

## Application

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

## Application

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### 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

# Application

## Reagents

- Titrant: sodium hydroxide solution 0.1 mol/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

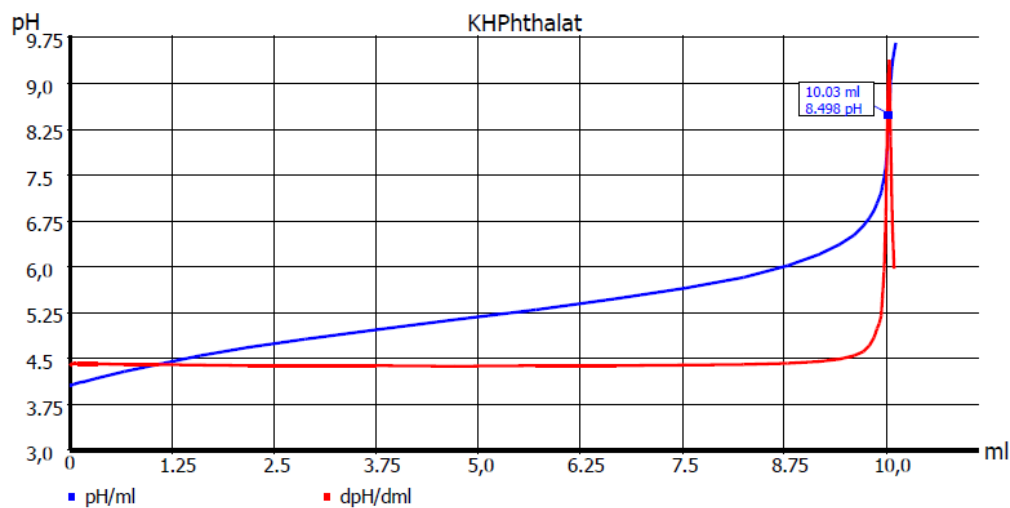
In a 50 mL beaker, 0.2 to 0.3g potassium hydrogen phthalate were weighed accurately and dissolved in 30 mL of dist. water with stirring. It is titrated with 0.1 mol/l sodium hydroxide solution.

## Application

## 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

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

## Calculation formula

Titre:	$(W \cdot F2) / ((EQ1 - B) \cdot M \cdot F1) \rightarrow WA$	Mol (M):	204.22000
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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

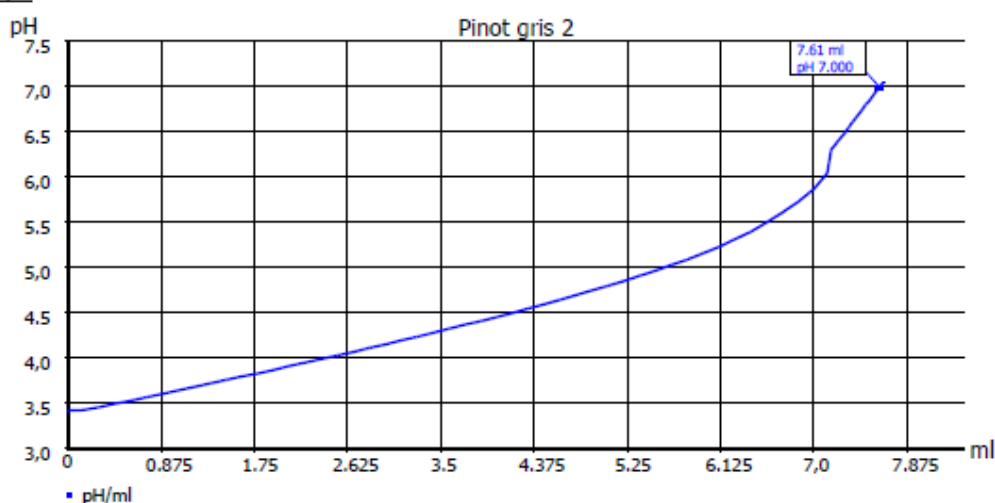
The sample is degassed by carefully boiling or purging with nitrogen. After the sample is cooled down to room temperature pipette accurately 10 ml in 50 ml beaker.

Add app. 15-20 ml CO<sub>2</sub> 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 2:	Off	Endpoint delay 1:	5 s

#### 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

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### Notes

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

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