Sheet No.
GT200-FO002 Vineger

Determination of Acidity in fermented vinegar (apple vinegar)

*This application sheet is provided as reference, and does not assure the measurement results. Please consider analysis environment, external factors and sample nature for optimal conditions before the measurement.

Outline

Determination of Acidity in fermented vinegar is identified in the Japan Agricultural Standards for fermented vinegar. It provides that the acidity of grain vinegar must be 4.2% or more.

Titration Type	: Neutralizing
♦Reference	: JAS for fermented vinegar
Acidity determination	: Automatic titration（method for potentiometric titrator）

Apparatus

Automatic titrator	: GT-200
Electrodes	: Double junction type reference electrode, Glass electrode
Reference electrode solution	: Inner : 1 mol / L - potassium chloride in water Outer : 1 mol / L - potassium nitrate in water

Reagents

[Titration Solution] ■0.5mol / L - Sodium hydroxide in water （Volumetric analysis grade）

Analytical Procedure

[Blank measurement]

(1) Add 100ml pure water into a 200ml beaker by measuring cylinder.
(2) Titrate with 0.5 mol / L - Sodium hydroxide solution.（MODE : SET-P, END 1 : 8.2 pH）

[Sample measurement]

(1) Add sample into a 200ml beaker by volumetric pipette. Adjust sample volume so that the titrant consumption will be 10 to 20 ml. (Sample volume of this application sheet is 10 ml.)
(2) Add 100 ml pure water into a beaker by measuring cylinder.
(3) Titrate with 0.5mol / L - Sodium hydroxide solution. （MODE : SET-P, END 1 : 8.2 pH）

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[Calculation]

Acidity (%) = 0.03 x (A1 – BL) x f / S x 100

0.03 : Weight of acetic acid equivalent to 1ml of 0.5 mol / L - Sodium hydroxide solution (g)
A1 : Titration volume of 0.5 mol / L - Sodium hydroxide solution for Sample measurement (ml)
BL : Titration volume of 0.5 mol / L - Sodium hydroxide solution for blank measurement (ml)
f : Factor of 0.5 mol / L - Sodium hydroxide solution
S : Sample Volume (ml)

Other Requirements

■pH calibration with pH standard solution is required before measurement.
■Confirm reagent labels and safety data sheets for safety.
■Wear protective equipment (eye protector, gloves and others.) when handling reagents.

Measurement Results

	Sample Volume	Titration volume (ml)	Measurement value (%)
1	10ml	16.7882	5.1
2		16.7973	5.1
3		16.8442	5.1

N	3
Average	5.1
SD	0.0038
RSD(%)	0.0750
Blank	0.0049m

The result shows average of three times measurement is 5.1% and RSD is 0.08%. GT-200 can measure determination of acidity in fermented vinegar （apple vinegar） with good repeatability.

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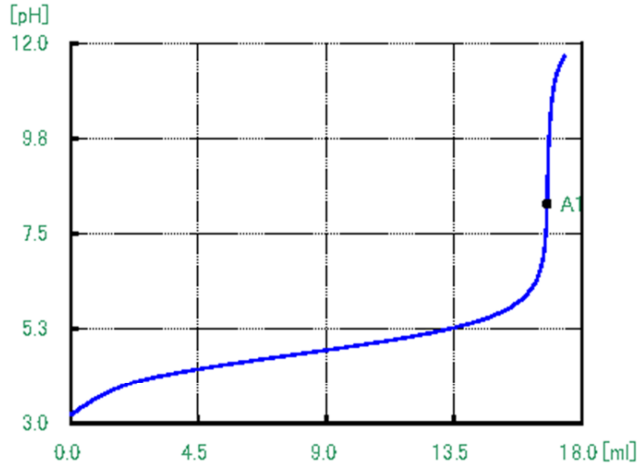
Determination of Acidity in fermented vinegar (apple

ID No. : 8 GT No.1 User : GT-200

Measurement Date : 3/11/2013 12:04 PM
Sample name : Apple vinegar
Titr Mode : Sample Titr
Sample size(S) : 10 [ml]



C1 : 5.05 [%] 8.2 [pH]

A1 : 16.7882 [ml]

P-Initial : 3.208 [pH]
Start : 0 [ml] 3.208 [pH]
End :17.412 [ml] 11.697 [pH] Measuring time : 5'31"

Run File No. : 0 Quick Mode
Titr File No. : Determination of Acidity in fermented vinegar (apple vinegar)
Mode : SET-P End1 : 8.2 [pH]
Detector(Detect) : pH
BRT No. : 1
Reagent : 12
WTint : 0 [sec]
Vup : 400 [µl]
Vlow : 10 [µl]
dE : 0.1 [pH]
dT : 3 [sec]
Vmax : 25 [ml]
Vover : 0.5 [ml]

C1 : 0.03*(A1-BL)*f/S*100

[%]

Reagent : NaOH Equiv(E) : 1 Mol(M) : 0.5 [Mol/l]
f : 1.002 BL : 0.0049 [ml]

Buret injection speed : 500 [ul/sec]