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 H_2O + 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) 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	-0.2 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