

# VA Application Note No. V-87

<b>Title:</b>	<b>Nickel and cobalt in drinking water using adsorptive stripping voltammetry</b>
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<b>Summary:</b>	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.
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<b>Sample:</b>	Drinking water
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<b>Sample preparation:</b>	none
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## Determination of nickel and cobalt

**Electrolyte** Ammonia buffer:  
 $c(\text{HCl}) = 1 \text{ mol/L} + c(\text{NH}_3) = 3 \text{ mol/L}$   
 DMG solution:  
 $c(\text{dimethylglyoxime disodium salt}) = 0.1 \text{ mol/L}$  in water

**Measuring solution** 10 mL drinking water  
 + 0.5 mL ammonia buffer  
 + 50  $\mu\text{L}$  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

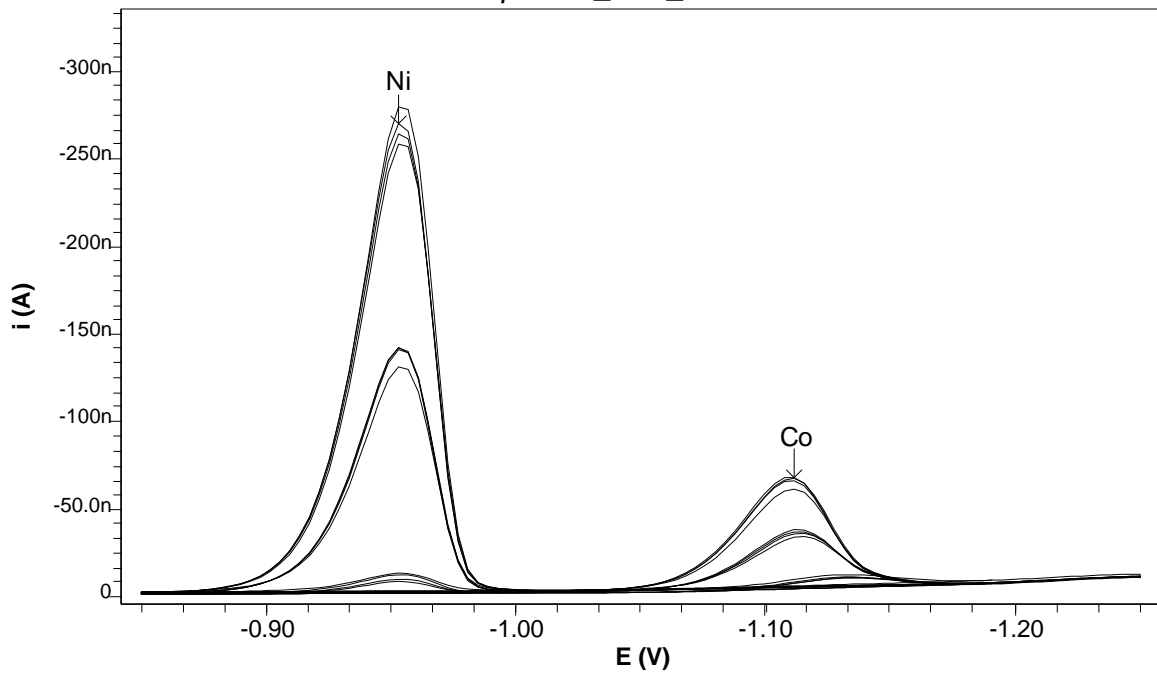
### Parameters

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

<b>Results:</b>	Ni	Co
	340 ng/L	210 ng/L

Determination of Ni and Co

Determination of Ni,Co in tap water  
tap water\_nico\_no5



Ni  
c = 342.187 ng/l  
+/- 76.096 ng/l (22.24%)

Co  
c = 209.614 ng/l  
+/- 14.989 ng/l (7.15%)

