Ω Metrohm

VA Application Note No.   V - 181

Title:	Determination of chromium(VI) in cement

Summary:	The concentration of Cr(VI) in cement is determined in tartrate electrolyte after acid extraction of the sample.

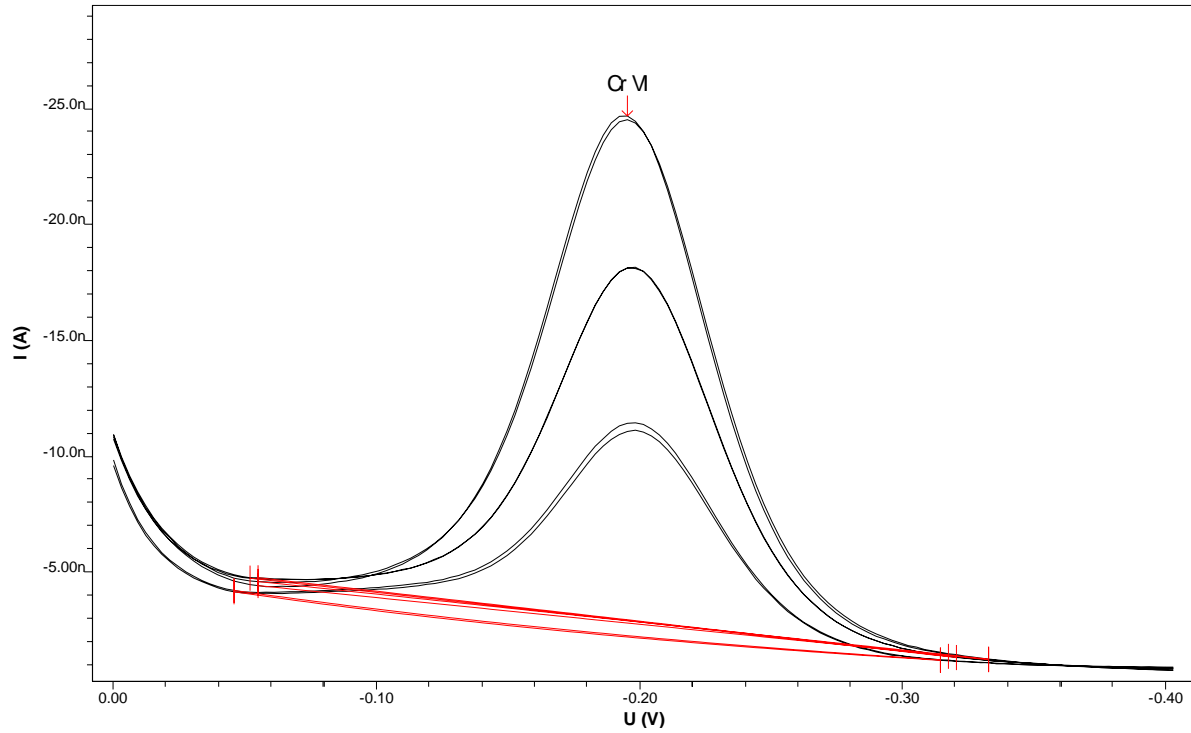|	
Sample:	cement
Sample preparation:	10 g cement sample is weighed into a beaker and elutriated with 50 mL nictric acid (c(HNO_3) = 1 mmol/L, pH = 3). The mixture is stirred for 1 h and then filtrated through a filter paper. The residue in the filter is rinsed twice with nitric acid. The filtrate is transferred into a 100 mL volumetric flask and made up to the mark with ultrapure water.

Analysis of Cr(VI)

Ammonium tartrate solution	c((NH_4)$_2$$C_4H_4O_6$) = 0.1 mol/L pH 9 adjusted with NH_3	
Measuring solution	10 mL ammonium tartrate solution + 2 mL extraction solution	
Working electrode (WE)	**MME** (Multi Mode Electrode)	6.1246.020
Auxiliary electrode (AE)	**Pt**	6.0343.000
Reference electrode (RE)	Reference system: Ag/AgCl/KCl (3 mol/L) Intermediate electrolyte: c(KCl) = 3 mol/L	6.0728.020 6.1245.010

Parameters		
	Working electrode	HMDE
	Stirrer speed	2000 rpm
	Mode	DP
	Purge time	300 s
	Deposition potential	0
	Deposition time	0
	Equilibration time	5 s
	Pulse amplitude	0.05 V
	Start potential	0 V
	End potential	-0.4 V
	Voltage step	0.003 V
	Voltage step time	0.3 s
	Sweep rate	0.01 V/s
	Peak potential Cr(VI)	-0.2 V

Results:	Cr(VI)
	17.9 mg/kg

Determination of Cr(VI)

Cr VI
c =   17.903 mg/kg
+/-   0.296 mg/kg (1.66%)