



# Common Findings in Aggregate Testing

On season 4 episodes 34 and 35 we discuss common nonconformities for the below aggregate standards. [LISTEN TO PART 1](#) / [LISTEN TO PART 2](#) or go to [podcast.aashtoresource.org](http://podcast.aashtoresource.org).

These findings are not ranked, nor do all laboratories receive these, but are some of the most common nonconformities seen in laboratories participating in our programs.

## General Aggregate Equipment

### Balance Issues



- Capacity
- Readability
- Accuracy
- Sensitivity

### Shaker Issues



Broken timer: Shaker runs for 10 minutes when it's set for 7 and this discrepancy isn't known or documented.

### Sieve Condition



Damaged sieves are rarely the cause of low proficiency sample ratings and are not often listed as nonconformities on assessment reports.

## AASHTO T 11 / ASTM C117

### Materials Finer than 75- $\mu$ m (No. 200) Sieve in Mineral Aggregates by Washing

The upper sieve in the nest of two sieves used during the washing process was not a sieve having openings in the range of 2.36 mm (No. 8) to 1.18 mm (No. 16) [ASTM: a 1.18-mm (No. 16) sieve]. A protective sieve was not used.

After the material on the sieves was returned to the sample container, the excess water was not decanted through the 75- $\mu$ m (No. 200) sieve to avoid loss of material. The excess water was decanted into the sink.

The washing procedure was not performed by agitating the specimen in a container of water and decanting the wash water over the nest of sieves. The entire specimen was placed onto the sieve nest and washed.

Records were not presented to indicate that test results obtained using the mechanical washing apparatus were consistent with those obtained using manual methods.

## AASHTO T 27 / ASTM C136: Sieve Analysis of Fine and Coarse Aggregates

The mass of the coarse aggregate after sieving differed from the original dry specimen mass by 0.5%.

The total passing 200 did not include the amount lost during the wash.

Sieving sufficiency issues:

- More than 0.5% of the total mass passed during the 1-minute hand sieving check. (AASHTO)
- More than 1% of the mass retained on the sieve passed during the 1-minute hand sieving check. (ASTM)
- Overloading: More than 200 g was retained on a sieve.

Reporting:

- The percentage passing the No. 200 sieve was less than 10% and was reported to the nearest 1%.
- The percentage of material passing the No. 200 sieve was not reported.

# Common Findings in Aggregate Testing

## AASHTO T 84 / ASTM C128: Relative Density (Specific Gravity) and Absorption of Fine Aggregate

- The temperature of the contents in the pycnometer was not adjusted to  $23.0 \pm 1.7^{\circ}\text{C}$  ( $73.4 \pm 3^{\circ}\text{F}$ ) [ASTM:  $23.0 \pm 2.0^{\circ}\text{C}$ ] after the elimination of the air bubbles.
- The temperature of the contents was not determined.

In the procedure used to fill the pycnometer, water was not added before the sample was introduced as specified in Section 9.2.1 of C128.

When the cone test for surface moisture was performed, the material above the top of the conical mold was struck off level with the top of the mold prior to tamping the material. This step is not specified in the test method.

The mass of the saturated surface-dry specimen placed into the pycnometer was not  $500 \pm 10$  g.

The mass of the second portion of the saturated surface-dry sample, used to determine the oven dry mass, was not within 0.2 g of the mass of the specimen placed into the pycnometer.

The pycnometer containing the specimen and water was not agitated for a sufficient period of time to eliminate all air bubbles.

Some disagreements about whether the specimen slumped properly during the test to consider it to be saturated surface-dry condition.

## AASHTO T 85 / ASTM C127: Relative Density (Specific Gravity) and Absorption of Coarse Aggregate

The temperature of the water bath was not  $23.0 \pm 1.7^{\circ}\text{C}$  ( $73.4 \pm 3^{\circ}\text{F}$ ) [ASTM:  $23.0 \pm 2.0^{\circ}\text{C}$  ( $73.4 \pm 3.6^{\circ}\text{F}$ )]. The temperature of the water bath was x.

The mass of the specimen was not first determined in a saturated surface-dry condition and then while immersed in water. The order of these steps in the procedure was reversed.

The water bath was not filled to the level of the overflow outlet in order to maintain a constant water level.

The water bath was sufficiently large enough to immerse the container.

The container was not shaken to eliminate air bubbles.

A large absorbent cloth was not presented to remove visible films of water from the surfaces of the aggregate particles. Several paper towels were used.

For a finding to be resolved, the laboratory must submit evidence that thoroughly addresses all aspects of the nonconformity/finding.

Learn more in [\*How to Resolve AASHTO re:source and CCRL Report Findings\*](#) and [\*Getting to the Root of the Problem: Root Cause Analysis \(RCA\) Explained\*](#)

NOTE: On season 2 episode 31 we discuss common nonconformities for the Standard Method of Test for Specific Gravity and Absorption of Fine Aggregate and how to resolve them. [LISTEN HERE](#)  
Printer Version: [Top Nonconformities AASHTO T84 and ASTM C128](#)