# Determination of total titratable acidity in wine and most (EU version)

# Application

## Use

This method is used for the quantitative determination of total acidity in wine and most. The total acidity is calculated as g/L tartaric acid.

## Appliances

- Titrator: TL 6000/7000(7750 (TL 6000/7000 M2/20) consists of
- Basic device
- Magnetic stirrer TM 235
- 20 mL Exchange unit WA 20, with brown glass bottle for titrant complete
- And pH combination electrode A 162 DIN ID

## Electrodes

- Electrode: A 162 DIN ID
- Calibration: DIN buffer pH= 4.00 and pH= 7.00

## Reagents

- Titrant: sodium hydroxide solution 0.1mol/l
- Soda lime for carbon dioxide uptake of the reagent.
- Titer: potassium hydrogen phthalate (reference substance)

## Description

**Calibration**

The pH combination electrode is calibrated in technical buffer pH=4.00 and pH= 7.00 or in DIN buffer pH= 4.01 and pH= 6.87.
Example of the calibration documentation:

### Calibration

Buffers used

| | | |
|---|---|---|
| pH buffer 1: | TEC_4.000 | |
| pH buffer 2: | TEC_7.000 | |

Measured values

| | | |
|---|---|---|
| pH buffer 1: | TEC_4.000 | 165.6 mV / 23.4 °C |
| pH buffer 2: | TEC_7.000 | -11.2 mV / 23.0 °C |

Calibration data

| | |
|---|---|
| Slope: | 99.4 % / -58.8 mV/pH |
| Zero point: | pH 6.81 / -11.2 mV |
| Temperature: | 23.4 °C (a) |
| Date and time: | 07.03.13 / 15:04 |

**Determination of the exact concentration of the standard solution**

By carbon dioxide absorption from the air occurs in the sodium hydroxide solution of sodium bicarbonate, which changes the pH of the titrant. To prevent this, a drying tube filled with soda lime is placed on the reagent bottle. The exact concentration of the sodium hydroxide solution is determined using the standard potassium hydrogen phthalate. The potassium hydrogen phthalate is dried in the oven before the titer determination for 2 hours at 120°C and cooled in a desiccator.

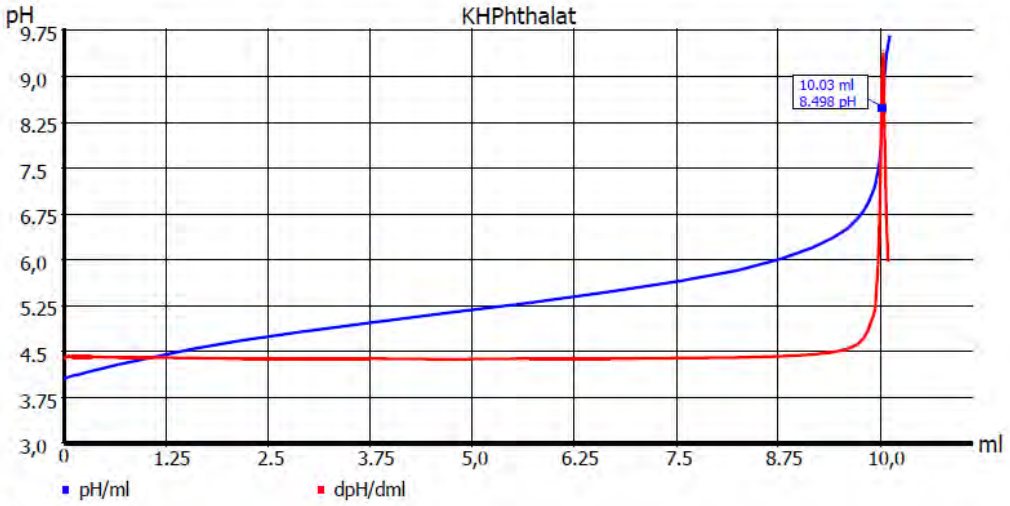
Implementation

In a 50 mL beaker, 0.2 to 0.3g potassium hydrogen phthalate were weighed accurately and dissolved in 30 mL of dist. water with stirring. It is titrated with 0.1 mol/l sodium hydroxide solution.

**Standardisation titration (result)**

## GLP documentation

Titration graph




Method data

| | | | |
|---|---|---|---|
| Method name: | Titre NaOH | Titration duration: | 2 m 15 s |
| End date: | 08.01.13 | End time: | 15:46:03 |

Titration data

| | | | |
|---|---|---|---|
| | | Weight: | 0.20490 g |
| Start pH: | pH 4.065 | End pH: | pH 9.667 |
| Start temperature: | 25.0 °C (m) | End temperature: | 25.0 °C (m) |
| Zero point: | pH 6.85 / -8.9 mV | Slope: | 98.7 % / -58.4 mV/pH |
| EQ: | 10.032 ml / pH 8.498 | Titre: | 0.1000 mol/l |
| Mean value: | --- | RSD: | --- |

Calculation formula

| | | | |
|---|---|---|---|
| Titre: | (W*F2)/((EQ1-B)*M*F1) -> WA | Mol (M): | 204.22000 |
| Weight (W): | 0.2049 g (m) | Factor 2 (F2): | 1000.0000 |
| Blank value (B): | 0.0000 ml | Factor 1 (F1): | 1.0000 |
| Statistics: | 3 | | |

# Application

**Standardisation titration (method**

## Method data

| | | | |
|---|---|---|---|
| Method name: | Titer NaOH | Created at: | 02/15/12 15:32:03 |
| Method type: | Automatic titration | Last modification: | 02/16/12 10:14:55 |
| Measured value: | pH | Documentation: | GLP |
| Titration mode: | Dynamic | | |
| Dynamic: | average | | |
| Measuring speed / drift: | Normal: | minimum holding time: | 02 s |
| | | maximum holding time: | 15 s |
| | | measuring time: | 02 s |
| | | drift: | 20 mV/min |
| Initial waiting time: | 0 s | | |
| Titration direction: | Increase | | |
| Pretitration: | Off | | |
| End value: | 10.500 pH | | |
| EQ: | On | | |
| slope value: | Steep | Value: | 700 |

Dosing parameter

| | | | |
|---|---|---|---|
| Dosing speed: | 100 % | Filling speed: | 30 s |
| Maximum dosing volume: | 30.00 ml | | |

Calculation formula

| | | | |
|---|---|---|---|
| Titer NaOH 0,1mol/l: | (W*F2)/((EQ1-B)*M*F1) | | |
| Mol (M): | 20.42230 | | |
| Unit: | | Decimal places: | 4 |
| Weight (W): | man | Factor 2 (F2): | 1000.0000 |
| Blank value (B): | 0.0000 ml | Factor 1 (F1): | 1.0000 |

Device information

Device: TitroLine 6000
Serial number:
Software version: 07_12

mth_Titer_NaOH_29_02_12-10_51_09.pdf

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# Application

**Titration of the sample**

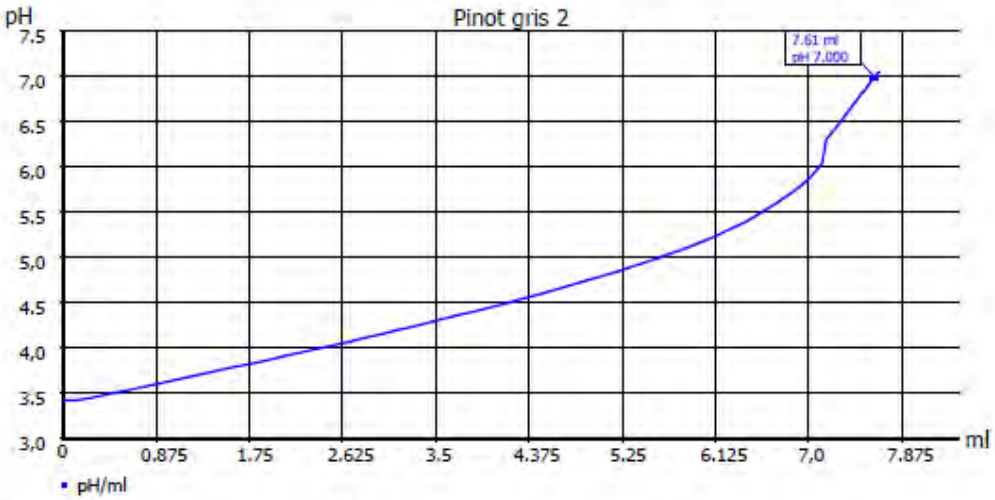
The sample is degassed by carefully boiling or purging with nitrogen. After the sample is cooled down to room temperature pipette accurately 10 ml in 50 ml beaker.

Add app. 15-20 ml $CO_2$ free water into and mix the sample on the magnetic stirrer for a few seconds. Titrate with the NaOH titrant to a fixed pH endpoint 7.0.

**Example**

## GLP documentation

Titration graph




Method data

| | | | |
|---|---|---|---|
| Method name: | Total acidity in wine | Titration duration: | 1 m 56 s |
| End date: | 12.07.13 | End time: | 10:07:16 |

Titration data

| | | | |
|---|---|---|---|
| Sample ID: | Pinot gris 2 | Pattern: | 10.000 ml |
| Start pH: | pH 3.426 | End pH: | pH 7.054 |
| Start temperature: | 26.5 °C (m) | End temperature: | 26.5 °C (m) |
| Zero point: | pH 6.77 / -13.3 mV | Slope: | 98.2 % / -58.1 mV/pH |
| EP1: | 7.613 ml / pH 7.000 | TA : | 5.77 g/l |

Calculation formula

| | | | |
|---|---|---|---|
| TA : | (EP1-B)*T*M*F1/(V*F2) | Mol (M): | 75.00000 |
| Blank value (B): | 0.0000 ml | Titre (T): | 0.10100000 (a) |
| Factor 1 (F1): | 1.0000 | Pattern (V): | 10.000 ml (m) |
| Factor 2 (F2): | 1.0000 | Statistics: | Off |

# Application

**Method parameters:**

Method data overall view

| | | | |
|---|---|---|---|
| Method name: | Total acidity in wine | Created at: | 07/12/13 9:49:58 |
| Method type: | Automatic titration | Last modification: | 07/12/13 10:04:25 |
| Measured value: | pH | | |
| Titration mode: | End pt. | Documentation: | GLP |
| Linear steps: | 0.040 ml | | |
| | | | |
| Measuring speed / drift: | Normal: | minimum holding time: | 02 s |
| | | maximum holding time: | 15 s |
| | | Measuring time: | 02 s |
| | | Drift: | 20 mV/min |
| Initial waiting time: | 0 s | | |
| Titration direction: | Increase | | |
| Pretitration: | Off | | |
| | | | |
| Endpoint 1: | pH 7.000 | delta endpoint 1: | pH 1.000 |
| | | Endpoint delay 1: | 5 s |
| Endpoint 2: | Off | | |

Dosing parameter

| | | | |
|---|---|---|---|
| Dosing speed: | 50.00 % | Filling speed: | 30 s |
| Maximum dosing volume: | 50.00 ml | | |

Unit values

| | |
|---|---|
| Unit size: | 20ml |
| Unit ID: | 10039117 |
| Reagent: | NaOH |
| Batch ID: | no entry |
| Concentration [mol/l]: | 0.10100 |
| Determined at: | 04/05/13 0:45:23 |
| Expire date: | -- |
| Opened/compounded: | -- |
| Test according ISO 8655: | 03/19/12 |
| Last modification: | 06/04/13 13:43:11 |

# Application

| Notes |
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If you have any questions on the application, you can feel free to contact us.

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