



**International
Standard**

ISO 25136

**Modified starch — Determination
of hydroxypropyl content —
Spectrophotometric method**

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Modified starch — Determination of hydroxypropyl content — Spectrophotometric method

1 Scope

This document specifies a spectrophotometric method for the determination of the hydroxypropyl group content of modified starches.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

ISO 648, *Laboratory glassware — Single-volume pipettes*

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

3 Terms and definitions

The following terms and definitions apply to this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1 hydroxypropyl content

mass of hydroxypropyl groups divided by the mass of the test portion of hydroxypropylated starch, which represents the proportion or concentration of hydroxypropyl groups within the starch sample

Note 1 to entry: It is expressed as a fraction or percentage of the total mass of the sample.

4 Principle

4.1 Spectrophotometric method for hydroxypropyl content

In concentrated sulfuric acid, the hydroxypropyl group in modified starches is oxidized to produce propylene glycol, which is subsequently dehydrated to yield propionaldehyde and propenol. In this acidic medium, propionaldehyde and propenol react with ninhydrin to form purple-colored complex. The hydroxypropyl content is quantified by measuring the absorbance of this complex at 590 nm.

5 Reagents

Use only reagents of recognized analytical grade, unless otherwise specified.

5.1 Water, conforming to at least grade 3 of ISO 3696, and free from carbon dioxide.