VA Application Note No. V - 171

Title:	Tellurium(IV) in zinc plant electrolyte

Summary:	The concentration of Te(IV) in Zn plant electrolyte is determined by cathodic stripping voltammetry (CSV) in ammonium sulfate electrolyte containing EDTA and Cu. To get a proper complexation of the interfering Zn a high amount of EDTA at is necessary pH 3.4.

Sample:	Zinc plant electrolyte (concentrated $ZnSO_4$ solution)
Sample preparation:	None

Analysis of Te

Supporting electrolyte	$c((NH_4)_2SO_4)$ = 2.5 mol/L $c(Na_2EDTA)$ = 0.1 mol/L *Na_2EDTA: Ethylenediaminetetraacetic acid disodium salt*	
Cu solution	β(Cu) = 1 g/L	
Measuring solution	10 mL supporting electrolyte + 0.2 mL Cu solution + 50 µL zinc plant electrolyte pH 3.4 adjusted with H_2SO_4	
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	-0.8 V
Deposition time	120 s
Equilibration time	10 s
Pulse amplitude	**0.08 V**
Start potential	-0.9 V
End potential	-1.15 V
Voltage step	0.004 V
Voltage step time	0.1 s
Sweep rate	0.04 V/s
Peak potential Te	-1.0 V

Results:	Te
	27.3 µg/L

Determination of Te