VA Application Note No. V - 175

Title:	**Antimony(III) in zinc plant electrolyte with chloranilic acid as complexing agent**

Summary:	The concentration of of Sb(III) in zinc plant electrolyte is determined by adsorptive stripping voltammetry (AdSV) with chloranilic acid as complexing agent. In this method high copper concentrations do not interfere. A approx. 10-fold excess of lead interferes since it shows a signal close to the antimony. With the parameters given below the working range of this method is 1 – 30 µg/L antimony(III) with respect to the concentration in the measuring vessel

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

Analysis of Sb(III)

CAA solution	c(CAA) = 5 mmol/L *CAA: chloranilic acid*	
Measuring solution	10 mL H_2O + 1 mL zinc plant electrolyte + 0.1 mL CAA solution pH 3.2 ± 0.2 adjusted with HCl	
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	0.1 V
Deposition time	10 s
Equilibration time	10 s
Pulse amplitude	0.05 V
Start potential	-0.2 V
End potential	-0.5 V
Voltage step	0.004 V

	Voltage step time	0.2 s
	Sweep rate	0.02 V/s
	Peak potential Sb	-0.35 V

Results:	Sb(III)
	106 µg/L

Determination of Sb(III)