

Sample Specification for a Corrosion Inhibitor Admixture

Manufacturer: The corrosion inhibitor admixture shall be either a 30% solids content calcium nitrite based admixture or a _____. The admixture shall be manufactured by a supplier with experience producing and supplying admixtures for concrete.

Product: If a calcium nitrite based admixture is used, it should meet or exceed the physical requirements (Table 1) of ASTM C-494 "Standard Specification for Chemical Admixtures for Concrete" for any Type of admixture.

Criteria to meet from Table 1 include:

Time of setting: between 3½ hours earlier to 3½ hours later than control

Compressive strength: minimum 90% of the control at any time period

Flexural strength: minimum 90% of the control at any time period

Length change, shrinkage: maximum 135% of the control

Relative durability factor: minimum 80

If another type of corrosion inhibitor is used there should be data available from a reputable laboratory proving its efficacy. The company should furnish test reports demonstrating the admixture's effectiveness in controlling corrosion in concrete. The testing could be done in accordance with FHWA/RD-83/012 "Time-to-Corrosion of Reinforcing Steel in Concrete," ASTM G109 "Standard Test Method for Determining the Effects of Chemical Admixtures on the Corrosion of Embedded Steel Reinforcement in Concrete Exposed to Chloride Environments," and/or ASTM G61 "Standard Test Method for Conducting Cyclic Potentiodynamic Polarization Measurements for Localized Corrosion Susceptibility of Iron, Nickel, or Cobalt-Based Alloys."

Compatibility: The corrosion inhibiting admixture shall be compatible with other admixtures in the concrete. A letter of compatibility must be issued from the corrosion inhibiting admixture manufacturer. The corrosion inhibitor should be added separately.

Corrosion Inhibiting Admixture Usage: All concrete in the _____, shall contain the specified corrosion inhibiting admixture. The dosage shall be _____ gallons (2 to 4 gallons in the general usage range) per cubic yard in accordance with a Life-365 analysis of the concrete service life. The data used in the analysis should be from reliable sources and should be included in the report. Concrete shall have a maximum w/cm of 0.40 and air content of 4.5% to 7.5% and a compressive strength of at least 5,000 psi (34 MPa).

Field Operation: The concrete cover for the reinforcing steel should be at least 2 inches (50 mm) as recommended in ACI 318, "Building Code Requirements for Structural Concrete." Concrete should be immediately cured after final finishing in accordance with ACI 308 "Standard Practice for Curing Concrete."