Tin

Method: Tropolone in 0.1 M $H_2C_2O_4$ and 0.2 M HCl
Function: Differential Pulse Voltammetry (DPV/a)

Start Potential	(mV)	-300
End Potential	(mV)	-600
Current range		20,48
Scan Speed	(mV/s)	20
Number of cycles		3
Delay before sweep	(s)	5
Purge and stir time	(s)	300
Stirring speed	(rpm)	300
Drop Size	(a.u.)	60

Tin concentrated standard solution (1 g/l)
Dissolve 1.5974 g of anhidrous and pureSnCl$_2$ in 1 l of 6 M HCl, in a volumetric flask.
(MMSnCl$_2$ = 189.6; MMSn = 118.69)

Supporting Electrolyte
A- 1 M $H_2C_2O_4$ and 2 M HCl solution.
B- Dissolve 90 g of $H_2C_2O_4$ (or 126 g of $H_2C_2O_4 \cdot H_2O$) and 167 ml of 37% HCl in 1 l of distilled water. Store in a polythene bottle.
B - 0.1 % (p/v) tropolone (2 idrossi – 2,4,6ciclo epta trien – 1 – one; cat. Fluka 9355) solution.
Dissolve 10 mg of tropolone in 10 ml of distilled water. Prepare the solution at the moment of the analysis. Store tropolone at 4°C.

Procedure
Pour 10 ml of sample in the cell. Add 1 ml of 1 M $H_2C_2O_4$ and 2 M HCl and 1 ml of tropolone solution.

Working standard solution (10 mg/l)
Dilute 1+99 the concentrated standard solution with 6 M HCl. Prepare the solution at the moment of the analysis

Interference
This method is very sensitive. Lead in high concentration of gives a peak far from the tropolone-Sn one.

Warnings

- The sample solution has to contain only Sn^{2+}. Treat the sample in order to obtain total Sn in this form.
- If lead is completely and surely absent, tin can be analysed by using the same method used for lead. The Sn peak shows the same potential.

Analysis of tin in the preserver liquid of the peas in tinplate can

Procedure

Pour 10 ml of liquid in a crucible.
Dry in a oven, at 110°C.
Ash in a muffle furnace, at 600°C. Cool.
If the ashes are grey, add few drops of 1% HNO_3, dry and repeat the treatment in muffle furnace.
Add 20 ml of 0.1 M $H_2C_2O_4$ and 0.2 M HCl and analyse.

Analytical report

Analysis: preserver liquid of the peas in a can
Sample Concentration = 77.0 µg/l
Method: 3 additions

a = 10.55 nA*l/µg   b = 812.4 nA
C_x = 77.0 µg/l   r² = .9996

AMEL 433

Volumes Table

Solvent Volume	0 (ml)
Supporting Sol.	0 (ml)
Sample Volume	10 (ml)
Standard Conc.	10000 (µg/l)

Height Table

#	Peak Pot.	Height
0	-463.5	812.4 nA
1	-462.6	1.324 µA
2	-463.5	1.865 µA
3	-462	2.350 µA

Regression Data

#	Add.Conc.	Height x dilution	
0	0 µg/l	812.4 nA	y = ax + b
1	50.0 "	1.331 µA	a = 10.55 nA*l/µg
2	100 "	1.884 µA	b = 812.4 nA
3	150 "	2.386 µA	r²= .9996