



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

pHC2401-8 Combined pH Electrode (part no.E16M400).

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
Direction:	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

Calibrate the combined pH electrode using the 2 IUPAC standards above.

Pipette 25 or 50 ml of sample.

Dip electrode and delivery tip in the solution.

Start method by pressing the RUN key.

Results

pHC2401-8 Combined pH Electrode (part no.E16M400). 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

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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%.