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Ti Application Note No.   T- 69

Title:	**Iron and nickel in binary mixtures**

Summary:	Determination of iron and nickel in binary mixtures by potentiometric titration with EDTA at different pH values using the Cu ISE.

Sample:	Solutions containing Fe^{3+} and Ni^{2+} or dissolved alloys

Sample Preparation:	none

Instruments and Accessories:	702, 716, 736, 751 or 785 Titrino or 726 Titroprocessor, 6.0502.140 Cu ISE, 6.0726.100 Ag/AgCl reference electrode

Analysis:	**a) Determination of nickel:**
	Pipette, e.g., 3.0 mL sample solution into a beaker. Add 20 mL dist. water, 10 mL NH_3/NH_4Cl buffer pH = 10 and 1 mL CuEDTA complex solution (0.05 mol/L). Stir for 25 s, then titrate with c(EDTA) = 0.1 mol/L.
	b) Determination of iron:
	Pipette, e.g., 3.0 mL sample solution into a beaker. Add 20 mL dist. water, 10 mL acetate buffer pH = 4.7 and 10.0 mL c(EDTA) = 0.1 mol/L. Stir for 25 s, then titrate back the EDTA excess with $c(CuSO_4)$ = 0.1 mol/L.

Calculation:	a) 1 mL c(EDTA) = 0.1 mol/L corresponds to 5.869 mg Ni^{2+}
	g/L Ni^{2+} = EP1 * C01 / C00
	EP1 = titrant consumption in mL C00 = 3.0 (sample volume in mL) C01 = 5.869
	b) 1 mL $c(CuSO_4)$ = 0.1 mol/L corresponds to 5.585 mg Fe^{3+}
	g/L Fe^{3+} = (C01 – EP1) * C02 / C00
	EP1 = titrant consumption in mL C00 = 3.0 (sample volume in mL) C01 = 10.0 [added volume of $c(CuSO_4)$ = 0.1 mol/L in mL] C02 = 5.585

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Results:	AVG(4) = 9.02 ± 0.05 g/L Fe^{3+} AVG(4) = 3.41 ± 0.06 g/L Ni^{2+}

Remarks:	In the same way binary mixtures of Fe^{3+}/Co^{2+} can be analysed.