

ICS 67.050

English Version

## Foodstuff - Determination of pesticide residues by ethyl acetate extraction using GC- and LC-MS/MS (SweEt)

Produits alimentaires - Dosage des résidus de pesticides par extraction à l'acétate d'éthyle par GC- et LC-MS/MS (SweEt)

Lebensmittel - Bestimmung von Pestizidrückständen mit Ethylacetatextraktion durch GC- und LC-MS/MS (SweEt)

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## European foreword

This document (CEN/TS 17743:2022) has been prepared by Technical Committee CEN/TC 275 “Food analysis - Horizontal methods”, the secretariat of which is held by DIN.

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**WARNING — The application of this Technical Specification can involve hazardous materials, operations and equipment. This Technical Specification does not claim to address all the safety problems associated with its use. It is the responsibility of the user of this Technical Specification to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.**

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## 1 Scope

This document specifies a method for the analysis of pesticide residues in foods of plant and of animal origin by ethyl acetate extraction using GC- and LC-MS/MS (SweEt).

## 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.

CEN/TS 17061:2019, *Foodstuffs - Guideline for the calibration and quantitative determination of chromatographic methods for the determination of pesticide residues and organic contaminants*

## 3 Terms and Definitions

No terms and definitions are listed in this document.

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

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

## 4 Principle

The method is based on extraction with ethyl acetate followed by determination with liquid chromatography (LC) and gas chromatography (GC). No clean-up is needed for low fat/oil fruit, vegetables and cereals or honey. However, for commodities with high fat/oil content, ethyl acetate/cyclohexane is used for extraction. Furthermore, a clean-up step using gel permeation chromatography (GPC) is needed. The animal products with low fat/oil content are extracted with ethyl acetate followed by clean-up using Primary Secondary Amine (PSA) and C18<sup>1</sup> as sorbents. For extraction of cereals, acidified ethyl acetate is used, which makes it possible to analyze acidic pesticides such as phenoxy acids.

**Low fat/oil fruits, vegetables and honey:** The homogenous sample is extracted with ethyl acetate after addition of NaHCO<sub>3</sub>. After extraction, Na<sub>2</sub>SO<sub>4</sub> is added to remove water. The sample extract is centrifuged and filtered prior to injection to GC-MS/MS and LC-MS/MS.

**Cereals:** The grinded sample is extracted after water addition with acidified ethyl acetate (5.21). After extraction, Na<sub>2</sub>SO<sub>4</sub> is added to remove water. The sample extract is centrifuged and filtered prior to injection to GC-MS/MS and LC-MS/MS.

**Animal origin:** The homogenous sample is extracted using ethyl acetate or ethyl acetate + cyclohexane (V<sub>1</sub> + V<sub>2</sub>, 1 + 1). After extraction, Na<sub>2</sub>SO<sub>4</sub> is added to remove water. The choice of extraction solvent depends on the fat/oil content of the sample. Samples with a fat/oil content of a mass fraction ≤ 10 % are extracted with ethyl acetate and purified with the sorbents PSA and C18 whereas for samples with higher fat/oil content ethyl acetate + cyclohexane (V<sub>1</sub> + V<sub>2</sub>, 1 + 1) followed by GPC is used. The sample extract is finally filtered prior to injection to GC-MS/MS and LC-MS/MS.

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<sup>1</sup> Octadecylsilyl chemically bonded silica gel.