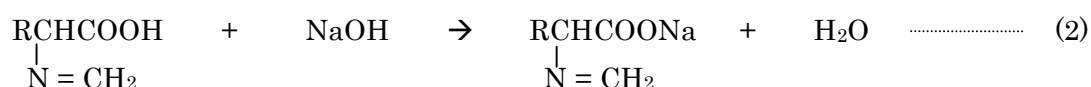
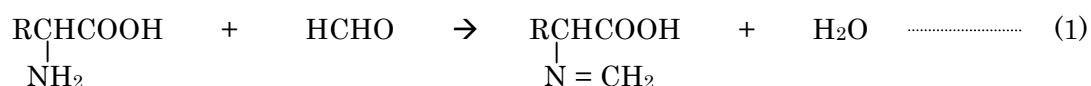


AQUACOUNTER Application Sheet	COM series	DATA No. A6	1st edition
Food and Beverage	Successive measurement of amino nitrogen and acid (citric acid) in grapefruit juice		

1. Measurement outline

Amino nitrogen and acid (citric acid) in grapefruit juice are titrated successively to quantify each component. Among various methods for determination of amino nitrogen, titrimetric method (Formol method) is used to estimate the total quantity of amino nitrogen.

In this method, citric acid in the sample is first titrated with sodium hydroxide and then formaldehyde solution is added to mask the amino group of the amino acid (formula 1), and the carboxyl group is titrated with sodium hydroxide.



2. Reagents and Electrodes

(1) Reagents	Titrant	0.1mol/L Sodium Hydroxide
	Loading buffer	35% Formaldehyde
(2) Electrodes	Indicator electrode	*Glass electrode GE-101B to IE-1 jack
	Reference electrode	*Reference electrode RE-201 to RE-1 jack

*standard accessories

3. Measurement conditions example (for COM-1600S + Buret B-2000-20 × 1 unit)

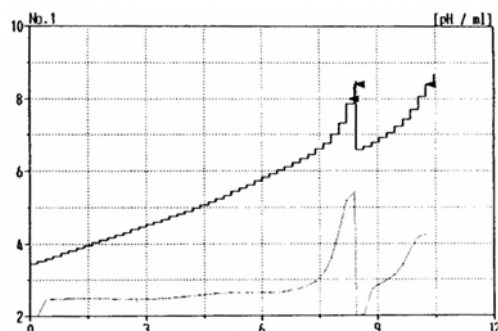
Master File No.1					
Condition file : 1 + 2 + 3					
Parameters for Condition file 1 (For 1 st EP = Citric acid)		Parameters for Condition file 2 (For HCHO addition)		Parameters for Condition file 3 (For 2 nd EP = Amino acid)	
Method	SET	Method	DISP	Method	SET
Amp No.	1	Amp No.	1	Amp No.	1
Buret No.	1	Buret No.	2	Buret No.	1
Meas Unit	pH	S-Timer	0 sec.	Meas Unit	pH
S-Timer	5 sec.	Disp. Vol.	15 mL	S-Timer	30 sec.
CP	0 mL			CP	0 mL
DP	0 mL			DP	0 mL
Direction	↑			Direction	↑
End Point	8.0			End Point	8.0
Over mL	0 mL			Over mL	0 mL
Max. Vol.	20			Max. Vol.	20
Mode No.	3			Mode No.	5
Unit	%			Unit	mg/100g
Formula	(D·B)×K×F×M/(S×10)			Formula	(D·B)×K×F×M/(S×100)
Blank	0			Blank	0
Molarity	0.1			Molarity	0.1
Factor	Titre of the titrant			Factor	Titre of the titrant
K	64.04 (As Citric acid)			K	14 (As N)

4. Measurement Procedure

Using a pipette, take 5.00mL of sample into a titration vessel. Add ca. 50mL of deionized water. Place the titration vessel on the magnetic stirrer. Lower the electrode holder into the titration vessel. Press the TITRATION key. On completion of the titration, rinse the electrode with deionized water.

5. Measurement example

Measurement results



Sample No.	Sample volume (mL)	Citric acid		Amino nitrogen	
		Titration value (mL)	Concentration (%)	Titration value (mL)	Concentration (mg/100g)
1	5	8.548	1.080	1.838	50.75
2	5	8.546	1.079	1.840	50.80
3	5	8.556	1.081	1.842	50.86
		Avg.		50.80 mg/100g	
		Std. Dev.		0.06 mg/100g	
		C.V.		0.11 %	

6. Notes

Formol titration method for amino nitrogen can only be used for estimation. For precise determination for amino nitrogen, Van Slyke method or HPLC method should be used.

Key words

Grapefruit juice, amino nitrogen, citric acid, VanSlyke method, formol method, formaldehyde

Hitachi High-Technologies Corporation

Head Office 1-24-14, Nishishinbashi, Minato-Ku, Tokyo 105-8717, Japan

Tel : 81-3-3504-7239 Fax : 81-3-3835-7302

<http://www.hitachi-hitech.com>

Hiranuma Sangyo Co., Ltd.

1739, Motoyoshidacho, Mito-City, Ibaraki 310-0836, Japan

Tel : 81-29-247-6411 Fax : 81-29-247-6942

<http://www.hiranuma.com>