

INTERNATIONAL STANDARD

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Oilseed residues — Determination of total isothiocyanate content and vinylthiooxazolidone content

*Tourteaux de graines oléagineuses — Dosage des isothiocyanates et de
la vinylthiooxazolidone*



Reference number
ISO 5504:1992(E)

ISO 5504:1992(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 5504 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*, Sub-Committee SC 2, *Oleaginous seeds and fruits*.

This second edition cancels and replaces the first edition (ISO 5504:1983), the Scope and Expression of results of which have been technically revised.

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

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Oilseed residues — Determination of total isothiocyanate content and vinylthiooxazolidone content

1 Scope

This International Standard specifies a method for the determination of the total isothiocyanate (ITC) content and 5-vinylthiooxazolidone (VTO) content produced by the enzymic hydrolysis of glucosinolates in oilseed residues of the *Brassica* family.

Under the operating conditions described, the method does not allow determination of free isothiocyanates and free vinylthiooxazolidone.

It has been concluded from the results of inter-laboratory tests that, owing to the accuracy of the method, it is not suitable for use on products having contents of less than

2 $\mu\text{mol/g}$ of ITC

6 $\mu\text{mol/g}$ of VTO

Annex A gives, for information, a method of determining the isothiocyanate content by argentimetry. This method is not applicable, however, to oilseed residues of the *Brassica* family having low glucosinolates contents.

NOTE 1 For rapeseeds, two methods for the determination of glucosinolates are given in ISO 9167-1 and ISO 9167-2.

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 734:1979, *Oilseeds residues — Determination of hexane extract (or light-petroleum extract), called "oil content"*.

ISO 5502:1992, *Oilseed residues — Preparation of test samples*.

3 Principle

After removal of the fats and oil (de-fatting), if necessary, and drying of the oilseed residue, enzymatic hydrolysis of the glucosinolates, extraction of isothiocyanates (ITC) with dichloromethane or chloroform and of vinylthiooxazolidone (VTO) with diethyl ether.

Determination of ITC by gas chromatography and of VTO by ultraviolet spectrometry.

4 Reagents

Use only reagents of recognized analytical grade, unless otherwise specified, and distilled or demineralized water or water of at least equivalent purity.

4.1 Reagents for determination of ITC

4.1.1 Dichloromethane, or, failing this, chloroform.

WARNING — Take special precautions when handling chloroform. Avoid prolonged exposure to chloroform by, for example, carrying out all operations, so far as possible, in a fume cupboard.

4.1.2 *n*-Hexane, or, failing this, light petroleum (boiling range 40 °C to 60 °C).

4.1.3 Buffer solution, of pH 7, commercially available, or, for example, a solution prepared as follows.

Measure 35,3 ml of 0,1 mol/l citric acid monohydrate ($\text{C}_6\text{H}_8\text{O}_7 \cdot \text{H}_2\text{O}$) solution (21,01 g/l solution) into a