



# Certificate of Test

ASTM C150 Type I/II  
AASHTO M85 Type I/II

August 12, 2020  
Lot 183-213

## C150 Chemical Requirements – Table 1

Item	Spec Limit	Result
Al <sub>2</sub> O <sub>3</sub>	N/A	3.9
Fe <sub>2</sub> O <sub>3</sub>	N/A	3.2
MgO	6.0 Max	0.9
SO <sub>3</sub>	2.3*	3.1
L.O.I.	3.5 Max	2.2
Insoluble Res	1.5 Max	0.7

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

## C150 Physical Requirements – Table 3

Item	Spec	Limit	Result
Blaine Specific Surface, m <sup>2</sup> /kg	C204	260 Min	399
Air Content of Mortar, Vol %	C185	12 Max	6.8
Autoclave Expansion, %	C151	0.80 Max	0.01
Vicat Initial Time of Set, min	C191	45 Min	103
Vicat Final Time of Set, min	C191	375 Max	200
Compressive Strength, psi:	C109	3 Days	1740 Min 4010
		7 Days	2760 Min 4840

## Compound Composition

Item	Spec Limit	Result
C <sub>3</sub> A, %	8 Max**	5
Equivalent Alkalies, %	N/A	0.65
Inorg Proc Addt's, %	5.0 Max	0
CaCO <sub>3</sub> in Limestone, %	70 Min	80.0
Limestone Additions	5.0 Max	4.8
C1038 Expansion, %	0.020% Max	0.011

## Additional Data

Limestone		Base Cement Phase Comp	
Amount (%)	4.8	C <sub>3</sub> S (%)	64
SiO <sub>2</sub> (%)	11.1	C <sub>2</sub> S (%)	13
Al <sub>2</sub> O <sub>3</sub> (%)	2.6	C <sub>3</sub> A (%)	5
Fe <sub>2</sub> O <sub>3</sub> (%)	1.6	C <sub>4</sub> AF (%)	10
CaO (%)	44.8		
SO <sub>3</sub> (%)	7.1		

\*\*Does not apply when C452 sulfate resistance limit in Table 4 is used, see below

## ASTM C150 Optional Requirements – Table 4

Item	Spec Limit	Result
C452 Sulfate Resistance, 14 Days, max, % expansion	0.040 max	0.030

This cement has been sampled and tested in accordance with ASTM standard methods and procedures. Cement chemical 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