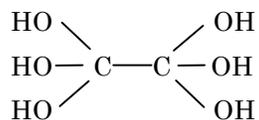


AQUACOUNTER Application Sheet	COM series	DATA No. K5	1st edition
Organic Acid		Quantification of oxalic acid	

1. Measurement outline

Oxalic acid is an acid that has 2 carboxyl groups in the molecule, and it is also called a dicarboxylic acid. It is an ortho acid with 2 molecules of crystal water and the structure below.

It is an acid stronger than formic acid and is easily oxidized.



Oxalic acid is used as a raw material in organic synthesis chemistry, and the sodium salt of oxalic acid is used as a standard substance for capacity analysis since it reacts quantitatively with oxidants such as potassium permanganate while storage is possible with stability. The method for quantifying oxalic acid is stipulated in JIS K 8519, and it is titrated and quantified with potassium permanganate under acidic conditions with sulfuric acid.

This section introduces an example in which oxalic acid dihydrate was measured by neutralization titration with sodium hydroxide titrant.

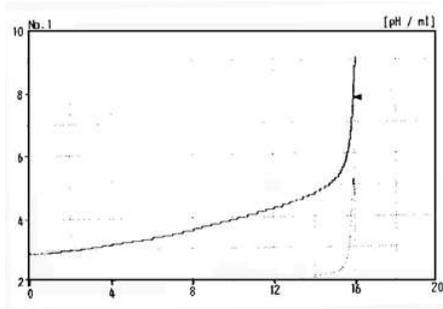
2. Reagents and Electrodes

(1) Reagents	Titrant	0.01mol/L sodium hydroxide titrant
(2) Electrodes *standard accessories	Indicator electrode	*Glass electrode GE-101B to IE jack
	Reference electrode	*Reference electrode RE-201 to RE jack

3. Measurement conditions example (for COM-1600S)

(1) Method	Auto
(2) End Sens	500
(3) Mode	4
Pre Int	0
Del K	9
Del Sens	0
Int Time	3
Int Sens	3
Brt Speed	2
Pulse	40

4. Measurement example



Measurement results on oxalic acid aqueous solution

Sample No.	Sample volume (mL)	Titration value (mL)	Concentration (g/L)
1	10	13.976	0.8863
2	10	13.949	0.8845
3	10	13.861	0.8790
Avg.			0.8822 g/L
Std. Dev.			0.0038 g/L
C.V.			0.043 %

5. Outline

In this section, measurement was taken using neutralization titration instead of the oxidation-reduction titration method in JIS method. While the validity of measurement was evaluated using special grade reagent, it was nearly identical to the theoretical value. In JIS method, the reaction between oxalic acid and permanganic acid is slow and the titration temperature needs to be kept at about 70°C. On the other hand, this method (neutralization titration) has the advantage of being capable of titrating under room temperature.

Key words

Quantification of oxalic acid, neutralization titration, standard substance

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