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# International Standard



# 1738

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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## Butter — Determination of salt content (Reference method)

*Beurre — Détermination de la teneur en sel (Méthode de référence)*

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## FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 1738 was developed by Technical Committee ISO/TC 34, *Agricultural food products*.

It was submitted directly to the ISO Council, in accordance with clause 5.10.1 of part 1 of the Directives for the technical work of ISO. It cancels and replaces ISO Recommendation R 1738-1971, which had been approved by the member bodies of the following countries :

Australia	Germany, F.R.	Poland
Belgium	Greece	Portugal
Brazil	Hungary	Romania
Canada	India	South Africa, Rep. of
Chile	Iran	Sweden
Czechoslovakia	Israel	Switzerland
Egypt, Arab Rep. of	Netherlands	Turkey
France	Peru	

The member bodies of the following countries had expressed disapproval of the document on technical grounds :

New Zealand  
United Kingdom

NOTE – The method specified in this International Standard has been developed jointly with the IDF (International Dairy Federation) and the AOAC (Association of Official Analytical Chemists, USA).

The text as approved by the above organizations was also published by FAO/WHO (Code of Principles, Standard No. B-8), by the IDF (IDF Standard 12 A) and by the AOAC [Official Methods of Analysis, 12th edition (1975), 16.191].

# Butter — Determination of salt content (Reference method)

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a reference method for the determination of the salt content of butter.

## 2 REFERENCE

ISO/R 707, *Milk and milk products — Sampling*.

## 3 DEFINITION

**salt content of butter**: The chlorides content determined by the procedure specified in this International Standard and expressed as sodium chloride as a percentage by mass.

## 4 PRINCIPLE

Melting of a test portion by the addition of boiling water, and titration of the chlorides in the mixture with a standard volumetric silver nitrate solution, using potassium chromate as indicator (the Mohr procedure).

## 5 REAGENTS

Reagents shall be of recognized analytical quality. The water used shall be distilled water or water of at least equivalent purity.

**5.1 Silver nitrate**, standard volumetric solution,  $c(\text{AgNO}_3) = 0,1 \text{ mol/l}^{(1)}$ .

**5.2 Potassium chromate** ( $\text{K}_2\text{CrO}_4$ ), 50 g/l solution.

## 6 APPARATUS

Usual laboratory apparatus not otherwise specified, and the following:

**6.1 Analytical balance**.

**6.2 Conical flask**, of capacity 250 ml.

**6.3 Burette**, graduated in 0,1 ml.

## 7 SAMPLING

See ISO/R 707.

## 8 PROCEDURE

### 8.1 Preparation of the test sample

Homogenize the laboratory sample by softening it in a closed container by warming in a water bath kept at as low a temperature as practicable in order not to break the emulsion. Temperatures of 23 to 28 °C are often suitable for this purpose, but in no case shall the temperature be above 39 °C. Shake the sample container at frequent intervals during the softening process in order to mix the sample thoroughly. Remove the sample container from the water bath and shake vigorously at frequent intervals until the sample has cooled to a thick, creamy consistency. A mechanical shaker may be used.

### 8.2 Test portion

Weigh, to the nearest 0,01 g, about 5 g of the test sample (8.1) into the conical flask (6.2).

### 8.3 Determination

Carefully add to the test portion (8.2), 100 ml of boiling water. Allow to stand for 5 to 10 min, swirling occasionally, while allowing to cool to 50 to 55 °C (titration temperature).

Add 2 ml of the potassium chromate solution (5.2), and mix by swirling. While swirling continuously, titrate with the silver nitrate solution (5.1) until the colour change to orange-brown persists for 30 s.

### 8.4 Number of determinations

Carry out two determinations on the same test sample.

### 8.5 Blank test

Carry out a blank test using the same reagents and the same procedure, but omitting the test portion.

1) Previously expressed as "0,1 N standard volumetric solution".

## 9 EXPRESSION OF RESULTS

### 9.1 Method of calculation and formula

The salt content, expressed as sodium chloride as a percentage by mass, is equal to

$$58,5 c (V_1 - V_0) \times \frac{100}{1000 m} = \frac{5,85 c (V_1 - V_0)}{m}$$

where

$c$  is the exact concentration, in moles per litre, of the silver nitrate solution;

$V_0$  is the volume, in millilitres, of silver nitrate solution used in the blank test;

$V_1$  is the volume, in millilitres, of silver nitrate solution used in the determination;

$m$  is the mass, in grams, of the test portion.

Take as the result the arithmetic mean of the two results

obtained, provided that the requirement for repeatability (see 9.2) is satisfied.

Round the result to the nearest 0,01 % ( $m/m$ ).

### 9.2 Repeatability

The difference between the results of two determinations carried out simultaneously or in rapid succession by the same analyst shall not exceed 0,02 g of sodium chloride per 100 g of the product.

## 10 TEST REPORT

The test report shall show the method used and the result obtained. It shall also mention any operating conditions not specified in this International Standard, or regarded as optional, as well as any circumstances that may have influenced the result.

The report shall include all details required for the complete identification of the sample.

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