



15301 Dixie Highway
 Louisville, KY 40272
 Telephone (502) 933-0122
 FAX (502) 933-6334

**CEMENT
 MILL
 TEST
 REPORT**

Cement Identified as Type I, Type II
Plant: Kosmos Cement
Location: Louisville, Kentucky
Kosmos Cement Customers
Sample Receiving and Testing Dates: October 1-31

Date: 11/17/2020

October

STANDARD COMPOSITION REQUIREMENTS (ASTM C114)	ASTM C150 SPECIFICATIONS	TYPE I	TYPE II	TEST
Silicon Dioxide (SiO ₂), %		---	---	19.9
Aluminum Oxide (Al ₂ O ₃), %	Maximum	---	6.0	4.7
Ferric Oxide (Fe ₂ O ₃), %	Maximum	---	6.0	3.3
Calcium Oxide (CaO), %		---	---	64.1
Magnesium Oxide (MgO), %	Maximum	6.0	6.0	3.9
Sulfur Trioxide (SO ₃), %	Maximum	3.0	3.0	3.5 ^A
Loss on Ignition (LOI), %	Maximum	3.5	3.5	3.0
Insoluble Residue, %	Maximum	1.50	1.50	0.98
Alkalies (Na ₂ O equivalent), %		---	---	0.64
Tricalcium Silicate (C ₃ S),		---	---	62.0
Dicalcium Silicate (C ₂ S), %		---	---	10.2
Tricalcium Aluminate (C ₃ A), %	Maximum	---	8	6.7
(C ₃ S+4.75C ₃ A)	Maximum		100	94
Limestone %	Maximum	5	5	4.5
CO ₂ %				1.9
CaCO ₃ % in Limestone	Minimum	70	70	82
STANDARD PHYSICAL REQUIREMENTS				
(ASTM C204) Blaine Fineness, m ² /kg	Minimum	280	280	407
(ASTM C430) -325 Mesh, %		---	---	96.8
(ASTM C191) Time of Setting (Vicat)				
Initial Set, minutes	Minimum/Maximum	45/375	45/375	118
Final Set, minutes				240
(ASTM C1702) Calorimetry	Maximum	---	---	72 ^B
(ASTM C451) False Set, % (Optional)	Minimum	50	50	79
(ASTM C185) Air Content, %	Maximum	12	12	7.1
(ASTM C185) Air Content, %	Maximum	0.80	0.80	
(ASTM C151) Autoclave Expansion, %		---	---	0.092
(ASTM C187) Normal Consistency, %				26.3
(ASTM C109) Compressive Strength, psi (MPa)				
3 Day - psi (MPa)	Minimum	1740(12.0)	1450(10.0)	4130
7 Day - psi (MPa)	Minimum	2760(19.0)	2470(17.0)	5326
28 Day - psi (MPa) (Optional)				

* Kosmos Cement hereby certifies that this cement meets or exceeds the chemical and physical specifications of ASTM C150 and AASHTO M85 for TYPE I and TYPE II portland cement.

^A In compliance with ASTM C150, since Optimum SO₃ exceeds 3.0%, the most recent results of ASTM C1038 for expansion in water at 14 days is <0.020%.

^B The value for ASTM C1702 is in accord with the required testing frequency.

Tom Kyser

By:
 Tom Kyser
 Quality Control Manager
 Kosmos Cement

Physical testing/sampling completed by: EO, DB
 Chemical testing/sampling completed by: E.O, EW,



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Additional Data Limestone					TEST
Silicon Dioxide (SiO ₂), %					5.6
Aluminum Oxide (Al ₂ O ₃), %					0.80
Ferric Oxide (Fe ₂ O ₃), %					0.40
Calcium Oxide (CaO), %					45.7
Sulfur Trioxide (SO ₃), %					0.15
Base Cement Composition					65
C3S %					10.7
C2S %					7.0
C3A %					10.9
C4AF %					None
Inorganic Processing Data					None

* Kosmos Cement hereby certifies that the above described data represents the materials used in the cement manufactured during the production period indicated

By:
 Tom Kyser
 Quality Control Manager
 Kosmos Cement