SCOPE
This procedure describes the sampling and testing of Calcium Nitrite Based Corrosion Inhibitor (§711-13) admixture used in the production of various classes of concrete for Department projects.

BACKGROUND
Calcium nitrite is a chemical admixture which, when added to plastic concrete, acts as an anodic inhibitor of corrosion to the reinforcing steel. The admixture is effective in retarding the corrosion reaction at the anode. To be effective, the calcium nitrite must be present in high concentrations. Calcium nitrite is also classified as a non chloride accelerator.

MATERIALS
The corrosion inhibitor shall consist of a calcium nitrite solution as approved by the Director, Materials Bureau, containing 30 ± 2% calcium nitrite solids by mass and having a specific gravity of 1.27 ± 0.02. The corrosion inhibitor, when used in the manufacturing process, shall not produce more than 1000 ppm of chloride ions in the final product. The pH shall be greater than 8.

EQUIPMENT
The inspector must have a 1000 ml graduated cylinder and a specific gravity hydrometer graduated to read true specific gravity of liquids. Accuracy must meet or exceed ASTM E100. The hydrometer must be calibrated according to ASTM E126. Include certification of calibration.

SAMPLING
A sample from each delivery of the calcium nitrite based corrosion inhibitor will be taken by or witnessed by a Department Representative (Inspector). The corrosion inhibitor, which must appear on the Department’s Approved List, must be accompanied by written certification stating that the material supplied meets the requirements of §711-13 of the Standard Specifications. Remove about 100 ml of the corrosion inhibitor from the bypass valve (see §501-2.03 F) before taking a 200 ml sample with the graduated cylinder.

TESTING
Check the specific gravity of the material using the specific gravity hydrometer. Place the hydrometer in the graduated cylinder and allow the instrument to settle. Take the reading at the point where the liquid surface intersects the graduated stem. Do not take the reading at the top of the meniscus.
**ACCEPTANCE**

If the specific gravity is >1.25, the shipment is acceptable for Department work.

If the material is <1.25, take another 200 mL sample for testing by the Main Office Materials Bureau. Tag the storage container. The material will not be allowed in Department work until the percent calcium nitrite is determined. The Materials Bureau will complete the evaluation of the sample within 14 days in accordance with Department written instructions.

If the percent calcium nitrite is 30 % ± 2 %, the material is acceptable for Department work.

**CONTACT**

Direct questions to the Field Engineering 1 Section of the Materials Bureau at (518) 457-5956.