Ti Application Note No. T- 58

Title:	**Sum of calcium and magnesium in cement by photometric titration**

***Summary*:**	Determination of the sum of calcium and magnesium in cement by photometric titration with EDTA 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 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 10 ... 20 mL of the prepared sample solution and 10 mL NH_3/NH_4Cl buffer pH = 10 into a beaker. Add about 80 mL dist. water and 1 mL methylthymol blue sodium salt colour indicator (0.1% in dist. water), then titrate with c(EDTA) = 0.1 mol/L using the MET mode.

Calculation:	1 mL c(EDTA) = 0.1 mol/L corresponds to 4.008 mg Ca^{2+} (2.4305 mg Mg^{2+}) mg/g Ca^{2+} = EPx * C01 * C02 / (C00 * C03) EPx = titrant consumption in mL EP1: evaluation Titrino EP2: intersection point TiNet C00 = approx. 1 (sample weight in g) C01 = 4.008 C02 = 500 (total volume of sample solution in mL) C03 = 10 … 20 (volume of sample solution used for the analysis in mL)

Remarks:	Calcium alone is determined according to Application Note T-57. The magnesium content can then be calculated from the difference between the results of the two titrations.

Results:

Date	27.08.1998		Time 10:52:01
User	JS		
Method	Mg in cement		
Id1	Ca/Mg 0.5:0.5		
SmplSize	4 ml		
Endpoints:			
MET U.EP1		4.397 ml	413 mV
MET U.Intersection1		4.461 ml	538 mV
Results:			
Magnesium1		109.933 mmol/l	
Magnesium2		111.530 mmol/l	