



Central Plains Cement Company

Cement Mill Test Report

Month of Issue: October 2018

Plant:	Tulsa, OK
Product:	Portland Cement Type I/II
Silos:	1, 3, 4, 6, 10, 11, 12, 13, 14, 15, 16
Manufactured:	September 2018

ASTM C 150-16 and AASHTO M 85-16 Standard Requirements

CHEMICAL ANALYSIS			PHYSICAL ANALYSIS		
Item	Spec limit	Test Result	Item	Spec limit	Test Result
Rapid Method, X-Ray (C 114)			Air content of mortar (%) (C 185)	12 max	7
SiO ₂ (%)	---	20.1	Blaine Fineness (m ² /kg) (C 204)	260 - 430	413
Al ₂ O ₃ (%)	6.0 max	4.7	-325 (%) (C 430)	---	95.3
Fe ₂ O ₃ (%)	6.0 max	3.4	Autoclave expansion (%) (C 151)	-0.2 min 0.80 max	0.01
CaO (%)	---	62.6	Compressive strength (PSI) (C 109)		
MgO (%)	6.0 max	2.0	1 day	---	1830
SO ₃ (%)	3.0 max *	3.1	3 days	1740 min	3180
Loss on ignition (%)	3.0 max	2.3	7 days	2760 min	3950
Insoluble residue (%)	0.75 max	---	28 days (Reflects previous month's data)	---	5740
CO ₂ (%)	---	1.0	Time of setting (minutes)		
Limestone (%)	5.0 max	2.6	Vicat Initial (C 191)	45 - 375	106
CaCO ₃ in Limestone (%)	70 min	88	Heat of Hydration (KJ/Kg, [cal/g]) (C 186)		
Inorganic Process Addition	5.0 max	---	7 days (for information only)	---	276 (66.0)
Adjusted Potential Phase Composition (C 150)					
C ₃ S (%)	---	54			
C ₂ S (%)	---	16			
C ₃ A (%)	8 max	7			
C ₄ AF (%)	---	10			
C ₃ S+4.75*C ₃ A (%)	100 max	86			

ASTM C 150-16 and AASHTO M 85-16 Optional Chemical Requirements:

NaEq (%)	0.48
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* Cement with SO₃ > 3.0 complies with ASTM C1038-14

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements of ASTM C 150-16 & AASHTO M 85-16 STANDARD SPECIFICATIONS FOR TYPE I AND TYPE II CEMENT.

Certified By:

John Tierney

October 11, 2018

Central Plains Cement Co. LLC - Tulsa Plant
2609 North 145th East Ave
Tulsa, OK 74012
918-437-3902



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Additional ASTM C 150-16 and AASHTO M 85-16 Standard data

Limestone Addition - Additional Data

Item	Test Result
SiO ₂ (%)	6.4
Al ₂ O ₃ (%)	0.9
Fe ₂ O ₃ (%)	0.5
CaO (%)	49.2
SO ₃ (%)	0.2
CO ₂ (%)	38.8

Base Cement Phase Composition

Item	Test Result
C ₃ S (%)	55
C ₂ S (%)	17
C ₃ A (%)	7
C ₄ AF (%)	10

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