

# ISE Application Note No. I - 07

**Title:** Fluoride content of cement and clinker

**Summary:** Determination of fluoride in cement or clinker by direct potentiometry with the Fluoride ISE

**Sample:** Cement or clinker

**Sample Preparation:** Exactly weigh 250 mg of sample into a Ni crucible. Add 4 g of solid NaOH. Heat up in a muffle furnace to 700 °C (1 h). Allow to cool and extract the digested sample with 100 mL dist. water and 30 mL c(HAc) = 1.5 mol/L. Rinse into a 250 mL volumetric flask with dist. water, fill up to the mark and mix.

**Instruments and Accessories:** 692 pH/Ion Meter, 725 Dosimat, 728 Magnetic Stirrer, 6.0502.150 F ISE, 6.0733.100 Ag/AgCl reference electrode, printer

**Reagents:** **Fluoride standard:**  
100 mg/L F<sup>-</sup> prepared from NaF (0.221 g/L NaF)  
**TISAB:**  
0.5 mol/L trisodium citrate, 0.2 mol/L KNO<sub>3</sub> in dist. water. pH = 5.7 by addition of c(HCl) = 2 mol/L.

**Analysis:** Pipette 1.0 mL of prepared sample solution and 20 mL TISAB into a plastic beaker. Start the automatic determination by four standard additions using a preselected delta U of 20 mV.

**Remarks:** To regenerate the surface, dip the electrode for about 3 min into TISAB after 5 determinations.  
**Result:**  
AVG(5) = 5.32 +/- 0.05 mg/g F<sup>-</sup>