



TEXAS LEHIGH CEMENT Co. LP
 P.O. Box 610 Buda, Texas 78610
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Plant: Buda
 701 Cement Plant Road
 Buda, Texas, 78610
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Cement Type: I - II LA
Report Date: 01/11/19
Production Period: Star 12/01/18
 End 12/31/18
Tracking No. TLCEBU 0000020

**MILL TEST REPORT
 AASHTO ACREDITED**

Chemical analysis % - ASTM C-114

Item	Type II LA Spec. Limit	Type I Spec. Limit	Test Results
SiO ₂ %	A	A	20.7
Al ₂ O ₃ %	6.0 max.	A	4.4
Fe ₂ O ₃ %	6.0 max.	A	4.1
MgO (%)	6.0 max.	6.0 Max.	1.1
SO ₃ (%)	3.0 max. ^E	3.0 max. ^E	2.8
Loss on Ignition (%)	3.5 max.	3.5 max.	2.4
Insoluble Residue (%)	1.5 max.	1.5 max.	0.53
CO ₂ (%)	A	A	1.19
Limestone (%)	5.0 max.	5.0 max.	3.0
CaCO ₃ in Limestone (%)	70 min	70 min	80.7
Total Alkali as Na ₂ O (OPTIONAL)	A	A	0.59
	Minimum	Minimum	0.577
	Maximum	Maximum	0.590

Physical Test ASTM C-150

Item		Type II LA Spec. Limit	Type I Spec. Limit	Test Result
Air content of mortar (volume %)	ASTM C-185	12 max	12 max	10
Blaine fineness (m ² /kg)	ASTM C-204	260 min.	260 min.	409
Autoclave expansion (%)	ASTM C-151	0.80 max.	0.80 max.	-0.03
Time of setting - Vicat test (minutes)				
Initial - Not less than or More than	ASTM C - 191	45 - 375	45 - 375	110
Final	ASTM C - 191	A	A	0
Compressive strength				
1 day, Minimum MPa (psi)	ASTM C-109	A - B	A - B	17.1 (2480)
3 day, Minimum MPa (psi)	ASTM C-109	10 (1450)	12 (1740)	27.8 (4030)
7 day, Minimum MPa (psi)	ASTM C -109	17 (2470)	19 (2760)	36.3 (5270)
28 day, Minimum MPa (psi) (OPTIONAL)	ASTM C-109	A - B - D	A - B - D	46.8 (6790)
False Set (OPTIONAL)	ASTM - C451	50 min.	50 min.	70
Mortar Expansion Bars	ASTM C-1038	0.020% Max ^E	0.020% Max ^E	A

Inorganic processing additions & Limestone

Type		Slag	Limestone
% Addition	5% Max	0.0	3.0
SiO ₂ (%)	A	39.88	10.47
Al ₂ O ₃ (%)	A	9.37	2.86
Fe ₂ O ₃ (%)	A	5.05	0.95
CaO (%)	A	28.75	46.90
SO ₃ (%)	A	1.81	1.86

Potential Compounds (%)^C

ASTM C - 150 Annex A1	Finished cement			Base cement	
	Type II LA Spec. Limit	Type I Spec. Limit	Result		Result
C ₃ S	A	A	59	C ₃ S	61
C ₂ S	A	A	15	C ₂ S	16
C ₃ A	8 max	A	4.7	C ₃ A	4.8
C ₄ AF	A	A	13	C ₄ AF	13
C ₃ S + 4.75 x C ₃ A	A	A	81	-----	-----

A Not Applicable
 B Limit not specified by purchaser. Test result provided for information only.
 C Adjusted (ASTM Annex A, point A 1.6)
 D Test Result of prior Month
 E ASTM C-150 Table 1 Note D permits to exceed SO₃ content provided it has been demonstrated to meet what is established under the Test Method ASTM C-1038 at 14 days

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements of the current applicable specifications ASTM C150 and AASHTO M85. Cement analysis are reported as oxides, in accordance with ASTM Test Method C114. Silicon dioxide (SiO₂) is present in the combined state as the compounds tricalcium silicate and dicalcium silicate, and not crystalline silica. The above data represents the average of mill samples from the production stream. Inorganic processing additions have been interground in accordance with ASTM C-465. The average composition of this processing addition can be found listed above. We are not responsible for improper use or workmanship.

QC Manager: V Gonzalez-Torres