

VA Application Note No. V - 159

Title: Bismuth in a tin bath

Summary: The concentration of Bi in a Sn bath is determined in a HCl / Urotropin[®] containing electrolyte by anodic stripping voltammetry (ASV). A reaction time of at least 25 min is required before the determination is started. Also the standard addition solution is prepared with HCl and Urotropin[®].

Sample: Acid Sn bath

Sample preparation: None

Analysis of Bi

HCl solution w(HCl) = 30%

Urotropin[®] solution c(Urotropin[®]) = 2 mol/L

Urotropin[®]: Hexamethylenetetramine

Measuring solution
 10 mL H₂O
 + 0.2 mL Sn bath
 + 3 mL HCl solution
 + 3 mL Urotropin[®] solution

Working electrode (WE) **MME** (Multi Mode Electrode) 6.1246.020

Auxiliary electrode (AE) **Pt** 6.0343.000

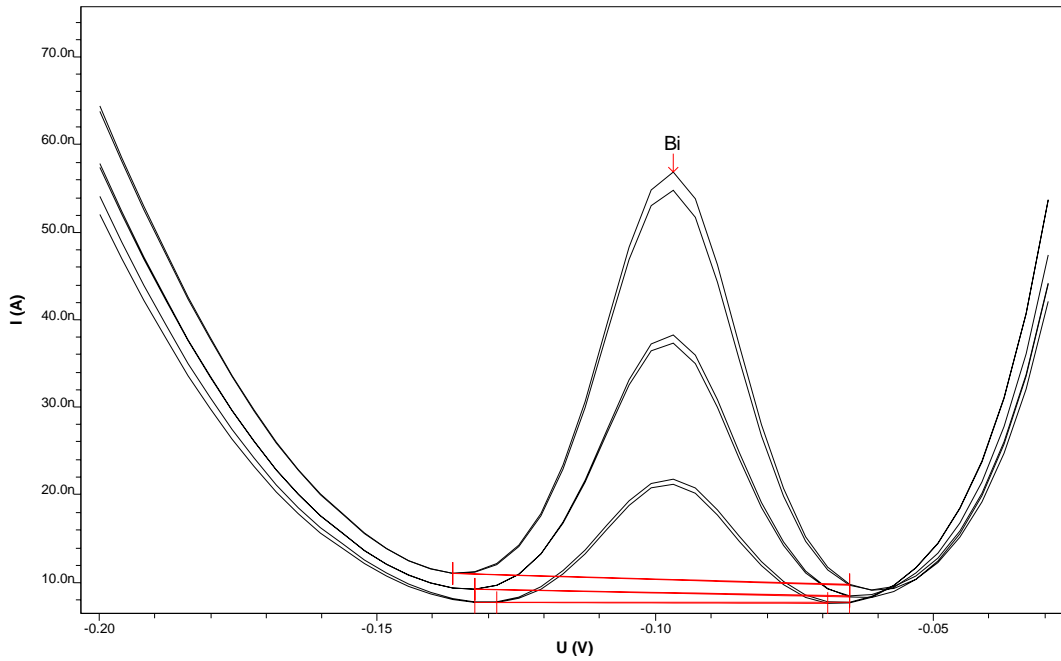
Reference electrode (RE) Reference system: Ag/AgCl/KCl (3 mol/L) 6.0728.020
 Intermediate electrolyte: c(KCl) = 3 mol/L 6.1245.010

Parameters

Working electrode	HMDE
Stirrer speed	2000 rpm
Mode	DP
Purge time	300 s
Deposition potential	-0.2 V
Deposition time	75 s
Equilibration time	10 s
Pulse amplitude	0.05 V
Start potential	-0.2 V
End potential	-0.03 V
Voltage step	0.004 V
Voltage step time	0.3 s
Sweep rate	0.013 V/s
Peak potential Bi	-0.1 V

Results:	Bi
	1.76 mg/L

Determination of Bi



Bi
 c = 1.758 mg/L
 +/- 0.047 mg/L (2.69%)

