

VA Application Note No. V - 187

Title:	Mercury in electronic components as part of electrotechnical products
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Summary:	<p>The EU directive on «Restriction of Hazardous Substances» (RoHS) requires the testing of four regulated heavy metals (Pb, Hg, Cd, Cr(VI)) in electrotechnical products. After sample preparation according to IEC 62321 the determination of mercury in electronic components can be carried out by anodic stripping voltammetry (ASV) at a gold rotating disk electrode (Au-RDE).</p>
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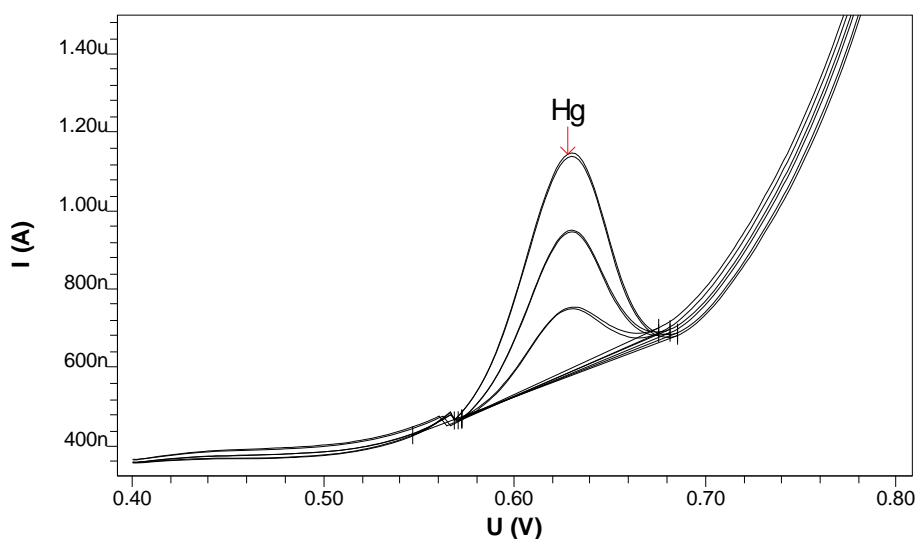
Sample:	Electronic components
Sample preparation:	Approx. 1 g of the ground sample is mineralized by wet digestion with nitric acid as described in IEC 62321.

Analysis of Hg		
Electrolyte	Perchloric acid electrolyte c(HClO ₄) = 0.22 mol/L c(EDTA) = 4 mmol/L c(NaCl) = 6 mmol/L	
Measuring solution	10 mL ultrapure water + 10 mL perchloric acid electrolyte + 0.05 mL digested sample solution 	

Deposition potential	+0.37 V
Deposition time	30 s
Equilibration time	10 s
Pulse amplitude	0.05 V
Start potential	+0.4 V
End potential	+0.8 V
Voltage step	0.002 V
Voltage step time	0.1 s
Sweep rate	0.02 V/s
Peak potential Hg	+0.64 V

Results:	Hg
	991.9 mg/kg

Determination of Hg



Hg
 c = 991.945 mg/kg
 +/- 16.391 mg/kg (1.65%)

