SLOVENSKI STANDARD
SIST EN ISO 11213:1998

01-november-1998

Modificiran škrob - Določevanje acetilnih skupin - Encimatska metoda (ISO 11213:1995)

Modified starch - Determination of acetyl content - Enzymatic method (ISO 11213:1995)

Modifizierte Stärke - Bestimmung des Acetylgehaltes - Enzymatisches Verfahren (ISO 11213:1995)

Amidon modifié - Dosage de l'acétyle - Méthode enzymatique (ISO 11213:1995)

Ta slovenski standard je istoveten z: **EN ISO 11213:1995**

ICS:

67.180.20 Škrob in izdelki iz njega Starch and derived products

SIST EN ISO 11213:1998 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 11213

January 1995

ICS 67.180.20

Descriptors: carbohydrates, starches, chemical analysis, determination of content, acetyl group, enzymatic method

English version

Modified starch - Determination of acetyl content - Enzymatic method (ISO 11213:1995)

Amidons et fécules modifiés - Détermination des groupements acétyles - Méthode enzymatique (ISO 11213:1995)

Modifizierte Stärke - Bestimmung des Acetylgehaltes - Enzymatisches Verfahren (ISO 11213:1995)

This European Standard was approved by CEN on 1994-11-28. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart,36 B-1050 Brussels

Foreword

The text of the International Standard ISO 11213:1995 has been prepared by Technical Committee ISO/TC 93 "Starch (including derivatives and by-products)" in collaboration with CEN/CS. It has been submitted to Parallel Vote and has been approved on 1994-11-28 as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 1995, and conflicting national standards shall be withdrawn at the latest by July 1995.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

Endorsement notice

The text of the International Standard ISO 11213:1995 was approved by CEN as a European Standard without any modification.

Annex ZA (normative)
Normative references to international publications with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

Publication	Year	Title	EN	Year
ISO 1666	1973	Starch - Determination of moisture content - Oven-drying methods	EN ISO 1666	1994

INTERNATIONAL STANDARD

ISO 11213

First edition
1995-02-01

Modified starch — Determination of acetyl content — Enzymatic method

Amidon modifié — Dosage de l'acétyle — Méthode enzymatique

Reference number
ISO 11213:1995(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 11213 was prepared by Technical Committee ISO/TC 93, *Starch (including derivatives and by-products).*

Annexes A, B and C of this International Standard are for information only.

International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland
Printed in Switzerland

Modified starch — Determination of acetyl content — Enzymatic method

1 Scope

This International Standard specifies an enzymatic method for the determination of the acetyl content of modified starch, both granular and soluble in cold water. Total and free acetyl contents are determined and the bound acetyl content is calculated.

The method is suitable for determining acetyl contents up to 2 % (*m/m*).

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1666:1973, *Starch — Determination of moisture content — Oven-drying methods.*

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods.*

3 Principle

The total acetyl content is determined by heating the sample with dilute hydrochloric acid which hydrolyses the acetyl fraction and solubilizes the starch. In the presence of the enzyme acetyl-CoA synthetase (ACS), acetate is converted with adenosine-5-triphosphate (ATP) and coenzyme A (CoA) to acetyl-Co-A. The latter then reacts with oxaloacetate to form citrate in the presence of citrate synthase (CS).

The oxaloacetate required for the reaction is formed from malate and nicotinamide adenine dinucleotide (NAD) in the presence of malate-dehydrogenase (MDH). In this reaction, the NAD is reduced to NADH and the formation of NADH can be determined by measuring the increase in absorbance at a specified wavelength. (See reference [1] in annex C.)

The free acetyl content is determined by making a suspension of the modified starch in water, filtering, and determining the acetyl content of the filtrate as already described. The bound acetyl content is calculated by subtracting the free acetyl content from total acetyl content.

4 Reagents and materials

The reagents used shall be of recognized analytical grade, unless otherwise specified. The water used shall comply with the specifications of ISO 3696, grade 2. The enzymes used shall be of a quality equivalent to the relevant enzymes of Boehringer Mannheim[1].

NOTE 1 Suitable test kits which are commercially available can be used.

4.1 Hydrochloric acid, 1 mol/l solution.

4.2 Sodium hydroxide, 5 mol/l solution.

4.3 Buffer solution.

In about 70 ml of water, dissolve the following reagents:

1) This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of the products named.