Residue:% Max	0.48%	1.50%	1.50%
Tricalcium Silicate (C <sub>3</sub> S):	56.5	--	--
Dicalcium Silicate (C <sub>2</sub> S):	14.4	--	--
Tricalcium Aluminate (C <sub>3</sub> A):% Max	6.8%	--	8.0%
Tetracalcium Aluminoferrite (C <sub>4</sub> AF):	9.80%	--	--
Total Alkali as NaEq:% Max	0.53%	0.60%	0.60%
Limestone, 5 % max	1.2%	5.0%	5.0%
CaCO <sub>3</sub> in Limestone, 70% min	85%	70%	70%

### Physical Properties:

Blaine (min m <sup>2</sup> /kg.):	392	260	260
Vicat, Initial Set (mins.):	140	--	--
Vicat, Final Set (mins.):	280	45-375	45-375
Autoclave Expansion:% Max	0.02%	0.80%	0.80%
False Set:	77%	--	--
Air Content (% Max by vol.):	6.50%	12.00%	12.00%

### Mortar Cube Breaks:

Compressive Strength (PSI):			
1 Day	1934	--	--
3 Days	3883	1740 min	1450 min
7 Days	5101	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

Quality Assurance & Lab Manager  
Alaska Basic Industries, Cement Division  
Direct: (907) 348-6402

# Type I/II

Terminals in  
Anchorage • Fairbanks