

Ti Application Note No. T- 17

Title:	Determination of the ampicillin content
Summary:	Determination of ampicillin in raw and pure products by potentiometric titration with Hg(II) using the combined Au electrode.
Sample:	Ampicillin sodium (M = 371.4 g/mol)
Sample Preparation:	none, see under «Analysis»
Instruments and Accessories:	702, 716 or 736 Titrino or 726 Titroprocessor, 6.0413.100 combined Au electrode
Analysis:	Weigh exactly ca. 50 mg sample into a beaker and dissolve in 10 mL dist. water. While stirring perform the following steps: Add 200 μ L acetic anhydride and, after a pause of 3 min, 10 mL $c(\text{NaOH}) = 1$ mol/L. Having waited for another 5 min add 5 mL $c(\text{HNO}_3) = 2$ mol/L and 20 mL acetate buffer pH = 4.6. Now titrate with $c(\text{Hg}(\text{NO}_3)_2) = 0.02$ mol/L.
Calculation:	$1 \text{ mL } c(\text{Hg}(\text{NO}_3)_2) = 0.02 \text{ mol/L}$ corresponds to 7.428 mg ampicillin Na. $\% \text{ ampicillin Na} = \text{EP1} * \text{C01} / \text{C00}$ $\text{EP1} = \text{titrant consumption in mL}$ $\text{C00} = \text{ca. } 0.05 \text{ (sample weight in g)}$ $\text{C01} = 0.7428$
Remarks:	After about 30 titrations the electrode has to be «cleaned» as follows: First clean it mechanically with wetted polishing powder (e.g. Alox). After rinsing with dist. water immerse the electrode for 5 min in buffer solution pH = 4 containing 0.5 g / 50 mL quinhydrone. (Quinhydrone is an 1 : 1 mixture of hydroquinone and quinone.) Result: $\text{AVG}(12) = 98.78 \pm 0.21 \% \text{ ampicillin Na}$