

December 5, 2019

Mr. Daniel Furr
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Subject: **Report of ASTM C1260 – Potential of Alkali Reactivity of Aggregate
Carolina Stalite Lightweight Aggregate
TEC Services Project No: 04-0514
TEC Services Sample ID: 19-1578**

Dear Mr. Furr:

SGS/TEC Services (TEC Services) is an AASHTO R18, ANS/ISO/IEC 17025:2005, and Army Corps of Engineers accredited laboratory. TEC Services is pleased to present this report of our testing of potential alkali reactivity on the aggregate sample submitted by Carolina Stalite. Our services were provided in accordance with the terms and conditions of our Service Agreement (TEC-PRO-04-0514) dated March 9, 2005. These test results pertain only to the samples tested.

A sample of lightweight aggregate from Gold Hill, NC was received in November of 2019. The test samples were made on November 13, 2019 and run for 14 days (16 days after casting) in accordance with ASTM C1260 *Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)*.

Mix materials and proportions for the lightweight aggregate mortar bars are presented in Table 1. The gradation of the aggregates used in preparing the length change specimens was in accordance with Table 1 in ASTM C1260. The aggregate grading used in the mortar bars is presented in Table 2. Test results are reported in Table 3. A graphical representation of the results is provided in Figure 1. No significant features of the specimens were observed during or after the test. The Buzzi cement used in the testing had an Autoclave Expansion of 0.01% and the equivalent alkalis were 0.54%.

Table 1 – Mix Proportions

Material	Type	Amount (g)
Cement	Buzzi – Portland Type I	440.0
Fine Aggregate	Carolina Stalite – Gold Hill, NC	636.0
Water	Distilled	206.8

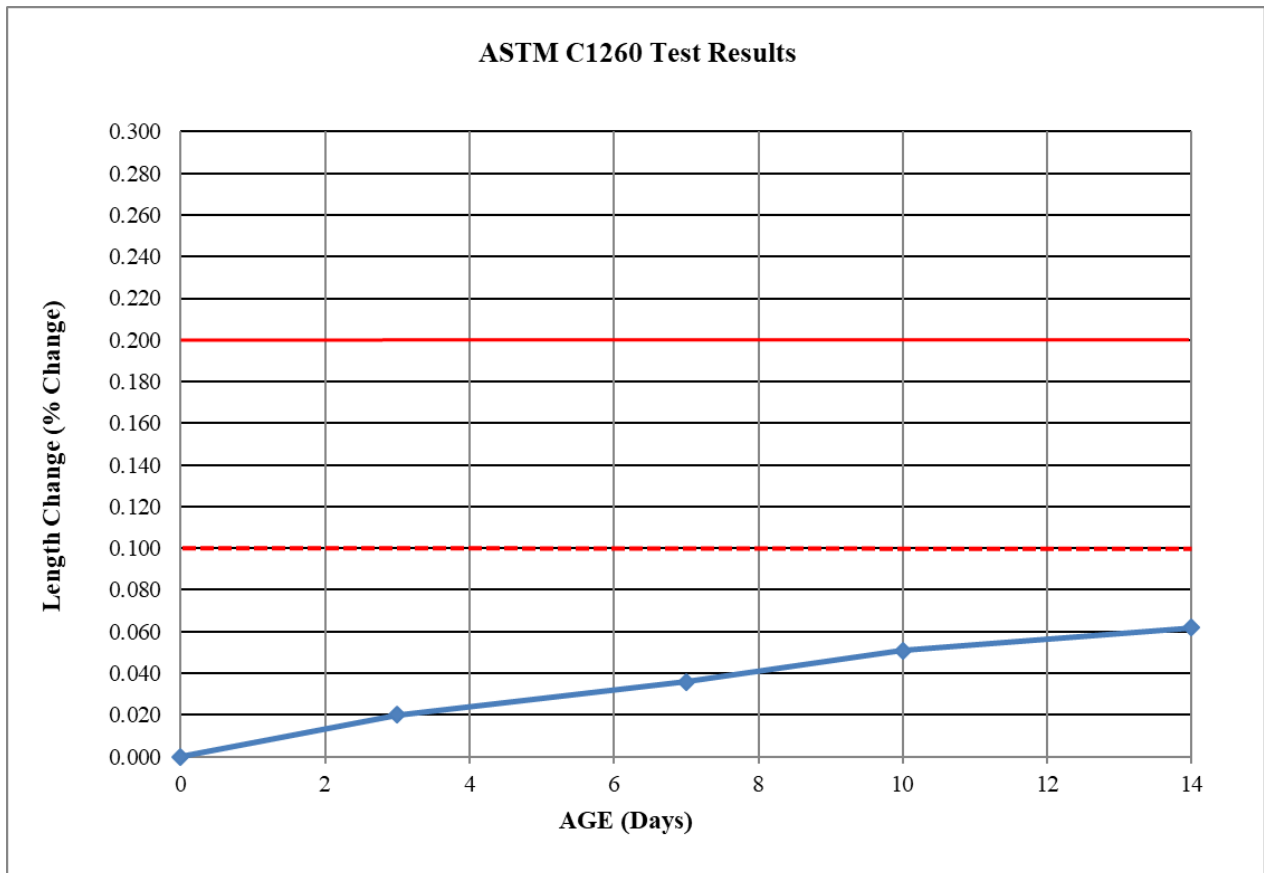
Table 2 –Aggregates Grading Used in Mortar Bars

FINE AGGREGATES GRADING, grams	
Sieve No.	Actual Amount
No. 8	63.6
No. 16	159.0
No. 30	159.0
No. 50	159.0
No. 100	95.4
Sum	636.0

Table 3 – Average length change of three specimens for the aggregate source

Age (days)	% Change			Average % Change
	No. 1	No. 2	No. 3	
0	0.000	0.000	0.000	0.000
3	0.019	0.019	0.021	0.020
7	0.036	0.034	0.037	0.036
10	0.052	0.049	0.053	0.051
14	0.063	0.061	0.063	0.062

Figure 1 – Length change during the 14-day exposure period



According to the appendix in C1260, Expansions of less than 0.10% at 16 days after casting are indicative of innocuous behavior in most cases, expansion between 0.10 and 0.20% at 16 days after casting include both aggregates that are known to be innocuous and deleterious in field performance and expansions of more than 0.20% at 16 days after casting are indicative of potentially deleterious expansion.

We appreciate the opportunity of providing our services to you. If you have any questions pertaining to this report or need any additional information, please do not hesitate to call us.

Sincerely,

SGS TEC Services

Steven Maloof
Laboratory Principal/Sr. Project Manager

Brian Smith
Project Manager