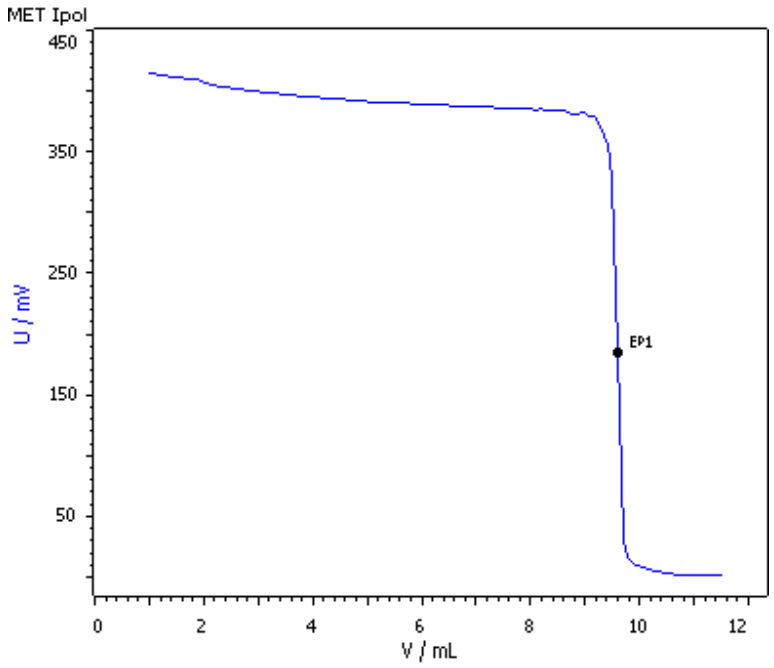
Titration Application Note T-114

Iodometric determination of ascorbic acid in orange juice



This application note describes the iodometric, bivoltametric determination of ascorbic acid in orange juice using the Double Pt-sheet electrode

Metrohm

Method description

Sample

Orange juice

Blood orange juice

Sample preparation

No sample preparation is required.

Configuration

907 Titrando	2.907.0010
801 Magnetic Stirrer	2.801.0040
800 Dosino (3)	2.800.0010
5 mL Dosing unit	6.3032.150
10 mL Dosing unit	6.3032.210
20 mL Dosing unit	6.3032.220
Double Pt-sheet electrode	6.0309.100

Solutions

Titrant	$c(I_2)$ = 0.01 mol/L
Sodium hydroxide	c(NaOH) = 1 mol/L
Sulfuric acid	$w(H_2SO_4)$ = 25%
Glyoxal solution w(glyoxal) = 40%	200 mL w(glyoxal) = 40% is adjusted with c(NaOH) = 1 mol/L to pH = 7.0. The solution is stored away from light in a dark bottle in a refrigerator.

Analysis

50 mL juice (0.05–0.5 mg ascorbic acid) is pipetted into a titration beaker; 2 mL glyoxal solution is added, and the mixture is stirred briefly and allowed to stand for 5 min. After the addition of 5 mL sulfuric acid $w(H_2SO_4)$ = 25%, the sample is titrated with $c(I_2)$ = 0.01 mol/L until after the equivalence point.

Parameters

Mode	MET Ipol
Vol. increment	0.1 mL
Signal drift	50 mV/min
Max. waiting time	26 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)
318.97	0.96%

Mean result for blood orange juice (n = 3)

Ascorbic acid / (mg/L)	s(rel)
470.78	0.79%