



# C.H.J. Incorporated

1355 E. Cooley Drive, Colton, CA 92324 ♦ Phone (909) 824-7210 ♦ Fax (909) 824-7209  
15345 Anacapa Road, Suite D, Victorville, CA 92392 ♦ Phone (760) 243-0506 ♦ Fax (760) 243-1225

January 15, 2010

Utelite Corporation  
72 East 1975 North  
Centerville, Utah 84014  
Attention: Mr. Darren Medeiros

Job No. 09575-5

**Subject:** Testing of Utelite Coarse Lightweight Aggregate

Dear Mr. Medeiros

At your request, C.H.J., Incorporated performed tests on the Utelite Coarse Lightweight Aggregate to verify conformance with ASTM Designation C 330-05 "Standard Specification for Lightweight Aggregates for Structural Concrete". The Utelite Coarse Lightweight Aggregate is a 1/2-inch expanded shale aggregate produced at the Utelite plant in Coalville, Utah. The material tested was sampled at the Utelite material handling facility in Colton, California, by a representative of C.H.J., Incorporated. The results are as follows.

**A. DELETERIOUS SUBSTANCES:**

<b><u>Test</u></b>	<b><u>Test Method</u></b>	<b><u>Test Result</u></b>	<b><u>C 330 Requirement</u></b>
Organic Impurities	C 40	Lighter than Standard	Lighter than Standard
Staining	C 641	Stain Index of 20	Stain Index of Less than 60
Loss on Ignition	C 114	0.57 Percent	Less than 5 Percent



Client: Utelite Corporation  
Material: Coarse Lightweight Aggregate

Page No. 2  
Job No. 09575-5

B. PHYSICAL TESTS:

<u>Test</u>	<u>Test Method</u>	<u>Test Result</u>	<u>C 330 Requirement</u>
Clay Lumps and Friable Particles	C 142	0.1 Percent	Less than 2 Percent
Bulk Density Dry Loose Condition	C 29	55.0 PCF	55 PCF Maximum
Bulk Density Saturated Loose Condition	C 29	64.6 PCF	No Requirement
Specific Gravity	C 127	1.79	No Requirement
Absorption	C 127	14.2 Percent	No Requirement

<u>Grading - Sieve Analysis (Test Method C 136)</u>			
<u>Sieve Size</u>	<u>Percent Passing</u>	<u>Manufacturer's* Limits</u>	<u>C 330 Requirement</u>
3/4" (19 mm)	100	100	100
1/2" (12.5 mm)	93	85-100	90-100
3/8" (9.5 mm)	75	40-80	40-80
No. 4 (4.75 mm)	20	0-20	0-20
No. 8 (2.36 mm)	6	0-10	0-10

\* The manufacturer has established these limits in lieu of ASTM C 330.



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Page No. 3  
 Job No. 09575-5

C. TESTS ON CONCRETE MADE WITH LIGHTWEIGHT AGGREGATE:

Concrete Mixture - Sand/Lightweight Aggregate

<u>Material</u>	<u>Weight (lbs.)</u>	<u>Specific Gravity</u>	<u>Abs. Volume</u>
Cement - Type II	564	3.15	2.87
Water	300	1.00	4.81
Natural Sand	1,235	2.64	7.50
Utelite Coarse	1,140	1.79	10.21
Admixtures:			
Water Reducing (fl. oz.)	19.7		
Air Entraining (fl. oz.)	1.9		
Slump (inches)	4.0		
Air Content (%)	6.0		1.62
Plastic Unit Weight (pcf)	121.2		

<u>Test</u>	<u>Test Method</u>	<u>28-Day Test Result</u>	<u>C 330 Requirement</u>
Compressive Strength	C 39	4,740 PSI 4,520 PSI 4,760 PSI	3000 PSI Minimum
Average		4,670 PSI	
Splitting Tensile	C 496	370 PSI 390 PSI 360 PSI 350 PSI 370 PSI 390 PSI 390 PSI 340 PSI	310 PSI Minimum
Average		370 PSI	



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Page No. 4  
Job No. 09575-5

C. TESTS ON CONCRETE MADE WITH LIGHTWEIGHT AGGREGATE: Cont'd

Concrete Mixture - Sand/Lightweight Aggregate

<u>Test</u>	<u>Test Method</u>	<u>Test Result</u>	<u>C 330 Requirement</u>
Oven Dry Density	C 567-00 (Measured)	106.9 PCF	No Requirement
		107.3 PCF	
		106.9 PCF	
Average		107.0 PCF	
Approximate Equilibrium Density	C 567-00 (Calculated per Section 9.2)	110.0 PCF	110.0 PCF Maximum
Drying Shrinkage	C 330 (Section 8.4)	0.051 Percent	0.070 Percent (Max)
Pop-out Test	C 151	No Pop-outs	No Pop-outs

D. RESISTANCE TO FREEZING AND THAWING TEST:

The resistance to freezing and thawing test was not performed. Utelite Corporation can demonstrate necessary resistance to freezing and thawing performance.

E. CONFORMANCE:

The Utelite Coarse Lightweight Aggregate manufactured by Utelite Corporation at Coalville, Utah, conforms to the requirements of ASTM Designation: C 330-05 "Standard Specification for Lightweight Aggregates for Structural Concrete".



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Page No. 5  
Job No. 09575-5

Thank you for the opportunity to provide materials testing services. If you should have any questions regarding this information, please do not hesitate to contact this firm at your convenience.



Respectfully submitted,

C.H.J., INCORPORATED

*George Battey III*

George Battey III  
Registered Civil Engineer No. 34323  
Registration Expires 9-30-2011

JMD/GB:ndt

Distribution: Utelite Corporation (4)