Application Note AN-T-220

面团和面包中的氯化钠含量

Determination of the sodium chloride content according to AOAC 971.27

For millenia, bread and salt—the staple food of humankind, has been vital for sustenance. Salt has been known as the «white gold» since ancient times and is what enhances the flavor in many products.

The increase of health consciousness in the past few decades has led to efforts in reducing the sodium chloride content in all food products. If consumed in excess, sodium may damage the cardiovascular system. It is therefore in the interest of food manufacturers to reduce the salt content and while preserving the flavor of the food.

To ensure consistent quality, it is critical to know the exact salt content in the raw materials and the final products. This is only possible by performing precise measurements during the production process.

It is possible to determine sodium chloride in dough and bread quickly according to AOAC 971.27 with the Eco Titrator equipped with an Ag Titrode.

SAMPLE AND SAMPLE PREPARATION

This application is demonstrated on bread dough made from white flour and whole wheat bread.

An appropriate amount of sample is weighed into the sample beaker and CO_2-free water is added. Then the sample is homogenized with the Polytron.

EXPERIMENTAL

The determinations are carried out on an Eco Titrator equipped with an Ag Titrode and a Polytron for sample preparation.

An appropriate amount of sample is weighed into the sample beaker and CO_2-free water as well as nitric acid solution is added.

While stirring, the solution is titrated until after the first equivalence point with standardized silver nitrate solution.

Figure 1. Eco Titrator equipped with an Ag Titrode.

RESULTS

Well-defined NaCl values and titration curves are obtained for the tested samples.

The results are summarized in Table 1. An exemplary titration curve is displayed in Figure 2.

Table 1. Results for the sodium chloride content according to AOAC 971.27 with an Eco Titrator equipped with an Ag Titrode.

Sample (n = 6)	Mean NaCl in %	SD(rel) in %
Bread dough	1.03	0.1
Whole wheat bread	2.31	0.1

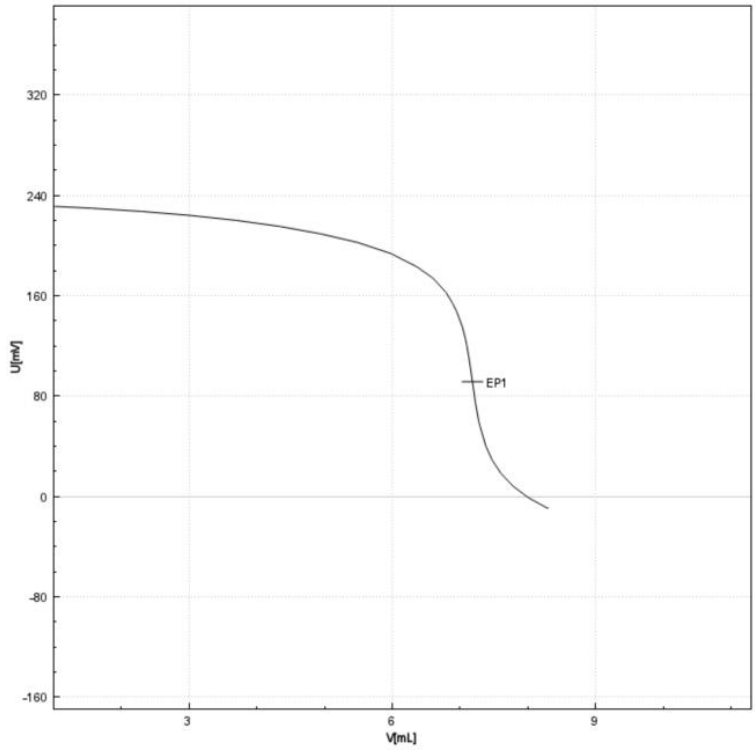

Figure 2. Titration curve of the determination of the sodium chloride content of whole wheat bread on an Eco Titrator.

CONCLUSION

Titration is a precise and reliable method to determine the sodium chloride content in dough and bread.

Using the Eco Titrator equipped with an Ag Titrode allows a fast determination. The system offers both low-priced and user-friendly handling. Pre-installed methods on the Eco Titrator makes it easy for customers without laboratory experience to get started with precise and fast titrations, perfect for bakeries.

Internal reference: AW TI CH1-1315-012021

CONTACT

Metrohm Taiwan Ltd.
開封街二段 46 號 5 樓
108 台北市
info@metrohm.com.tw

CONFIGURATION

Eco Titrator Salt

集成了磁力搅拌器和触摸用户界面的紧凑型 Eco Titrator 是常规分析的理想选择。它可始终以极小的空间需求(约 DIN A4)提供符合 GLP 规范的结果。

Eco Titrator Salt plus 为您提供用于分析各类样品中氯化物的完整套装。该套装包含一台滴定仪、一个 10 mL 计量管单元以及一支 Ag Titrode,一种用于硝酸银沉淀滴定的免保养电极。

Polytron PT 1300 D

Polytron PT 1300 D-Metrohm 版本
均质匀浆仪,可直接通过 OMNIS Software, tiamoTM 或 Touch Control 进行控制。
Polytron PT 1300 D 由一个控制装置和一个驱动装置组成。通过驱动装置上的耦合系统可简便快速地更换设备,无需额外使用工具。
可轻松粉碎固体样品可。该设备也非常适用于粘性样品的良好混合。