

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION
Qualified Product Policy for
Corrosion Inhibitors for Concrete

The purpose of this policy is to outline procedures by which corrosion inhibitors will be qualified. Request for qualification along with the results of the required procedures shall be submitted to:

Caleb Gunter, PE
Structural Materials Engineer
SCDOT, Office of Materials and Research
1406 Shop Road
Columbia, SC 29201
(803) 737-6694
guntercb@scdot.org

A producer may request to be included on the qualified product list after providing documentation from an AASHTO accredited laboratory certifying that the following requirements have been met.

1. A confirmation of compliance with AASHTO M194 Type C (ASTM C494 Type C), *Chemical Admixtures for Concrete*, showing that adding the admixture does not adversely affect the structural and mechanical properties of concrete.

Trial mixtures should be done for concrete with the following requirements:

- Two different types of concrete, SCDOT Class 4000 (water to cement ratio 0.4) and SCDOT Class 6500 (water to cement ratio 0.37) should be tested.
- Air content of concrete should be 4.5 % \pm 1.5%.
- Slump should be between 1 and 4 inches.

Key Parameters to be reported are:

- 1.1 *Slump Tests*: Perform test according to AASHTO T119
 - 1.2 *Air Content*: Measure according to AASHTO T152
 - 1.3 *Setting Time*: Measure according to AASHTO T197
 - 1.4 *Compressive Strength*: AASHTO T126 and T22
 - 1.5 *Flexural Strength*: AASHTO T126 and T97
 - 1.6 *Freezing and Thawing Resistance*: AASHTO T126 and T161
 - 1.7 *Maximum Shrinkage*: AASHTO T160
2. A certification stating that the corrosion inhibitor admixture does not contain calcium chloride. Laboratory test reports submitted by the producer of chemical admixtures shall include information on the chloride ion content and alkali content expressed as Na₂O equivalent. The admixture should not have more than 250-ppm chloride content.
 3. A measurement of the chloride permeability using AASHTO T277 both in the presence and absence of corrosion inhibiting admixture. If the admixture has nitrite or silica fume or other ions that could lead to higher Coulomb values while performing T 277, long-term ponding tests should be done as described in AASHTO T259. Trial mixture for the ponding study should be SCDOT Class 4000 (0.4 water to cement ratio) concrete with air content 4.5 % \pm 1.5% and slump between 1 and 4 inches.
 4. An evaluation of the inhibitor's corrosion resistance: the effectiveness of inhibitors to protect steel in the presence of chlorides should be documented for a period of **2 years**. This can be done according to the specifications given in ASTM G109.