



Kosmos Cement Company, LLC  
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**CEMENT MILL TEST REPORT**

Source: Kosmos Cement Plant, Louisville, KY

Date of Report: 01/13/2023

Product Type: III portland cement with Eq. Alkali Content <0.60%

Production: December 2022

Standard Chemical Requirements (ASTM C114)	Specifications	ASTM C150 / AASHTO M-85		Test Results
		Type I	Type II	
Silicon Dioxide (SiO <sub>2</sub> ), %		----	---	19.5
Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> ), %	Maximum	----	6	4.7
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> ), %	Maximum	----	6	2.9
Calcium Oxide (CaO), %		----	----	60.3
Magnesium Oxide (MgO), %	Maximum	6.0	6.0	3.8
Sulfur Trioxide (SO <sub>3</sub> ), % **	Maximum	3.0	3.0	3.90 <sup>A</sup>
Loss on Ignition (LOI), %**	Maximum	3.0	3.0	1.5
Insoluble Residue (IR), %	Maximum	1.50	1.50	0.72
Equivalent Alkali Content (Na <sub>2</sub> O+0.658 K <sub>2</sub> O), Reported %				0.50
Tricalcium Silicate (C <sub>3</sub> S), %		----	----	50.6
Dicalcium Silicate (C <sub>2</sub> S), %		----	----	17.8
Tricalcium Aluminate (C <sub>3</sub> A), %	Maximum	----	8	7.5
Sum of C <sub>3</sub> S + 4.75 C <sub>3</sub> A, %**	Maximum	----	100	86 <sup>C</sup>
Limestone content of cement, %	Maximum	5.0	5.0	n/a
CO <sub>2</sub> in finished cement, %				n/a
CaCO <sub>3</sub> content of Limestone, %	Minimum	70	70	n/a

**Standard Physical Requirements**

(ASTM C204) Blaine Fineness, m <sup>2</sup> /kg	Minimum	260	260	624
(ASTM C430) Passing No. 325 Sieve, %		----	----	99.5
(ASTM C191) Time of Setting; Vicat test:				
Initial Set, minutes	Minimum	45	45	90
Final Set, minutes	Maximum	375	375	220
(ASTM C451) False Set, % (Optional)	Minimum	50	50	70
(ASTM C185) Air Content of Mortar, %	Maximum	12	12	8.4
(ASTM C187) Normal Consistency, %		----	----	30.7
(ASTM C109) Compressive Strength:		<b>Mpa</b> <b>(psi)</b>	<b>MPa</b> <b>(psi)</b>	<b>MPa</b> <b>(psi)</b>
1 Day		----	----	32.3    (4686)
3 Days	Minimum	12.0    (1740)	10.0    (1450)	39.2    (5687)
7 Days	Minimum	19.0    (2760)	17.0    (2470)	44.7    (6481)
28 Days (Optional)		----	----	----

<sup>A</sup> Kosmos Type I,II cement has successfully demonstrated by Test Method C1038 that cement with values exceeding the limits in ASTM C150, Table 1 for SO<sub>3</sub> content has not developed expansion exceeding 0.020% at 14 days. Supporting data is available upon request.

<sup>C</sup> In addition to the Table 1 calculation, the three-day test for Heat of Hydration using Calorimetry per C1702 was performed at the required frequency, and is available upon request.

Kosmos Cement Company, LLC hereby certifies that this cement meets or exceeds the chemical and physical specifications of ASTM C150 and AASHTO M-85 for the type identified.

Kosmos Cement Company, LLC is not responsible for the improper use or workmanship that may be associated with the use of this cement.

*Tom Kyser*

Tom Kyser                      Quality  
 Control Manager