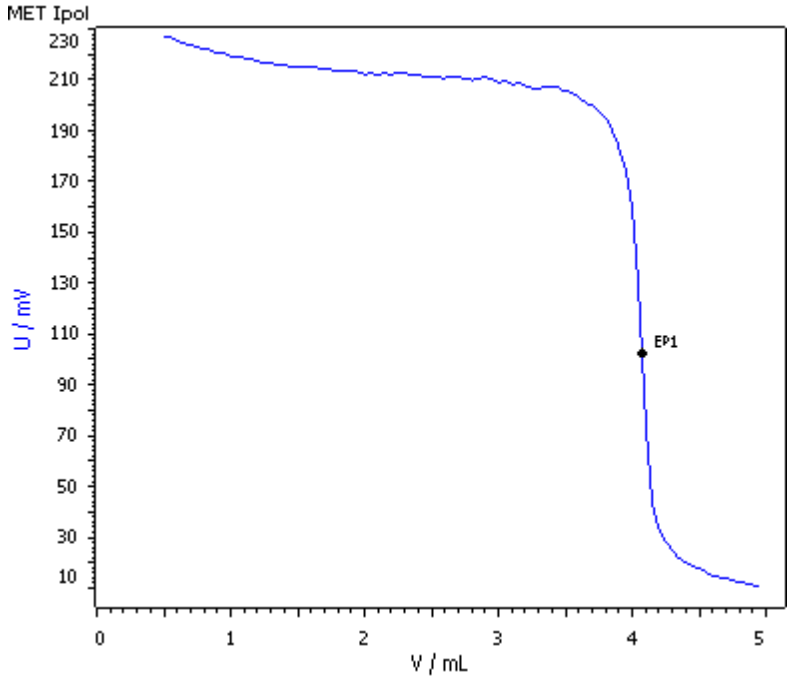
Titration Application Note T-115

# Bivoltametric determination of ascorbic acid in orange juice using 2,6-dichlorophenol-indophenol




This Application Note describes the bivoltametric determination of ascorbic acid in orange juice using 2,6-dichlorophenolindophenol (DPIP) as titrant and the Double Pt-sheet electrode for indication.

Metrohm

# Method description

### Sample

Orange juice

### Sample preparation

No sample preparation is required.

### Configuration

| | |
|---|---|
| 907 Titrando | 2.907.0010 |
| 801 Magnetic Stirrer | 2.801.0040 |
| 800 Dosino (2) | 2.800.0010 |
| 50 mL Dosing unit | 6.3032.250 |
| 20 mL Dosing unit | 6.3032.220 |
| Double Pt sheet electrode | 6.0309.100 |

### Solutions

| | |
|---|---|
| Titrant<br>c(DPIP) = 0.25 g/L | 50 mg DPIP sodium salt dihydrate is dissolved in about 150 mL hot dist. water (50 – 60 °C) containing 42 mg sodium hydrogen carbonate. The solution is transferred into a 200 mL volumetric flask and made up to the mark with dist. $H_2O$.<br>The solution can be stored up to one week in a brown glass bottle in a refrigerator.<br>The titer of this solution has to be determined daily. |
| Oxalic acid solution<br>w($H_2C_2O_4$) = 2% | 28 g oxalic acid dihydrate is weighed into a 1 L volumetric flask and dissolved in dist. $H_2O$. The flask is then filled up to the mark with dist. $H_2O$. |

### Analysis

1 mL sample (0.05–0.5 mg ascorbic acid) is pipetted into a titration beaker. 50 mL oxalic acid solution is added. The solution is then titrated with β(DPIP) = 0.25 g/L until after the equivalence point.

### Parameters

| | |
|---|---|
| Mode | MET Ipol |
| Stirring rate | 4 |
| Start volume | 1 mL |
| Pause | 30 s |
| Vol. increment | 0.05 mL |
| Signal drift | 30 mV/min |
| Max. waiting time | 32 s |
| I(pol) | 1 µA |
| EP criterion | 30 mV |
| EP recognition | greatest |

### Results

Mean result for orange juice (n = 3)

| Ascorbic acid / (mg/L) | s(rel) |
|---|---|
| 372.00 | 0.80% |