



FROEHLING & ROBERTSON, INC.

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September 26, 2013

PUMICE LIGHTWEIGHT AGGREGATE CERTIFICATION TEST REPORT

PROJECT NO.: 60R-0206
CONTROL NO.: 60-14-117603
CLIENT: Allied Concrete Products
 3900 Shannon Street
 Chesapeake, Virginia 23324
 Attn: Mr. Peter W. Schmidt
PROJECT: Aggregate Certification- Pumice
STANDARDS: ASTM C330-09, AASHTO M 195-06, and UL 618

SIEVE ANALYSIS (ASTM C136)

SIEVE SIZE (mm)	% PASSING	ASTM C330 SPECIFICATIONS
3/8" (9.5)	100	100
#4 (4.75)	92	85-100
#16 (1.18)	34	40-80
#50 (300μ)	14	10-35
#100 (150μ)	5	5-25

PHYSICAL PROPERTIES

TEST	RESULTS	ASTM C330 SPECIFICATIONS
Specific Gravity: C127	1.62	---
Absorption, %: C127	23.0	---
Organic Impurities, Color: C40	No Change (0)	<3
Clay Lumps, %: C142	0.3	≤2
Loss on Ignition, %: C618	0.1	<5
Popouts: C151	None	None
Dry Loose Unit Wt., lbs./ft ³ (kg/m ³): C29	53.1 (887)	<70 (1,120)
Dry Rodded Unit Wt., lbs./ft ³ (kg/m ³): C29	56.9 (950)	---
Shrinkage @ 28 Days, %: C157	0.04	≤0.07
Stain Test, Index: C641	20 (No Stain)	<60

The above test results meet the requirements of ASTM C330-09, AASHTO M195-04 and UL 618 for fine aggregate with the exception of the amount passing the #16 sieve.



MIX MATERIALS/PROPERTIES

MATERIALS/PROPERTIES	UNIT
Portland Cement, lbs. (kg)	564 (335)
Coarse Aggregate, lbs. (kg)	800 (475)
Fine Aggregate, lbs. (kg)	1,627 (965)
Water, lbs. (kg)	292 (173)
Air Entrainment, oz. (ml)	0.6 (17.7)
Water Reducer, oz. (ml)	22.5 (665.4)
Slump, in (mm)	3-1/2 (89)
Air Content, %	6.1
Plastic Unit Weight, lbs./ft ³ (kg/m ³)	122.1 (71.5)
28 Day Air Dry Unit Weight, lbs./ft ³ (kg/m ³)	118.2 (69.5)

COMPRESSIVE STRENGTH RESULTS (ASTM C39)

CYLINDER	AGE (DAYS)	STRENGTH, psi (Mpa)	AVERAGE
1	7	2,530 (17.4)	2,510 (17.3)
2	7	2,480 (17.1)	
3	7	2,520 (17.4)	
4	28	3,300 (22.8)	3,310 (22.8)
5	28	3,290 (22.7)	
6	28	3,340 (23.0)	

TENSILE SPLITTING STRENGTH RESULTS (ASTM C496)

CYLINDER	AGE (DAYS)	STRENGTH, psi (Mpa)	AVERAGE
7	28	490 (3.38)	500 (3.45)
8	28	500 (3.45)	
9	28	490 (3.38)	
10	28	500 (3.45)	
11	28	510 (3.51)	
12	28	500 (3.45)	
13	28	500 (3.45)	

Should you have any questions about this report or require additional information or testing, please contact us at your earlier convenience.

Respectfully Submitted,
FROEHLING & ROBERTSON, INC.

Robert A. Hill, III, P.E.
 Branch Manager

RAH:jc