

October 18, 2019

43rd Street, Inc.
One 43rd Street
Pittsburgh, PA 15201

Lehigh Cement Company, LLC
675 Quaker Hill Road
Union Bridge, MD 21791
Phone: 1-800-638-1716
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www.lehighhanson.com

JOB:
GENERAL CONTRACTOR:
MASONRY CONTRACTOR:
ARCHITECT:

To whom it may concern:

Lehigh Cement Company, LLC certifies that at time of shipment, the portland cement designated as **Type I-II** manufactured at the **Union Bridge, Maryland** plant conforms to the **standard** composition and physical requirements of the current Standard Specification for Portland Cement of ASTM C-150 and AASHTO M85 for **Type I** and **Type II** portland cement.

The designated cement also conforms to the following **optional** requirements of ASTM C -150 and AASHTO M85:

- **Low-Alkali:** 0.60% maximum equivalent alkali content expressed as $\text{Na}_2\text{O} + 0.658\text{K}_2\text{O}$

This certification is limited to the language above and carries no other express or implied warranties or representations. This certification is applicable for the calendar year 2019.

Yours Truly,


Brandon Eckard
Quality Control Manager

CC: Files
Union Bridge Sales Office

LEHIGH

HEIDELBERGCEMENT Group

Mill Test Certificate Report

Type: **I/II ASTM, I/II AASHTO**

Test Period: **08/01/19**
to: **08/31/19**

Grind Number: **August-19**

Certification

Lehigh Cement Company, LLC certifies that at time of shipment, the portland cement designated as Type I – II manufactured at the Union Bridge, Maryland plant conforms to the standard composition and physical requirements of the current Standard Specification for Portland Cement of ASTM C 150 and AASHTO M85 for both Type I and Type II portland cement. This certification carries no other express or implied warranties and Lehigh Cement Company LLC, is not responsible for improper use or workmanship of the described cement.

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: 800-638-1716

Test Data on ASTM "Standard" Requirements

Chemical Requirements (ASTM C-150, Table 1)			Physical Requirements (ASTM C-150, Table 3)		
Item	Limit	Results	Item	Limit	Results
SiO ₂	A	19.56	Fineness:		
Al ₂ O ₃	6.0 Max	4.76	% Passing 45µm (No. 325)	A	97.84
Fe ₂ O ₃	6.0 Max	3.25	Blaine Fineness (m ² /Kg)	260 min	382
CaO	A	63.07			
MgO	6.0 max	2.08	Autoclave Expansion (%)	0.8 max	0.02
SO ₃	D	2.89	Vicat Setting Time:		
Loss on Ignition	3.5 max	3.23	Initial Set (minutes)	45 min	159
Na ₂ O	A	0.06			
K ₂ O	A	0.66	Air Content (%)	12 max	7.9
Insoluble Residue	1.5 max	0.17	Compressive Strengths Mpa:		
CO ₂	A	1.81	1-Day	A	15.38
Limestone %	5.0 max	4.16	3-Day	12.0 min	26.13
CaCO ₃ in Limestone	70% Min	98.7	7-Day	19.0 min	31.61
			28-Day	A	40.21
Potential Compounds:		Adjusted	Compressive Strengths, PSI:		
C ₃ S	A	55.19	1-Day	A	2230
C ₂ S	A	14.40	3-Day	1450 min	3788
C ₃ A	8 max	7.13	7-Day	2470 min	4583
C ₄ AF	A	9.86	28-Day	A	5831
C ₃ S+4.75°C ₃ A	<100	89	Mortar Bar Expansion, C-1038, %	Max 0.020	0.001

Test Data on ASTM Optional Requirement

Chemical Requirements (ASTM C-150, Table 2)			Physical Requirements (ASTM C-150, Table 4)		
Item	Limit	Results	Item	Limit	Result
Equivalent Alkalies		0.49	False Set	Min 50	74
Chlorides, %		0.019	Heat of Hydration, C-1702 at 3-day, cal/g		75.4

Additional Data

Item	Limestone	Inorganic Processing Addition	Base Cement Phase Composition	
			Item	Result
Amount	4.16	N/A	C ₃ S	57.58
SiO ₂	0.24	N/A	C ₂ S	15.03
Al ₂ O ₃	0.03	N/A	C ₃ A	7.44
Fe ₂ O ₃	0.28	N/A	C ₄ AF	10.29
CaO	48.52	N/A		
SO ₃	0.56	N/A		

Notes

Footnotes: A: no limit applicable
 D: if SO₃ exceeds 3.0%, C-1038 shall not be more than 0.020%

September 16, 2019
Date


Quality Control Manager: Brandon Eckard