

VA Application Note No. V - 172

Title:	Cobalt in zinc plant electrolyte with α-furildioxime as complexing agent
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Summary:	The concentration of Co in zinc plant electrolyte (neutral zinc sulfate solution) is determined by adsorptive stripping voltammetry (AdSV) in ammonia buffer with α -furildioxime as complexing agent.
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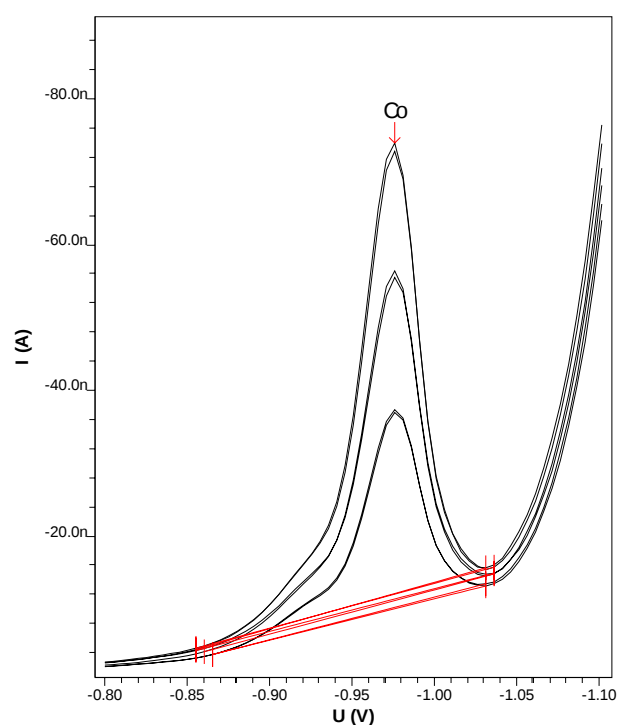
Sample:	Neutral zinc sulfate solution
Sample preparation:	None

Analysis of Co		
Ammonia buffer pH 9.6	c(NH ₄ Cl) = 1 mol/L c(NH ₃) = 2 mol/L	
Nitrite solution	c(NaNO ₂) = 5 mol/L	
α-Furildioxime solution	c(α -furildioxime) = 4 mmol/L	
Measuring solution	5 mL H ₂ O + 5 mL ammonia buffer + 1 mL nitrite solution + 100 μ L α -furildioxime solution + 2 mL zinc sulfate 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)	6.0728.020
	Intermediate electrolyte: c(KCl) = 3 mol/L	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	5 s
	Pulse amplitude	0.05 V
	Start potential	-0.8 V
	End potential	-1.1 V
	Voltage step	0.005 V
	Voltage step time	0.2 s

	Sweep rate	0.025 V/s
	Peak potential Co	-0.98 V

Results:	Co
	1.96 µg/L

Determination of Co



Co
 c = 1.963 µg/L
 +/- 0.031 µg/L (1.57%)

