



Application Note AN-T-132

Titratable acidity in milk and yogurt

Accurate determination according to DIN 10316, ISO/TS 11869, and IDF/RM 150

The titratable acidity gives an indication of the freshness of milk and yogurt as well as other fermented milk products. The determined titratable acidity in milk is mainly given through the absorption of hydroxyl ions by milk proteins and milk salts. The acidity increases with bacterial acidification and with enzymatic lipolysis.

The titratable acidity corresponds to the amount of sodium hydroxide required to titrate 100 g sample to a pH value of 8.30.

In this Application Note, an easy and accurate method to determine the titratable acidity in milk according to DIN 10316 and in yogurt according to ISO/TS 11869 and IDF/RM 150 is demonstrated.

SAMPLE AND SAMPLE PREPARATION

The method is demonstrated for UHT milk and natural yogurt. The samples are prepared according to the

standard.

EXPERIMENTAL

This analysis is performed on a 905 Titrando equipped with a magnetic stirrer and a Porotrode for pH measurement.

Prior to the analysis, the Porotrode must be calibrated in order to ensure accurate results.

A reasonable amount of milk or prepared yogurt sample is used for the titration. An endpoint titration is carried out with standardized sodium hydroxide to a pH value of 8.3.

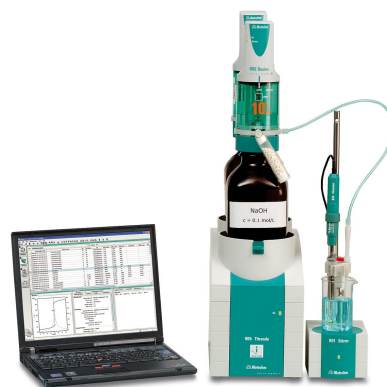


Figure 1. 905 Titrando with tiamo. Example setup for the determination of the titratable acidity in dairy products.

RESULTS

The analysis demonstrates acceptable and reproducible results. The results are summarized in

Table 1. An example titration curve is displayed in **Figure 2.**

Table 1. Mean titratable acidity of a milk and a yogurt sample determined with a Titrando system (n = 5).

| Sample | Mean titratable acidity | SD(rel) in % |
|--------|--|--------------|
| Milk | 144.40 mL c(NaOH) = 0.1 mol per L milk | 0.28 |
| Yogurt | 12.87 mmol NaOH / 100 g | 0.17 |

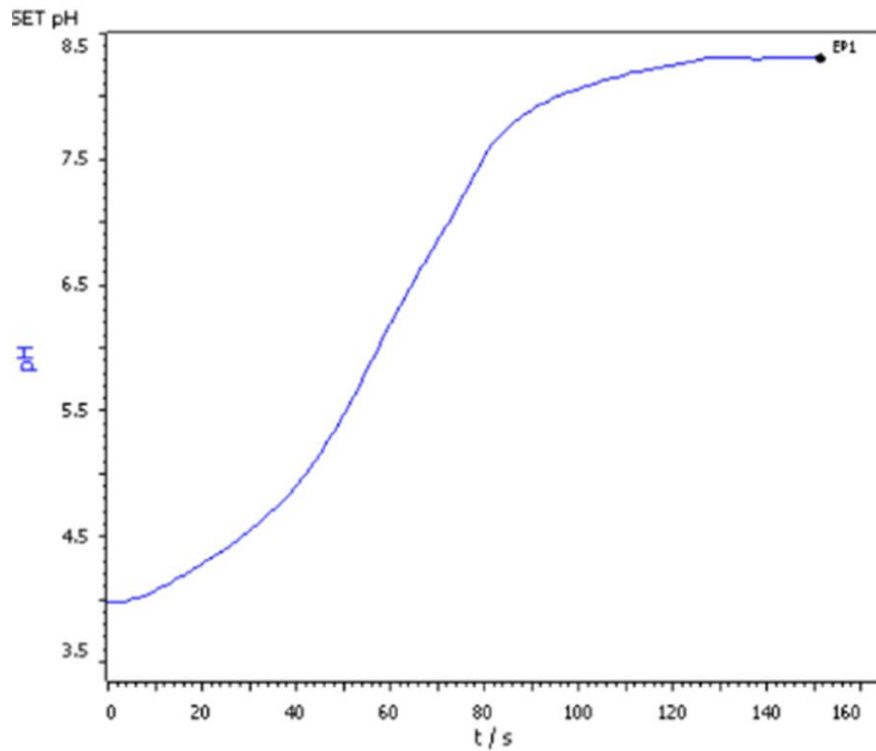


Figure 2. Example titration curve of the determination of titratable acidity in a dairy product.

CONCLUSION

After sample preparation, the determination of the titratable acidity can be performed reliably and cost-efficiently by using a Metrohm autotitrator. Fast and

precise determination according to DIN 10316, ISO/TS 11869, and IDF/RM 150 is possible.

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CONTACT

Metrohm Brasil
Rua Minerva, 161
05007-030 São Paulo

metrohm@metrohm.com.br