



June 12, 2017

Mr. Jody Wall  
Carolina Stalite  
P.O. Box 186  
Gold Hill, North Carolina 28071

Phone: (704) 279-8614  
Email: jwall@stalite.com

Subject: **Final Report of ASTM C330**  
**Carolina Stalite ¾ Inch Coarse Lightweight Aggregate**  
**TEC Services Project No: 04-0514**  
**TEC Services Sample ID: 17-094**

Dear Mr. Wall:

Testing, Engineering and Consulting Services, Inc. (TEC Services) is an AASHTO R18, ANSI/ISO/IEC 17025:2005, and Army Corps of Engineers accredited laboratory. TEC Services is pleased to present this final report of our testing on the ¾-inch lightweight aggregate submitted to our laboratory on January 30, 2017. The results of this testing pertain only to the samples tested. The aggregate was tested in accordance with ASTM C330-14 *Standard Specification for Lightweight Aggregates for Structural Concrete* as authorized by the service agreement (TEC-PRO-04-0514) dated March 29, 2005.

This specification covers lightweight aggregates intended for use in structural concrete in which the prime considerations are reducing the density while maintaining the compressive strength of the concrete. The maximum and minimum requirements for this specification are presented in Section 4 *Chemical Composition* and Section 5 *Physical Properties* of ASTM C330 and are reported in Table 1. Based on the results, the ¾-inch lightweight aggregate submitted to our laboratory meets and/or exceeds the requirements of ASTM C330.



Testing, Engineering & Consulting Services, Inc.  
235 Buford Drive | Lawrenceville, GA 30046  
770-995-8000 | 770-995-8550 (F) | [www.tecservices.com](http://www.tecservices.com)



**Table 1: Summary of Test Results**

<b>Section 4 - Chemical Composition</b>	<b>Test Results</b>	<b>ASTM C330 Requirements</b>
Organic Impurities (Color change )	< 1	3 (max)
Staining (Stain index)	20	60 (max)
Loss on Ignition	0.37	5% (max)
<b>Section 5 – Physical Properties</b>		
Clay Lumps and Friable Particles (Dry mass)	0.1 %	2% (max)
Bulk Density (Loose)	46 lb/ft <sup>3</sup>	55 lb/ft <sup>3</sup> (max)
Relative Density (Specific Gravity – Wetted Surface Dry)	1.458	----
72-Hour Absorption	4.6 %	----
Compressive Strength (Requirement based off of Calculated Equilibrium Density)	4,830	2,800 psi (min)
Splitting Tensile (Requirement based off of Calculated Equilibrium Density)	405	306 psi (min)
Drying Shrinkage	-0.017	-0.070 % (max)
Popouts	No Popouts	No Popouts
Grading	See Section 5.1.2 Below	
Resistance to Freezing and Thawing - Average Relative Dynamic Modulus (%)	100	

## Test Results

### Section 4.1.1 Organic Impurities

Requirement – Lightweight aggregate subjected to the test for organic impurities shall not produce darker color than standard.

Result – The lightweight aggregate did not show any color change.

### Section 4.1.2 Staining

Requirement – Lightweight aggregate shall have a stain index of less than sixty.

Result – The lightweight aggregate showed light stain, which indicates an index of 20.

### Section 4.1.3 Loss on Ignition

Requirement – Lightweight aggregate shall have a loss of ignition not more than five percent.

Result – The lightweight aggregate had a loss on ignition of 0.37 percent.

### Section 5.1.1 Clay Lumps and Friable Particles

Requirement – The amount of clay lumps and friable particles shall not exceed two percent by dry mass.

Results – The lightweight aggregate had 0.1 percent clay lumps and friable aggregate.

### **Section 5.1.2 Grading**

The grading shall conform to the requirements in Table 1 of ASTM C330. The Grading and the required grading are reported in Table 2.

**Table 2: Grading & Required Grading**

Sieve Size	% Passing	Required % passing ( $\frac{3}{4}$ " to #4)
1 in (25mm)	100	100
$\frac{3}{4}$ in (19mm)	96.7	90-100
$\frac{1}{2}$ in (12.5mm)	36.9	---
$\frac{3}{8}$ in (9.5mm)	19.3	10 - 50
#4 (4.75mm)	3.3	0-15
#8 (2.36mm)	2.7	---

### **Section 5.1.4 Bulk Density (Loose)**

Requirement – The maximum bulk density (loose) for coarse aggregate is 55 lbs/ft<sup>3</sup>.

Result – The lightweight aggregate had an average bulk density (loose) of 46 lb/ft<sup>3</sup>.

### **Section 5.1.6 Specific Gravity & Absorption**

The density factor was tested in accordance with ASTM C128 - 12 *Standard Test Method for Density, Relative Density (Specific Gravity) & Absorption of Coarse Aggregate*. The sample was dried to a constant mass and soaked for 72 hours. The specific gravity and absorption is reported in Table 3.

**Table 3: Specific Gravity & Absorption**

Absorption after 72 hour Soak (percent)	Relative Density (Specific Gravity) (OD)	Relative Density (Specific Gravity) (SSD)	Apparent Relative Density (Apparent Specific Gravity)	Density Oven Dry (lb/ft <sup>3</sup> )	Density SSD (lb/ft <sup>3</sup> )	Apparent Density (lb/ft <sup>3</sup> )
4.6	1.395	1.458	1.489	86.9	90.8	92.7