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**CEMENT
 MILL
 TEST
 REPORT**

Cement Identified as Type III LA, Low Alkali Portland Cement

Date: 08/04/2021

Plant: Kosmos Cement

Location: Louisville, Kentucky

Kosmos Cement Customers

Sample Receiving and Testing Dates <July 1-31

Production Month: July

STANDARD COMPOSITION REQUIREMENTS (ASTM C114)	ASTM C150 SPECIFICATIONS	TYPE I	TYPE II	TYPE III LA	TEST
Silicon Dioxide (SiO ₂), %		----	----	----	19.4
Aluminum Oxide (Al ₂ O ₃), %	Maximum	----	----	----	4.7
Ferric Oxide (Fe ₂ O ₃), %	Maximum	----	----	----	3.3
Calcium Oxide (CaO), %		----	----	----	61.3
Magnesium Oxide (MgO), %	Maximum	----	----	6.0	3.4
Sulfur Trioxide (SO ₃), %	Maximum	----	----	3.5	3.97 ^A
Loss on Ignition (LOI), %	Maximum	----	----	3.0	2.10
Insoluble Residue, %	Maximum	----	----	1.50	1.18
Alkalies (Na ₂ O equivalent), % (Optional)		----	----	0.60	0.52
Tricalcium Silicate (C ₃ S), %		----	----	----	54.7
Dicalcium Silicate (C ₂ S), %		----	----	----	14.2
Tricalcium Aluminate (C ₃ A), %	Maximum	----	----	15	7.0
(C ₃ S+4.75C ₃ A)	Maximum	----	----	----	88.0
STANDARD PHYSICAL REQUIREMENTS					
(ASTM C204) Blaine Fineness, cm ² /gm	Minimum	----	----	----	"647
(ASTM C430) -325 Mesh, %		----	----	----	99.8
(ASTM C191) Time of Setting (Vicat)					
Initial Set, minutes	Minimum	---	---	45	" 85
Final Set, minutes	Maximum	----	----	375	225
(ASTM C451) False Set, % (Optional)	Minimum	---	----	50	69
(ASTM C185) Air Content, %	Maximum	----	----	12	7.2
(ASTM C151) Autoclave Expansion, %	Maximum	----	----	0.80	0.107
(ASTM C187) Normal Consistency, %		----	----	----	31.7
(ASTM C109) Compressive Strength, psi (MPa)					
1 Day - psi (MPa)	Minimum			1740(12.0)	" 4870
3 Day - psi (MPa)	Minimum	-----	-----	3480(24.0)	7870
7 Day - psi (MPa)	Minimum	-----	-----		6470
28 Day - psi (MPa) (Optional)	Minimum	-----	-----		

• Kosmos Cement hereby certifies that this cement meets or exceeds the chemical and physical specifications of ASTM C150 for TYPE III LA Portland Cement.

In compliance with ASTM C563, since Optimum SO₃ exceeds 3.5%, and the most recent results of ASTM C1038 for expansion in water at 14 days is <0.020%.

Physical testing completed by: EM, DB
 Chemical testing completed by: MA, TG, EO, NJ

By: Tom Kyser
 Quality Control Manager
 Kosmos Cement