INTERNATIONAL STANDARD

ISO 11543

First edition
2000-09-15

Modified starch — Determination of hydroxypropyl content — Method using proton nuclear magnetic resonance (NMR) spectrometry

Amidon modifié — Détermination de la teneur en hydroxypropyle — Méthode spectrométrique de résonance magnétique nucléaire du proton

Reference number
ISO 11543:2000(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 11543 was prepared by Technical Committee ISO/TC 93, *Starch (including derivatives and by-products)*.

Annex A of this International Standard is for information only.

Modified starch — Determination of hydroxypropyl content — Method using proton nuclear magnetic resonance (NMR) spectrometry

1 Scope

This International Standard specifies a proton NMR spectrometric method for the determination of the hydroxypropyl content of granular modified starch.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 1666:1996, *Starch — Determination of moisture content — Oven-drying method*.

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

3 Principle

The modified starch is dissolved by partial hydrolysis in a solution of deuterium chloride in deuterium oxide.

The signal coming from the three protons of the methyl group in the hydroxypropyl function is measured.

An internal standard, 3-trimethylsilyl-1-propane sulfonic acid, sodium salt, is used.

4 Reagents and materials

Use only reagents of recognized analytical grade.

4.1 Water, complying with at least grade 3 in accordance with ISO 3696. The water shall be free from carbon dioxide.

4.2 Deuterium oxide, at least 99,8 % purity, in 25 ml screw-cap bottles.

4.3 Deuterium oxide, at least 99,95 % purity, in 0,75 ml sealed ampoules.

4.4 Deuterium chloride solution, c(DCl) ≈ 2 mol/l.

Dilute 1 ml of concentrated deuterium chloride [commercial form, w(DCl) ≈ 38 % (by mass)] with 5 ml of deuterium oxide (4.2).