

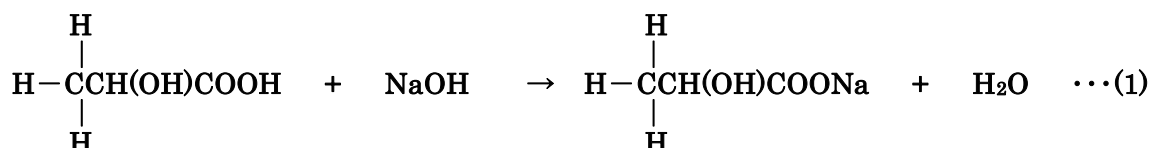
## Organic acid

## Determination of lactic acid

## 1. Abstract

Lactic acid is oxycarboxylic acid which has carboxy group (-COOH) and alcoholic hydroxyl group (-OH). It shows acidic property when dissolved in water. Lactic acid is produced as raw material of organic compound or food additive.

“JIS (Japanese Industrial Standards) K8726” prescribes the determination method for the lactic acid by the back-titration with sodium hydroxide and sulfuric acid using phenolphthalein indicator. This report introduces an example of the potentiometric titration (formula (1)) with sodium hydroxide standard solution for the measurement of lactic acid sanitizer solution for raw noodles.



## 2. Configuration of instruments and reagents

### (1) Configuration of instruments

Main unit	:	Hiranuma Automatic Titrator COM series
Electrodes	:	Glass electrode GE-101B
		Reference electrode RE-201Z

\*Instead of the above electrodes, the following electrodes are usable.

- Glass reference combination electrode GR-501BZ···Fixed sleeve type
- Glass reference combination electrode GR-511BZ···Moveable sleeve type

### (2) Reagents

Titrant	:	0.1 mol/L Sodium hydroxide standard solution
---------	---	--

## 3. Measurement procedure

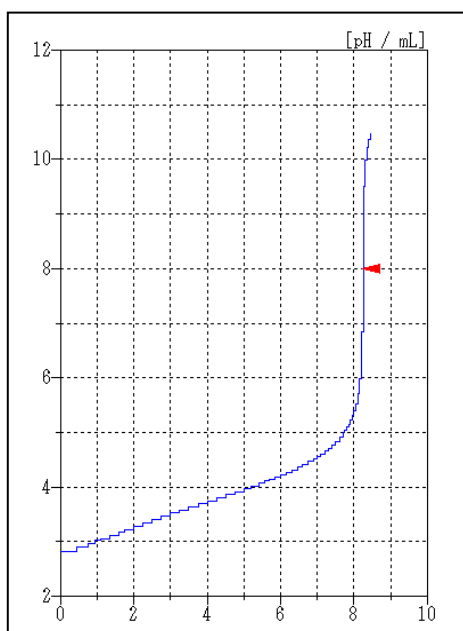
- (1) Dispense 20 mL of sample into a 100 mL beaker with volumetric pipette.
- (2) Add 40 mL of carbon dioxide-free DI water.
- (3) Immerse electrodes and start titration with 0.1 mol/L sodium hydroxide standard solution.

## 4. Measurement conditions and results

### Example of titration condition

Cndt No.	1	ConstantNo.	1	Mode No.	20
Method	Auto	Size	20 mL	Pre Int	0 sec
Buret No.	1	Blank	0 mL	Del K	5
Amp No.	1	Molarity	0.100 mol/L	Del Sens	0 mV
D. Unit	pH	Factor	1.0004	Int Time	2 sec
S-Timer	5 sec	K	90.08	Int Sens	3 mV
C.P. mL	0 mL	L	0	BrT Speed	2
T Timer	0 sec	Unit	%	Pulse	40
D.P. mL	0 mL	Formula	(D-B)*K*F*M/(S*10)		
End Sens	1000	Decimal Places	4		
Over mL	0.2 mL	Auto In Pram.	Non		
Max.Vol.	20 mL				

### Measurement results



Example of titration curve

Meas. No.	Size (g)	Titrant Volume (mL)	Conc. (%)	Statistic calculation	
1	20	8.193	0.3692	Avg.	0.370 %
2	20	8.221	0.3704	SD	0.001 %
3	20	8.221	0.3704	RSD	0.187 %

## 5. Note

Oxycarboxylic acid has both properties of carboxylic acid and alcohol. Hydroxyl group enhances the acidic property, and it gets weaker as the position goes farther from COOH.

Keywords: Lactic acid, Neutralization titration,