

Sheet No.

GT200-FO035E Food & Beverage

Determination of acidity of wine

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Method : Acid-base Titration
Apparatus : Automatic Titrator model GT-200(GT0EF)
Electrodes: Glass electrode (GTPH1B)
Reference electrode, DJ (GTRE10)
Inner solution: 1mol / L Potassium chloride
Outer solution: 1mol / L Potassium nitrate
Titration mode : INF/SP, Detection: pH
Related standard : Analysis Method of National Tax Administration Agency, Japan:
Total acid (Free Acid) in Fruit Wine

*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

Wines contain acids, such as tartaric acid, malic acid, lactic acid and so on. The acidity affects color and taste of wines. In Japan, measurement of acidity of wines is prescribed in "Fruit wine" on Analytical Method of National Tax Administration Agency. The result is determined by consumption volume of sodium hydroxide of the titration to pH8.2.

Reagents

[Titrant]

■ 0.1mol/L-sodium hydroxide solution (Volumetric analysis grade)

Analytical Procedure

- (1) Take 10ml of the sample by a hall pipette into a 100ml beaker.
- (2) Add around 60ml of pure water without carbonic acid
- (3) Titrate with 0.1mol/L-sodium hydroxide solution with the following parameters.
Mode: INF/SP, END1: 8.2pH

[Calculation]

Acidity = A1 × f

A1 : Titration volume of 0.1mol/L-sodium hydroxide solution from sample test (ml)

f : Factor of 0.1mol/L-potassium hydroxide / ethanol titrant

For reference: determination as tartaric acid Tartaric acid (g/100ml) = Avidity × 0.075

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Other Requirements

- Before the testing, pH calibration is required.
- Make sure to confirm labels and safety data sheets of reagents and gases used for the measurement and handle them with enough care.
- Wear protective equipment (eye protector, gloves and others) when handling reagents.

Measurement Results

Wine (Red wine)

	Sample size (ml)	Titration volume (ml)	Acidity
1	10	7.2201	7.3
2		7.1921	7.2
3		7.2114	7.3

Nos. of data (n) 3
Average 7.3
Standard deviation (SD) 0.01
Relative S.D. (RSD%) 0.20

Wine (White wine)

	Sample size (ml)	Titration volume (ml)	Acidity
1	10	8.1170	8.2
2		8.1549	8.2
3		8.1352	8.2

Nos. of data (n) 3
Average 8.2
Standard deviation (SD) 0.02
Relative S.D. (RSD%) 0.23

Results measured by GT-200 were 7.3 (Red wine) and 8.2 (White wine).

Repeatability was good with relative standard deviation (RSD%) 0.2% for both samples.

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ID No. : 2 GT No.1

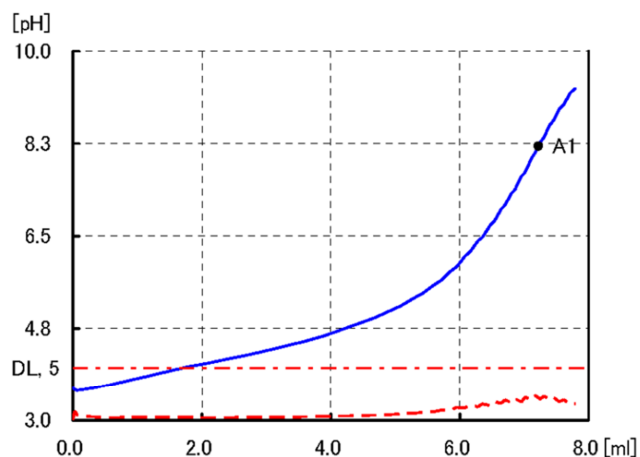
User : GT-200

Measurement : 2016/01/06 14:32

Sample name : Red wine

Type : Sample Titr

Sample size (S) : 10 [ml]



C1 : 7.27 []

A1 : 7.2201 [ml] 8.2 [pH]

Initial potential(Pi) : 3.607 [pH]

Strat (Start) : 0 [ml] 3.607 [pH]

End (End) : 7.79 [ml] 9.288 [pH]

Measurement time (Time) : 3'17"

Titration File No. : 1 Total Acid (free acid) of Wine

Mode : INF/SP End1, End1 Width : 8.2 [pH] \pm 1 [pH]

Detect : pH

BRT No. : 1

Reagent : 2

WTint : 0 [sec]

Vup : 300 [μ l]Vlow : 20 [μ l]

dE : 0.1 [pH]

dT : 3 [sec]

DL : 5 [pH/ml]

DetCnt : 20

Vmax : 50 [ml]

C1 : A1*f

Vover : 0.5 [ml]

[]

Reagent (Reag) : 0.1M-NaOH

Equivalent (E) : 1

Molarity (M) : 0.1 [Mol/l]

Factor (f) : 1.007

Buret Injection Speed : 500 [μ l/sec]

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ID No.: 5 GT No.1

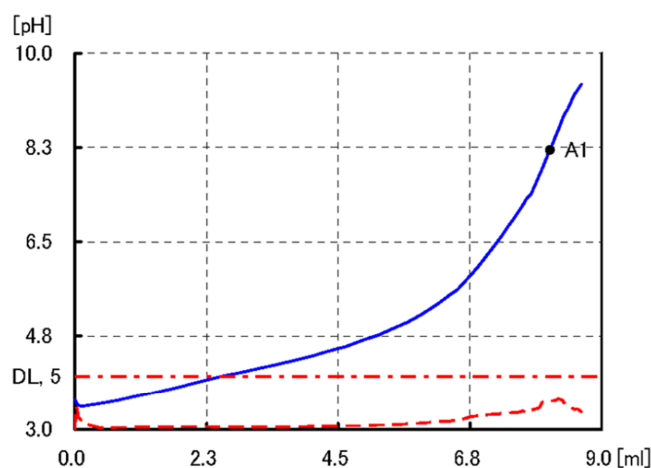
User: GT-200

Measurement : 2016/01/06 15:49

Sample name : White wine

Type : Sample Titr

Sample size (S) : 10 [ml]



C1 : 8.17 []

A1 : 8.117 [ml] 8.2 [pH]

Initial potential (Pi) : 3.555 [pH]

Start (Start) : 0 [ml] 3.555 [pH]

End (End) : 8.66 [ml] 9.431 [pH]

Measurement time (Time) : 3'54"

Titration File No. : 1 Total Acid (free acid) of Wine

Mode : INF/SP End1, End1 Width : 8.2 [pH] \pm 1 [pH]

Detect : pH

BRT No. : 1

Reagent : 2

WTint : 0 [sec]

Vup : 300 [μ l]Vlow : 20 [μ l]

dE : 0.1 [pH]

dT : 3 [sec]

DL : 5 [pH/ml]

DetCnt : 20

Vmax : 50 [ml]

C1 : A1*f

Vover : 0.5 [ml]

[]

Reagent (Reag) : 0.1M-NaOH

Equivalent (E) : 1

Molarity (M) : 0.1 [Mol/l]

Factor (f) : 1.007

Buret Injection Speed : 500 [μ l/sec]