LEHIGH
HEIDELBERGCEMENT Group

Mill Test Certificate Report

Type:	I/II and GU ASTM, I/II AASHTO	**Test Period:**	12/12/12
Silo:		**to:**	12/24/12
Grind Number:	Week 51-52 2012		

Certification

This certifies that the described cement, at the time of shipment, meets chemical and physical requirements of the current applicable specification for ASTM C-150, for Type I and Type II as well as AASHTO M-85 for Type I and Type II. This cement also meets the specification for ASTM C-1157 type GU. This cement contains no organic or inorganic additions. We are not responsible for improper use or workmanship.

General Information

Supplier:	Lehigh Cement Company LLC	**Source Location:**	Union Bridge Plant
Address:	675 Quaker Hill Rd.		
	Union Bridge, Md. 21791	**Contact:**	Sales Office
Telephone:	800-462-9071		

Test Data on ASTM "Standard" Requirements

Chemical Requirements (ASTM C-150, Table 1)			
Item	Limit	Results	
SiO_2	-	19.69	
Al_2O_3	6.0 Max	4.62	
Fe_2O_3	6.0 Max	3.31	
CaO	-	61.48	
MgO	6.0 max	3.27	
SO_3	-	3.00	
Equivalent Alkalies	0.6 max	0.44	
Loss on Ignition	3.0 max	2.78	
Insoluble Residue	0.75 max	0.18	
CO_2	A	1.55	
Limestone %	5.0 max	3.66	
$CaCO_3$ in Limestone	70% Min	96.2	
Potential Compounds:		Adjusted	Base
C_3S	-	49.70	51.62
C_2S	-	18.65	19.37
C_3A	8 max	6.58	6.84
C_4AF	-	10.01	10.39

Physical Requirements (ASTM C-150, Table 3)		
Item	Limit	Results
Fineness:		
% Passing 45µm (No. 325)	-	97.69
Blaine Fineness (m^2/Kg)	260 min	364
Autoclave Expansion (%)	0.8 max	0.03
Vicat Setting Time:		
Initial Set (minutes)	45 min	174
Final Set (minutes)	375 max	293
Air Content (%)	12 max	7.5
Compressive Strengths Mpa:		
1-Day	-	14.33
3-Day	12.0 min	27.19
7-Day	19.0 min	33.63
28-Day	-	-

Test Data on ASTM Optional Requirement

Chemical Requirements (ASTM C-150, Table 2)		
Item	Limit	Results
$C_3S+4.75*C_3A$	<100	81.0
Heat of Hydration (10/12)		79.6

Physical Requirements (ASTM C-150, Table 4)		
Item	Limit	Result
False Set	Min 50	76
C-1038	Max 0.020	0.008

January 2, 2013
Date

J. D. Hooke
Quality Control Manager