VA Application Note No. V-87

Title:	**Nickel and cobalt in drinking water using adsorptive stripping voltammetry**

Summary:	Nickel and cobalt can be determined in drinking water in one run by adsorptive stripping voltammetry (AdSV). Dimethylglyoxime (DMG) is used as complexing agent at a pH value of 9.3.

Sample:	Drinking water
Sample preparation:	none

Determination of nickel and cobalt

Electrolyte

Ammonia buffer:
c(HCl) = 1 mol/L + c(NH_3) = 3 mol/L

DMG solution:
c(dimethylglyoxime disodium salt) = 0.1 mol/L in water

Measuring solution

10 mL drinking water
+ 0.5 mL ammonia buffer
+ 50 µL DMG solution
→ pH = 9.3

Working electrode (WE) **MME** (Multi-Mode Electrode) 6.1246.020

Auxiliary electrode (AE) **Pt** 6.0343.000

Reference electrode (RE) Ag/AgCl/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	–750 mV
Deposition time	60 s
Equilibration time	5 s
Pulse amplitude	50 mV
Start potential	–850 mV
End potential	–1250 mV
Voltage step	4 mV
Voltage step time	0.3 s
Sweep rate	13.3 mV/s
Peak potential Ni	–960 mV
Peak potential Co	–1150 mV

Results:	Ni	Co
	340 ng/L	210 ng/L

Determination of Ni and Co