INTERNATIONAL STANDARD ISO 5550

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Caseins and caseinates — Determination of water content (Reference method)

Caséines et caséinates — Détermination de la teneur en eau (Méthode de référence)

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FOREWORD

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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 5550 was developed by Technical Committee ISO/TC 34, *Agricultural food products*, and was circulated to the member bodies in June 1977.

It has been approved by the member bodies of the following countries :

Australia	Hungary	Romania
Austria	India	South Africa, Rep. of
Belgium	Iran	Spain
Bulgaria	Ireland	Thailand
Canada	Israel	Turkey
Czechoslovakia	Korea, Rep. of	United Kingdom
Egypt, Arab Rep. of	Mexico	U.S.S.R.
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Germany, F. R.	Poland	
Ghana	Portugal	

The member body of the following country expressed disapproval of the document on technical grounds :

U.S.A.

NOTE – The method specified in this International Standard has been developed jointly with the IDF (International Dairy Federation) and the AOAC (Assocation of Official Analytical Chemists, U.S.A.). The text as approved by the above organizations will also be published by FAO/WHO (Code of Principles concerning Milk and Milk Products and Associated Standards), by the IDF and by the AOAC (Official Methods of Analysis).

Printed in Switzerland

Caseins and caseinates — Determination of water content (Reference method)

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a reference method for the determination of the water content of all types of caseins and caseinates.

2 REFERENCES

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

ISO 3310/I, *Test sieves — Technical requirements and testing — Part I : Metal wire cloth.*

3 DEFINITION

water content of caseins and caseinates : The loss of mass determined by the procedure described in this International Standard and expressed as a percentage by mass.

4 PRINCIPLE

Drying of a test portion at 102 ± 1 °C and weighing to determine the loss of mass.

5 APPARATUS

5.1 Analytical balance.

5.2 Drying oven, well ventilated, capable of being controlled at 102 ± 1 °C.

5.3 Flat-bottomed dish of material non-corrodible under the conditions of the test (for example glass dish with ground-glass cover, or aluminium or stainless steel dish equipped with tight-fitting lid which can readily be removed) of at least 50 mm (preferably 75 mm) diameter and at least 25 mm deep.

5.4 Desiccator, containing an effective desiccant. If silica gel is used, it should be changed daily.

5.5 Grinding device, for grinding the laboratory sample, if necessary (see 7.1.4), without development of undue heat and without loss or absorption of moisture. A hammer-mill shall not be used.

5.6 Test sieve, wire cloth, diameter 200 mm, nominal size of aperture 500 µm, with receiver, complying with ISO 3310/I.

5.7 Suitable device for handling dishes, for example laboratory tongs.

6 SAMPLING

See ISO/R 707.

7 PROCEDURE

7.1 Preparation of the test sample

7.1.1 Thoroughly mix the laboratory sample by repeatedly shaking and inverting the container (if necessary, after having transferred all of the laboratory sample to an air-tight container of sufficient capacity to allow this operation to be carried out).

7.1.2 Transfer about 50 g of the thoroughly mixed laboratory sample to the test sieve (5.6).

7.1.3 If the 50 g portion directly passes or almost completely passes the sieve, use for the determination the sample as prepared in 7.1.1.

7.1.4 Otherwise, grind the 50 g portion, using the grinding device (5.5), until it passes the sieve. Immediately transfer all the sieved sample to an air-tight container of sufficient capacity and mix thoroughly by repeatedly shaking and inverting. During these operations, take precautions to avoid any change in the water content of the product.

7.1.5 After the test sample has been prepared, the determination (7.4) should be proceeded with as soon as possible.

7.2 Preparation of the dish

7.2.1 Heat the uncovered dish and its lid (5.3) in the oven (5.2), controlled at 102 ± 1 °C, for at least 1 h.

7.2.2 Place the lid on the dish, transfer the covered dish to the desiccator (5.4), allow to cool to the temperature of the balance room and weigh to the nearest 0,1 mg.

7.3 Test portion

Put 3 to 5 g of the test sample (7.1) into the dish, cover with the lid and weigh to the nearest 0,1 mg.

7.4 Determination

7.4.1 Uncover the dish and place it with its lid in the oven (5.2), controlled at 102 ± 1 °C, for 4 h.

7.4.2 Replace the lid on the dish, transfer to the desiccator, allow to cool to the temperature of the balance room and weigh to the nearest 0,1 mg.

7.4.3 Uncover the dish and heat it again, with its lid, in the oven for 1 h. Then repeat operation 7.4.2.

7.4.4 If the mass obtained in 7.4.3 is less than the mass obtained in 7.4.2 by more than 1 mg, repeat operation 7.4.3.

In the event of an increase of mass, take for the calculation the lowest mass recorded.

The total drying time should not normally exceed 6 h.

8 EXPRESSION OF RESULTS

8.1 Method of calculation and formula

The water content of the sample, expressed as a percentage by mass, is equal to

$$\frac{m_1 - m_2}{m_1 - m_0} \times 100$$

where

m_0 is the mass, in grams, of the dish and the lid (7.2.2);

m_1 is the mass, in grams, of the dish, the lid and the test portion before drying (7.3);

m_2 is the mass, in grams, of the dish, the lid and the test portion after drying (7.4.3 or 7.4.4).

Calculate the water content to the nearest 0,01 %.

8.2 Repeatability

The difference between two single results obtained on identical test material by one analyst using the same apparatus within a short time interval will exceed 0,10 g of water per 100 g of product on average not more than once in 20 cases in the normal and correct operation of the method.

9 TEST REPORT

The test report shall show the method used and the result obtained; it shall also mention all 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 necessary for complete identification of the sample.