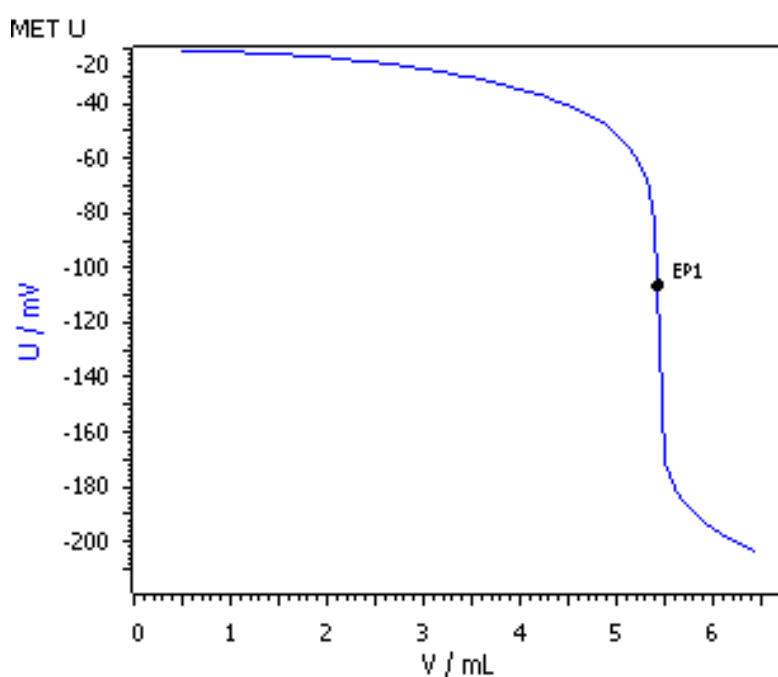


# Automated determination of copper in aqueous solution using the Cu ISE



The automated, complexometric determination of copper using the Cu ISE is described in this Application Note.

# Method description

## Sample

Aqueous solution of copper

## 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 Titrando                                      | 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, 3 x                                   | 2.800.0010 |
| 802 Stirrer                                       | 2.802.0020 |
| 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

|                            |   |
|----------------------------|---|
| Titrant                    | c(EDTA) = 0.1 mol/L<br>If possible this solution should be bought from a supplier.  |
| Buffer solution<br>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. |

## Analysis

An appropriate amount of sample solution is pipetted into the titration vessel and diluted with 50 mL deion. H<sub>2</sub>O. 5 mL buffer solution is added, and 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)

|                    |       |
|--------------------|-------|
| Cu content / (g/L) | 6.462 |
| s(rel) / %         | 0.12  |

## 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.

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