VA Application Note No. V - 115

Title:	Antimony in PET (polyethylene terephthalate)

Summary:	Sb is determined in polyethylene terephthalate (PET) after digestion in sulfuric acid and hydrogen peroxide. The application is carried out with anodic stripping voltammetry (ASV) in hydrochloric acid.

Sample:	PET pellets
Sample preparation:	250 mg sample 2 mL w(H_2SO_4) = 96 % suprapur are put into a flask of the digestion apparatus and heated to 250°C. 1 mL w(H_2O_2) = 30% suprapur is added through a dropping funnel. The mixture reacts intensively. Another 1 mL H_2O_2 is added. After the 2nd addition the mixture was heated to 400° C until SO_3 fumes are formed. After cooling down the solution was filled up to 100 mL.

Analysis of Sb

Electrolyte	w(HCl) = 30 % suprapur	
Measuring solution	5 mL water + 100 µL digestion solution + 5 mL w(HCl) 30%	
Auxiliary electrode (AE)	Pt	
Reference electrode (RE)	Ag/AgCl/KCl (3 mol/L)	
Parameters	Working electrode	HMDE
	Stirrer speed	2000 rpm
	Mode	DP
	Purge time	300 s
	Deposition potential	-300 mV
	Deposition time	30 s
	Equilibration time	5 s
	Pulse amplitude	50 mV

	Start potential	-300 mV
	End potential	-70 mV
	Voltage step	6 mV
	Voltage step time	0.1 s
	Sweep rate	60 mV/s
	Peak potential Sb	-200 mV

Results:	Sb
	158 µg/g

Determination of Sb