



Acidity of Cheese

Introduction

As the acidity of cheese has a major influence on the taste of the product, this parameter is used to test the quality.

Principle

The acidity of cheese is determined by end point titration using 0.1 eq/l NaOH. The end point value is generally fixed at pH 8.4 and the result is expressed in % of lactic acid, which has a MW of 90.08 g/mol.

Electrode and reagents

81-65 Combined pH Electrode (part no. 8165BNWP).

NaOH 0.1 eq/l solution in distilled water (see Application Note TTEP01-02MIN).

IUPAC Series pH standards

pH 4.005 (part no. S11M002) or pH 7.000 (part no. S11M004) and pH 10.012 (part no. S11M007).

End Point titration settings

Burette volume	10 ml
Stirring speed	400 rpm
Working mode	pH
Number of end points	1
End point	8.40 pH
Stirring delay	30 seconds
Minimum speed	0.2 ml/min
Maximum speed	10 ml/min
Proportional band	4.00 pH
End point delay	5 seconds
Titration	Increasing pH
Sample unit	g
Sample amount	see below
Result	%

Procedure

Sample preparation Place a known amount of cheese (generally between 10 and 20 g) in a 250 ml beaker, add 100 ml of distilled water at 40°C and homogenise with a high speed homogeniser. Filter or centrifuge according to particular recommendations and dilute to 250 ml using a volumetric flask. Titrate an aliquot of 25 or 50 ml for example.

Titration

- 1/ Calibrate the combined pH electrode using the 2 IUPAC standards above.
- 2/ Pipette 25 or 50 ml of sample.
- 3/ Dip electrode and delivery tip in the solution.
- 4/ Start method by pressing the RUN key.

Results

Expressed as % of lactic acid (CH₃-CHOH-COOH with a MW of 90.08 g/mol)

As in this case 1 molecule of titrant reacts with 1 molecule of lactic acid

$$R = V(\text{titr}) * C(\text{titr}) * 90.08 * 100 * F / 1000 * W(\text{smp})$$

-V(titr) = total volume of titrant to reach the end point in ml

-C(titr) = Titrant concentration in eq/l (currently 0.1)

-W(smp) = sample amount in g

90.08 = Molecular weight of lactic acid

F = Dilution factor between total volume and aliquot

100 = Factor needed for a result expressed in %

For a result in %

Enter

- The actual sample amount in the SAMPLE screen
- The titrant concentration in the TITRANT screen
- 1 Titrant and 1 Sample in the COEFFICIENTS display
- 90.08 as molecular weight

The Titration Manager gives a result according to the above formula.

You can also use the dilution calculation formula of the titration manager.

In the SAMPLE screen

- Dilution YES
- Enter the total sample amount
- Enter the final dilution volume in ml
- Enter the aliquot volume in ml

5 determinations

Mean: 0.97%

Standard deviation: 0.01%

Rel. standard deviation: 1%

Working range

For a dilution factor of 10 and 10 g as sample amount, and for a titrant volume corresponding to 0.5 ml as an experimental detection limit for titrant consumption, the result limit is close to 0.45%.

