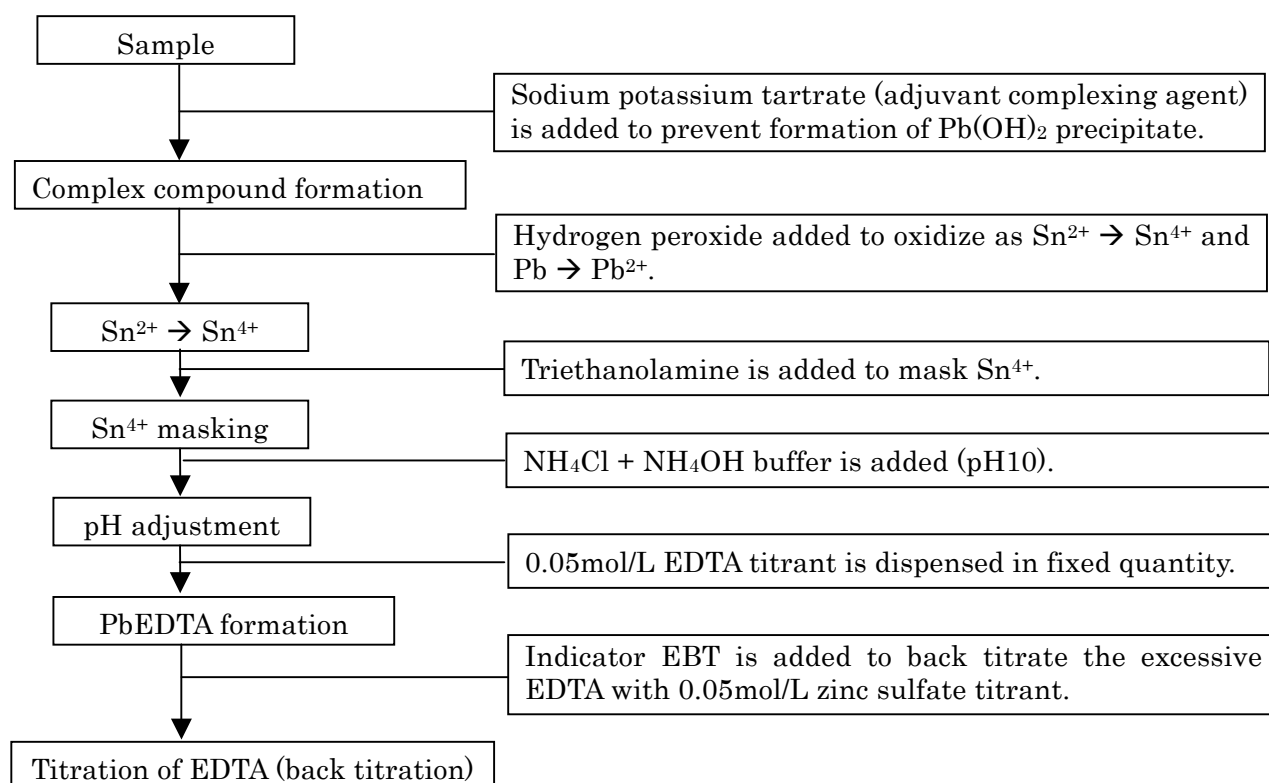


AQUACOUNTER Application Sheet	COM series	DATA No. E6	1st edition
Plating	Quantification of lead in solder plating solution		

## 1. Measurement outline

Control and analysis on solder plating solution for printed wiring boards is an important work that affects the quality of product finishing. This section introduces an example of chelate titration on lead in solder plating solution with EDTA titrant. The following provides the analysis flow:



## 2. Reagents and Electrodes

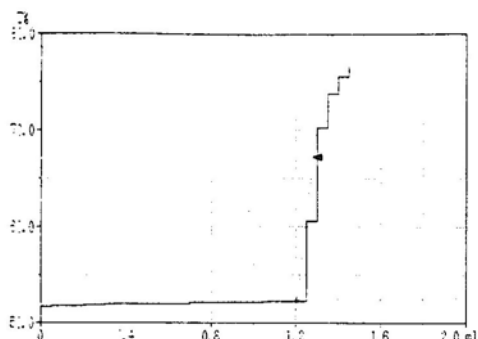
(1) Reagents	Titrant	0.05mol/L $\text{ZnSO}_4$ titrant
	Dispensed solution	0.05mol/L EDTA standard solution
	Loading buffer	2.5mL 1mol/L sodium potassium tartrate solution 1mL approximately 30% oxygenated water 10mL $\text{NH}_4\text{Cl} + \text{NH}_4\text{OH}$ pH10 buffer
	Indicator	0.1mL EBT indicator
(2) Electrodes	Photometric probe with 650nm filter	

### 3. Measurement conditions example (for COM-1600M w/ Photometric unit)

Master File No.1 Condition file: 1	
Method	F Cross
Amp No.	2
Buret No.	1
Meas Unit	mV
S-Timer	0 sec
CP	0 mL
DP	0 mL
End Sens	1000
Over mL	0.50 mL
Max Vol	20 mL
Mode No.	6
Unit	g/L
Blank	Blank result value
Factor	Titer of the titrant
Molarity	0.05
K	207.21
Formula	$(B-D) \times F \times K \times M/S$

Mode No.6	
Pre Int	0 sec
Del K	2
Del Sens	0 mV
Int Time	3 sec
Int Sens	3 mV
Brt Speed	2
Pulse	40

### 4. Measurement example



#### Measurement results on Pb<sup>2+</sup>

Sample No.	Sample volume (mL)	Titration value (mL)	Concentration (g/L)
1	1	1.198	38.96
2	1	1.200	38.95
3	1	1.204	38.95
Avg.			13.95 g/L
Std. Dev.			0.006 g/L
C.V.			0.016 %

### 5. Outline

#### (1) About direct lead titration method

Though this method used back titration method, it is possible to directly titrate with EDTA. However, the reaction speed will be slow when sodium potassium tartrate is used as the adjuvant complexing agent, and titration needs to be conducted by heating it to about 40°C

#### (2) Reagent dispensing

Since this measurement uses back titration, the precision of EDTA addition in fixed quantity affects the measurement precision. For this purpose, favorable results can be obtained by dispensing using the fixed quantity dispensing function (Method: Disp) of Burette B-2000.

### Key words

Plating solution, solder plating solution, lead quantification, chelate titration

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