



# Certificate of Test

ASTM C150 Type I/II Low-Alkali  
AASHTO M85 Type I/II Low-Alkali

April 10, 2017  
Lot 60-90

**C150 Chemical Requirements – Table 1**

| Item                           | Spec Limit | Result |
|--------------------------------|------------|--------|
| Al <sub>2</sub> O <sub>3</sub> | N/A        | 4.0    |
| Fe <sub>2</sub> O <sub>3</sub> | N/A        | 3.4    |
| MgO                            | 6.0 Max    | 1.0    |
| SO <sub>3</sub>                | 3.0*       | 3.3    |
| L.O.I.                         | 3.5 Max    | 2.8    |
| Insoluble Residue              | 1.5 Max    | 0.99   |

**C150 Physical Requirements – Table 3**

| Item  | Spec Limit | Result        |
|---|------------|---------------|
| Blaine Specific Surface, m <sup>2</sup> /kg | 260 Min    | 391           |
| Air Content of Mortar, Vol %                | 12 Max     | 7.78          |
| Autoclave Expansion, %                      | 0.80 Max   | 0.01          |
| Vicat Initial Time of Set, minutes          | 45 Min     | 90            |
| Vicat Final Time of Set, minutes            | 375 Max    | 190           |
| Compressive Strength, psi:                  | 3 Days     | 1740 Min 3800 |
|   | 7 Days     | 2760 Min 4770 |

\*Does not apply. In compliance with Footnote D, Table 1, ASTM Standard Specification C150 and AASHTO Standard Specification M85.

## Compound Composition

| Item                              | Spec Limit | Result |
|-----------------------------------|------------|--------|
| C <sub>3</sub> A, %               | 8 Max      | 5      |
| Equivalent Alkalies, %            | 0.60 Max   | 0.59   |
| Inorganic Processing Addt's, %    | 5.0 Max    | 0      |
| CaCO <sub>3</sub> in Limestone, % | 70 Min     | 93.0   |
| Limestone Additions               | 5.0 Max    | 4.8    |
| C1038 Mortar Bar Expansion, %     | 0.020% Max | 0.014  |

This cement has been sampled and tested in accordance with ASTM standard methods and procedures. Cement analysis are reported as oxides, in accordance with ASTM Test Method C114. This cement is manufactured at our Laramie, Wyoming facility. All test results are certified to comply with the type and specification designated. We are not responsible for improper use or workmanship.

Bob Kersey, Chief Chemist



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