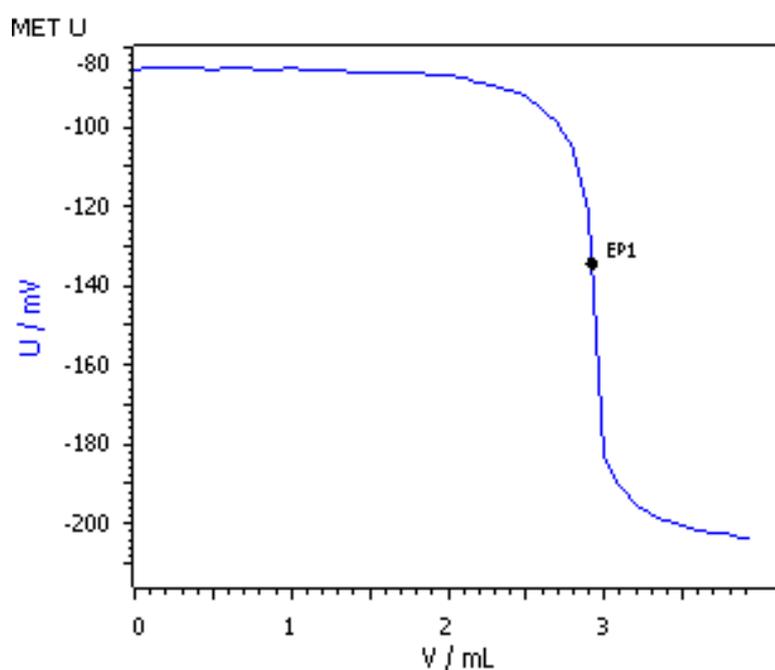


# Automated determination of cobalt in aqueous solution using the Cu ISE



Cobalt can be analyzed using the Cu ISE. A small amount of Cu-EDTA complex thereby acts as indicator as the Cu ISE itself is not sensitive for cobalt.

# Method description

## Sample

Aqueous solution of cobalt

## Sample preparation

Strongly acidic sample solutions (e.g., from acid digestions) are preneutralized to pH = 4–5 with c(NaOH) = 1 mol/L.

## Configuration

907 Titrand	2.907.0010
815 Robotic USB Sample Processor XL	2.815.0020
786 Swing head	2.786.0040
Swing arm	6.1462.070
Titration head	6.1458.010
Sample rack 28 x 200 mL	6.2041.830
800 Dosino, 5 x	2.800.0010
802 Stirrer	2.802.0020
5 mL Dosing unit	6.3032.150
10 mL Dosing unit, 2 x	6.3032.210
50 mL Dosing unit	6.3032.250
Disposable PP sample beakers, 200 mL, 1000 pieces	6.1459.310
Cu ISE	6.0502.140
LL ISE Reference	6.0750.100

## Solutions

Titrand	c(EDTA) = 0.1 mol/L If possible this solution should be bought from a supplier.
Buffer solution pH = 10	54 g NH <sub>4</sub> Cl is weighed into a 1 L volumetric flask and dissolved in deionized water. 350 mL w(NH <sub>3</sub> ) = 25% is added and the mixture made up to 1 L with deionized water.
Cu-EDTA	c(Cu(NH <sub>4</sub> ) <sub>2</sub> EDTA) = 0.1 mol/L If possible this solution should be bought from a supplier.

## Analysis

An appropriate amount of sample solution is pipetted into the titration vessel and diluted with 50 mL deion. H<sub>2</sub>O. 0.5 mL Cu-EDTA and 5 mL buffer solution are added. After a pause of 30 s, the solution is titrated with c(EDTA) = 0.1 mol/L until after the equivalence point.

## Parameters

Mode	MET U
Pause	30 s
Stirring rate	8
Signal drift	50 mV/min
Min. waiting time	5 s
Max. waiting time	26 s
Volume increment	0.1 mL
EP criterion	30 mV
EP recognition	greatest

## Results

Mean results (n = 5)

Co content / (g/L)	2.695
s(rel) / %	0.26

## Comments

The sample size should be chosen in such a way that the titrant volume needed for the titration lies between 10 and 90% of the buret volume.