VA Application Note No. V - 169

Title:	Lead in tin soldering contacts

Summary:	The concentration of Pb in Sn soldering contacts is determined by anodic stripping voltammetry (ASV) in an electrolyte containing citrate, oxalic acid, HCl and cetyl trimethyl ammonium bromide.

Sample:	Sn soldering contact
Sample preparation:	2 mL w(HNO_3) = 65% and 0.1 mL w(HCl) = 30% are added onto a sample of soldering contact (approx. 50 mg). The mixture is heated on a heater to 150°C. When the sample is dissolved completely the solution is cooled down to room temperature and made up to 10 mL with ultrapure water.

Analysis of Pb

Supporting electrolyte pH 2.5	c(sodium citrate) = 0.1 mol/L c(oxalic acid) = 0.1 mol/L c(HCl) = 0.2 mol/L	
CTAB solution	c(CTAB) = 0.005 mol/L *CTAB: cetyl trimethylammonium bromide*	
Measuring solution	5 mL H_2O + 5 mL supporting electrolyte pH 2.5 + 20 µL prepared sample solution + 0.05 mL CTAB 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	-0.48 V
Deposition time	90 s
Equilibration time	20 s
Pulse amplitude	0.05 V
Start potential	-0.53 V

	End potential	-0.25 V
	Voltage step	0.004 V
	Voltage step time	0.2 s
	Sweep rate	0.02 V/s
	Peak potential Pb	-0.4 V

Results:	Pb
	1.4 mg/g

Determination of Pb