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**CEMENT  
MILL  
TEST**

**Cement Identified as:** Type I, Type II **Date:** 05/02/22

**Production Period:** March, 2022 **Silos:** 2, 6

STANDARD CHEMICAL REQUIREMENTS (ASTM C114)	SPECIFICATIONS	ASTM C 150		AASHTO	RESULTS
		TYPE I	TYPE II (MH)	M85 Type I	
Silicon Dioxide (SiO <sub>2</sub> ), %		-----	-----	-----	19.5
Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> ), %	Maximum	-----	6.0	-----	4.4
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> ), %	Maximum	-----	6.0	-----	3.2
Calcium Oxide (CaO), %		-----	-----	-----	62.5
Magnesium Oxide (MgO), %	Maximum	6.0	6.0	6.0	4.5
Sulfur Trioxide (SO <sub>3</sub> ), % <sup>A</sup>	Maximum	3.0	3.0	3.0	3.3
Loss on Ignition (LOI), %	Maximum	3.5	3.5	3.5	2.6
Insoluble Residue, %	Maximum	1.50	1.50	1.5	0.64
Alkalies (Na <sub>2</sub> O equivalent), %		-----	-----	-----	0.80
Tricalcium Silicate (C <sub>3</sub> S), Potential %		-----	-----	-----	60
Dicalcium Silicate (C <sub>2</sub> S), Potential %		-----	-----	-----	8
Tricalcium Aluminate (C <sub>3</sub> A), Potential %	Maximum	-----	8	-----	6
Tetracalcium Aluminoferrite (C <sub>4</sub> AF), Potential %		-----	-----	-----	9
C <sub>3</sub> S + 4.75C <sub>3</sub> A	Maximum		100		89
CO <sub>2</sub> , %					1.6
Limestone, %	Maximum	5.0	5.0		3.7
CaCO <sub>3</sub> in Limestone, %	Minimum	70	70		97
<b>PHYSICAL REQUIREMENTS</b>					
(ASTM C204) Blaine Fineness, m <sup>2</sup> /kg	Range	260 Min.	260 - 430	260 Min.	393
(ASTM C191) Time of Setting (Vicat)					
Initial Set, minutes	Minimum	45	45	45	124
Final Set, minutes	Maximum	375	375	375	224
(ASTM C185) Air Content, %	Maximum	12	12	12	7
(ASTM C151) Autoclave Expansion, %	Maximum	0.80	0.80	0.80	0.10
(ASTM C1038) Expansion in Water, %	Maximum	0.02	0.02	0.02	0.008
(ASTM C187) Normal Consistency, %		-----	-----	-----	25.6
Heat of Hydration (ASTM C1702)					
3 day, cal/g	Most Recent Value				82
(ASTM C 109) Compressive Strength, psi (Mpa)					
1 Day		-----	-----	-----	2620 ( 18.1 )
3 Day	Minimum	1740 ( 12.0 )	1450 ( 10.0 )	1740 (12.0)	4188 ( 28.9 )
7 Day	Minimum	2760 ( 19.0 )	2470 ( 17.0 )	2760 (19.0)	5122 ( 35.3 )
28 Day	Minimum	4060 ( 28.0 )	4060 ( 28.0 )	4060 (28.0)	6229 ( 43.0 )

<sup>A</sup> Per ASTM C150 Table 1 footnote D

We hereby certify that this cement conforms to all of the standard requirements for portland cement in the above specification for the type specified.

By: Rusty Strader

Physical Testing completed by: DG, JT  
 Chemical Testing completed by: TA, NC, KL, NM

Rusty Strader  
 Quality Control Manager  
 Fairborn Cement Company

