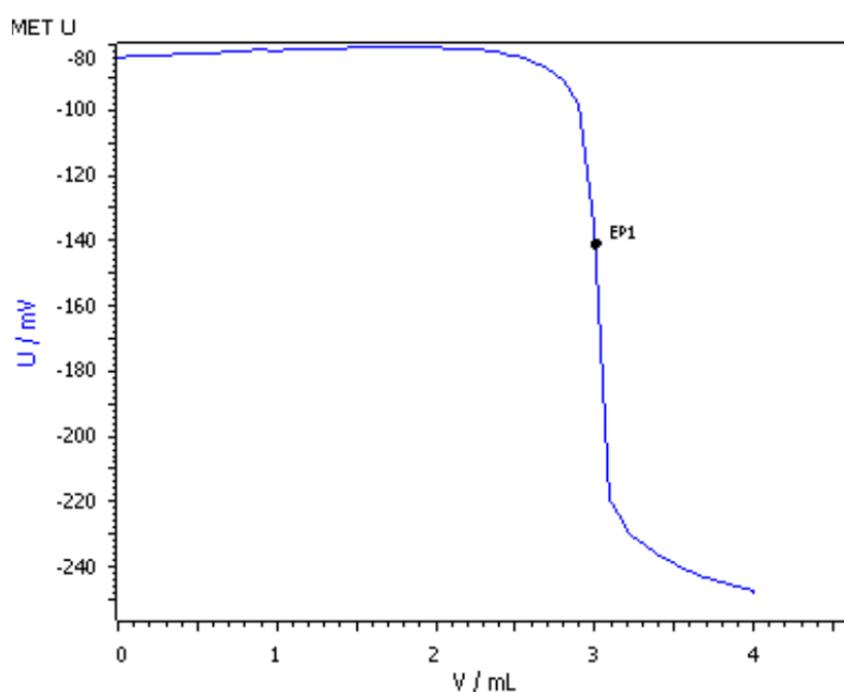


Automated determination of cadmium in aqueous solution using the Cu ISE



Cadmium 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 cadmium.

Method description

Sample

Aqueous solution of cadmium

Sample preparation

Strongly acidic sample solutions (e.g., from acid digestions) are pre-neutralized 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 ₄ Cl is weighed into a 1 L volumetric flask and dissolved in deionized water. 350 mL w(NH ₃) = 25% is added and the mixture made up to 1 L with deionized water.
CuEDTA	c(Cu(NH ₄) ₂ 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. H₂O. 0.5 mL CuEDTA 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)

Cd content / (g/L)	5.288
s(rel) / %	0.21

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.