

ISE Application Note No. I - 4

Title:	Nitrate content of a copper plating bath
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Summary:	Determination of nitrate in a copper plating bath after conversion of nitrate to ammonium. Direct potentiometric measurement using the Ammonium ISE
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Sample:	Copper plating bath
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Sample Preparation:	Pipette 5.0 mL sample into a beaker, add 2 mL H ₂ SO ₄ (conc.) and a spatula of iron powder. Boil for 5 min. Allow to cool, rinse with dist. water into a 100 mL volumetric flask, fill up to the mark and mix. Pipette 15.0 mL of this solution into a second 100 mL volumetric flask, fill up to the mark with dist. water and mix.
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Instruments and Accessories:	692 pH/Ion Meter, 725 Dosimat, 728 Magnetic Stirrer, 6.0506.010 NH ₃ ISE, printer
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Reagents:	Ammonium standard: 1000 mg/L N, prepared from NH ₄ Cl (3.819 g/L NH ₄ Cl) NaOH: c(NaOH) = 10 mol/L H ₂ SO ₄ (conc., high purity), Fe powder (high purity)
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Analysis:	Pipette 20 mL of the prepared sample solution (0.15 mL of the original sample) into the measuring vessel and add 1 mL NaOH. Immediately start the determination by automatic standard addition (3 steps, delta U = 15 mV).
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Remarks:	If the sample contains ammonium it has to be determined and taken into account by a separate analysis.
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Result:	AVG(5) = 6.15 +/- 0.27 g/L NO ₃ ⁻
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