VA Application Note No. V- 32

Title:	**Zinc, cadmium, lead, copper, iron, nickel and cobalt in freeze-dried hop**

***Summary*:**	Determination of Zn, Cd, Pb, Cu, Ni, Co and Fe in freeze-dried hop after a wet digestion.

Sample:	Freeze-dried hop samples
Sample Preparation:	Wet digestion with H_2SO_4 and H_2O_2

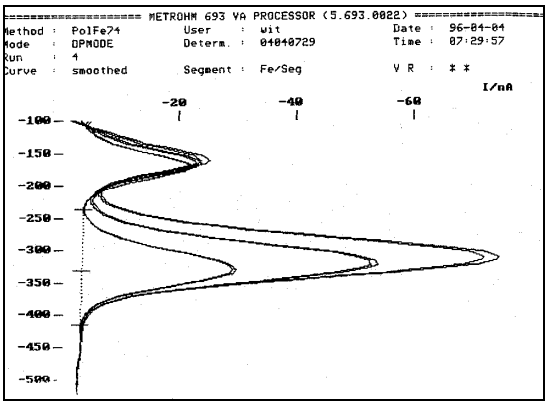
Iron:	
Electrolyte:	Catechol and Pipes buffer pH = 7.0 ± 0.1 with NH_3
AE:	Pt
RE:	Ag/AgCl/KCl 3M
Parameters:	DPCSV (-50 mV), HMDE U_{meas} = -100 mV (20s), U_{start} = -100 mV, U_{end} = -600 mV Ep (Fe) = -310 mV

Nickel and cobalt:	
Electrolyte:	Dimethylglyoxime in ethanol, NH_4Cl buffer
AE:	Pt
RE:	Ag/AgCl/KCl 3M
Parameters:	DPCSV (-50 mV), HMDE U_{meas} = -700 mV (30s), U_{start} = -700 mV, U_{end} = -1200 mV Ep (Ni) = -970 mV, Ep (Co) = -1110 mV

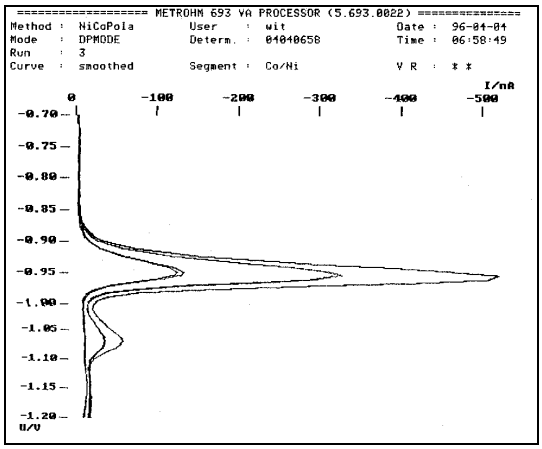
Zinc, cadmium, lead and copper:	
Electrolyte:	NH_4Ac buffer, pH = 4.6
AE:	Pt
RE:	Ag/AgCl/KCl 3M
Parameters:	DPASV (+50 mV), HMDE U_{meas} = -1150 mV (90s), U_{start} = -1150 mV, U_{end} = +200 mV Ep (Zn) = -960 mV, Ep (Cd) = -550 mV, Ep (Pb) = -395 mV, Ep (Cu) = +55 mV

Results:	**Zn** mg/L	**Cd** mg/L	**Pb** mg/L	**Cu** mg/L	**Ni** mg/L	**Co** mg/L	**Fe** mg/L
	27.2	**1.85**	**3.08**	**159.3**	**9.78**	**0.151**	**381.5**

Determination of iron



Determination of nickel and cobalt



Determination of zinc, cadmium, lead and copper