Ti Application Note No. T- 60

Title:	**Aluminium in cement by photometric titration**

***Summary*:**	Determination of aluminium in cement by photometric back-titration of the EDTA excess with zinc sulphate using the 610 nm Spectrode.

Sample:	Cement

Sample Preparation:	Mix approx. 1 g sample with 1.5 g NH_4Cl in an Erlenmeyer flask. Carefully add 8 mL conc. HCl and 0.5 mL HNO_3 1 : 1. Heat up and boil for about 40 min, mixing from time to time. Allow to cool down, add 50 mL hot dist. water to dissolve the soluble salts and filter the mixture through a paper filter into a 500 mL volumetric flask. Rinse the Erlenmeyer flask and the filter with hot dist. water. After cooling down, fill to the mark with dist. water.

Instruments and Accessories:	702, 716, 736, 751 or 785 Titrino, 703 Titration Stand, 6.5501.01X Spectrode 610 nm, Metrodata TiNet 2

Analysis:	Pipette 40 mL of the prepared sample solution into a beaker, then add 10 mL ammonium acetate buffer pH = 4.6 and 10.00 mL c(EDTA) = 0.1 mol/L. Heat up and boil for 2 min. After cooling down, adjust the pH value to 5.5 by adding NH_4OH. Add 40 mL dist. water and 0.35 mL xylenol orange colour indicator (1% in dist. water), then titrate with c($ZnSO_4$) = 0.1 mol/L using the MET mode.

Calculation:	1 mL c(EDTA) = 0.1 mol/L corresponds to 2.6982 mg Al^{3+} mg/g Al^{3+} = (C01 – EPx) * C02 * C03 / (C00 * C04) EPx = titrant consumption in mL EP1: evaluation Titrino EP2: intersection point TiNet C00 = approx. 1 (sample weight in g) C01 = 10.00 [added volume of c(EDTA) = 0.1 mol/L in mL] C02 = 2.6982 C03 = 500 (total volume of sample solution in mL) C04 = 40 (volume of sample solution used for the analysis in mL)

Remarks:	This method can also be used for the determination of aluminium in other solutions. For more information please see Application Bulletin No. 63.

Results:

Date	02.09.1998		Time 14:06:45
User	JS		
Method	Al in cement		
Id1	Al 0.1 mol/L		
SmplSize	6 ml		
Endpoints:			
MET U.EP1		3.714 ml	711 mV
MET U.Intersection1		3.649 ml	846 mV
Results:			
Aluminium1		104.773 mmol/l	
Aluminium2		105.852 mmol/l	