

Sheet No.

GT200-WA013 Wastes

Chlorine ion (Chloride) in tap water 1/3

Method : Precipitation titration
 Apparatus : Automatic Titrator GT-200
 Electrode: Reference electrode, double junction
 Silver detection electrode
 Reference electrode
 inner solution: 1mol/L Potassium chloride
 Outer solution: 1mol/L potassium nitrate
 Titration mode : INF, Detection: mV
 Related standard : Japanese standard method for the Examination of Water, Mohr method

*This sheet is provided as information. It is not to guarantee the analysis values. Please use under the ideal conditions considering external factors including the analysis environment and properties of the sample.

Outline

Chlorine ion (Chloride) contaminate into the tap water by various reasons. When the tap water contain high amount of the ion, it cause worse taste of the water. Concentration of Chlorine ion is measured by precipitation titration with silver detection electrode.

Reagents

[Titrant]

■0.01 mol/L silver nitrate solution (for volumetric analysis)

[Reagents]

■0.01 mol/L sodium chloride solution: Take 0.5844g of sodium chloride (standard reagent) that is dried in a muffle furnace, 550degC for one hour, into 1L measuring flask. Melt and dilute it in the flask to 1L total by pure water.

Analytical Procedure

[Blank test]

- (1) Take 100ml of pure water into a 200ml beaker by a measuring cylinder.
- (2) Add 5.0mL of 0.01mol/L Sodium Chloride Solution into the beaker by a transfer pipette.
- (3) Titrate by 0.01mol/L Silver Nitrate Titrant.

[Sample measurement]

- (1) Take 100ml of tap water into a 200ml beaker by a measuring cylinder.
- (2) Titrate by 0.01mol/L Silver Nitrate Titrant.

[Equation]

$$\text{Chlorine ion (Cl mg / L)} = (A1 - (BL - 5 / f)) \times f \times 1000 / 100 \times 0.3545$$

A1 : Consumption of 0.01mol/L Silver Nitrate Titrant (mL) of the sample measurement

BL : Consumption of 0.01mol/L Silver Nitrate Titrant (mL) of the blank test (4.9759)

f : Factor of 0.01mol/L Silver Nitrate Titrant (1.000)

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Other Requirements

- Tap water temperature must be the room temperature before measurement.
- Change the inner solution and outer solution of the Reference Electrode before measurement.
- Polish the silver part of the Detection Electrode before measurement.
- Handle measurement reagents with care after reading through and understanding their labels and safety data sheets.
- Wear personal protective equipment such as protective goggles and gloves when handling the reagents.

Measurement Results

	Sample size (mL)	Titration Volume (mL)	Results (mg/L)
1	100	2.5914	9.3
2		2.5896	9.3
3		2.5885	9.3

Number of data (n) 3
 Average 9.3
 Standard deviation (SD) 0.0052
 Relative standard deviation (RSD%) 0.0560

Blank value 4.9759ml

Chlorine ion in tap water is measured by GT-200. Average of the three measurement is 9.3mg/L. The value is enough repeatable on 0.06% of relative standard deviation, RSD%.

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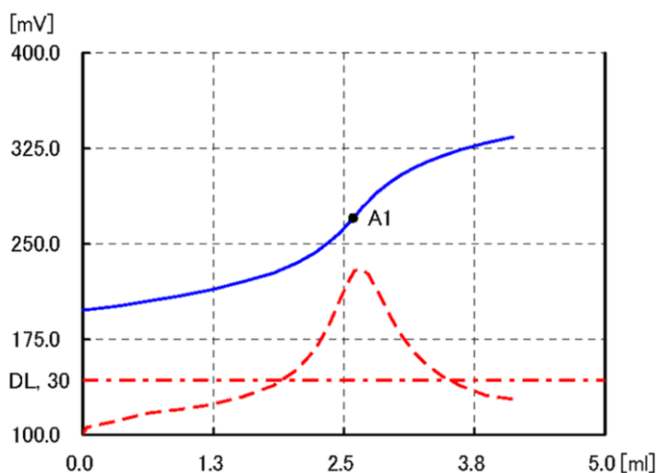
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ID No. : 8 GT No.1

User : GT-200

Measurement date : 2013/03/07 15:23
 Sample name : Tap water

Measurement type : Sample Titr
 Sample size (S) : 100 [ml]



C1 : 9.26 [mg/L]

A1 : 2.5885 [ml] 270 [mV]

Pi : 198 [mV]
 Start : 0 [ml] 198 [mV]
 End : 4.122 [ml] 334 [mV] Time : 2' 2"

Run File No. : 0 Quick Mode

Titration File No. : 25 Examination of water (Chlorine ion)

Mode : INF End1 End1 Width : 350 [mV] ± 500 [mV]

Detect : mV1

BRT No. : 1

Reagent : 21

WTint : 0 [sec]

Vup : 300 [μl]

Vlow : 10 [μl]

dE : 2 [mV]

dT : 3 [sec]

DL : 30 [mV/ml]

DetCnt : 6

C1 : (A1-(BL-5/f))*f*1000/100*0.3545

Vmax : 10 [ml]

Vover : 1 [ml] [mg/L]

Reag : AgNO3

E : 1

Molarity(M)

: 0.01 [Mol/l]

f : 1.000

BL : 4.9759 [ml]

Buret Injection Speed : 500 [ul/sec]