

Standard Method of Test for

Comparison of Water from Sources Other Than a Public Supply for Use in Portland Cement Containing Materials

SCDOT Designation: SC-T-54 (6/09)

1. SCOPE:

This method describes the general procedures for comparing water from sources other than a public source to public source water for use in Portland cement containing materials.

2. REFERENCED DOCUMENTS:

- 2.1 2007 SCDOT STANDARD SPECIFICATION 701.2.11.3
- 2.2 ASTM C 109
- 2.3 ASTM C 151
- 2.4 ASTM C 191
- 2.5 ASTM C 305

3. APPARATUS:

Mechanical Mixer
Cube molds
Vicat Apparatus
Conical rings and glass plates
Autoclave
Autoclave bar molds

4. PROCEDURES:

A. Comparison of Compressive Strength

- a) Prepare a set of 7-day cement cubes using the water from a public water supply according to ASTM C 109.
- b) Prepare a set of 7-day cement cubes made using the sample water according to ASTM C-109.
- c) Break both sets of 7-day cement cubes according to ASTM C-109.
- d) Determine the average strength in psi for each set of cement cubes.
- e) Determine the reduction (or increase) in strength by dividing the average strength of the cement cubes made using public water supply by the average psi of the cement cubes using sample water. Multiply by 100 to convert to a percentage difference.
- f) Report as percent.

B. Comparison of Autoclave Expansion

- a) Prepare an autoclave bar made with water from a public supply according to ASTM C151.
Comparison of Water from Sources Other Than a Public Supply for Use in Portland Cement Containing Materials (cont'd.)
- b) Prepare an autoclave bar made with sample water according to ASTM C151.
- c) Test in autoclave according to ASTM C151.

- d) Determine autoclave expansion according to ASTM C151 on each autoclave bar.
- e) Compare results and determine if there is any indication of unsoundness.
- f) Report any unsoundness found.

C. Comparison of Time of Setting

- a) Prepare a sample of cement paste using the water from a public water supply according to ASTM C191.
- b) Prepare a sample of cement paste using the sample water according to ASTM C191.
- c) Test both samples according to ASTM C191.
- d) Determine the time of set for each sample.
- e) Compare results to determine if the change in the time of set.
- f) Report the change in time of set in minutes.