SLOVENSKI STANDARD
oSIST prEN 16852:2026

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Živila - Ugotavljanje etil karbamata v žganju iz koščičastega sadja, sadnih tropin in v drugih žganih pijačah - Metoda GC-MS

Foodstuffs - Determination of ethyl carbamate in stone fruit spirits, fruit marc spirits and other spirit drinks - GC-MS method

Lebensmittel - Bestimmung von Ethylcarbamat in Steinobstbränden, Bränden aus Obsttrester und anderen Spirituosen - GC-MS-Verfahren

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Produits alimentaires - Détermination de la teneur en carbamate d'éthyle dans les eaux-de-vie de fruits à noyaux, les eaux-de-vie de marc de fruits et les autres boissons alcoolisées - Méthode par CG-SM

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ICS:

67.160.10	Alkoholne pijače	Alcoholic beverages

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 16852

October 2026

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English Version

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (prEN 16852:2026) has been prepared by Technical Committee CEN/TC 275 "Food analysis - Horizontal methods", the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 16852:2017.

prEN 16852:2026 includes the following significant technical changes with respect to EN 16852:2017:

— Removed normative references from the document;

— added purity and CAS numbers for several substances in the reagents clause;

— included option to use different weights for standard substances or commercially available standard solutions;

— added new clause 5.22 with information on quality control;

— removed recommendation about PTV injector for the GC device;

— included an optional sample preparation without the adjustment of the alcoholic strength;

— amended ethyl carbamate concentrations of the calibration solutions in Table 2;

— added an option for an additional qualifier ion;

— added a calculation formula for the method with SPE clean-up;

— removed reference to ISO 17025 regarding test report requirements;

— added the alcoholic strength for matrices used in the method validation study;

— full editorial revision.

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1 Scope

This European Standard specifies a gas chromatographic method using mass spectrometric detection for the determination of ethyl carbamate (EC) in stone fruit spirits, fruit marc spirits and other spirit drinks.

The method has been validated in an interlaboratory study for stone fruit spirits and fruit liqueurs, at levels ranging from 0,253 mg/l to 1,11 mg/l. However, linearity of the instrument response was proven for the concentration ranges 0,10 mg/l to 4,0 mg/l (simplified method) and 0,025 mg/l to 3,0 mg/l (procedure including sample clean-up), respectively.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

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

4 Principle

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Samples with a content of total dry extract of less than 10 g/l are injected directly into the gas chromatography mass spectrometry (GC-MS) system after the addition of internal standard (ISTD), and optionally after the adjustment of the alcoholic strength of the beverage. Samples with a higher total dry extract are first transferred onto a solid phase extraction (SPE) cartridge and the ethyl carbamate is eluted with a mixture of cyclohexane and ethyl acetate.

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Stone fruit spirits can contain precursors of ethyl carbamate which get transformed into EC under the influence of sunlight, e.g. during the shelf life of a spirit. To obtain the actual content of EC in the sample, light-protected glass ware (e.g. brown glass) shall be used during the analysis.

5 Reagents

Use only reagents of recognized analytical grade, including deionized water, unless otherwise specified. Solvents shall be of quality for HPLC (High Performance Liquid Chromatography) analysis.

In the preparation of solutions, other amounts can also be used respecting the given accuracy. Commercially available solutions may also be used.

Ethyl carbamate has been classified by IARC as probably carcinogenic to humans (see [1]).

5.1 Ethanol absolute, ≥ 99 %.

5.2 Ethanol solution, volume fraction φ = 65 %.

Pipet 65 ml of ethanol (5.1) into a 100 ml volumetric flask and fill to the mark with water.

5.3 Ethanol solution, φ = 35 %.

Pipet 35 ml of ethanol (5.1) into a 100 ml volumetric flask and fill to the mark with water.

5.4 Cyclohexane.

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5.5 Ethyl acetate.

5.6 Eluant, cyclohexane + ethylacetate, V_1 + V_2, 1+1.

5.7 n-Pentane.

5.8 Solid phase material.

Approximately 20 g of a chemically inert, wide-pore and highly pure diatomaceous earth based solid phase, e.g. Extrelut® NT[1]

5.9 Sodium chloride.

5.10 Ethyl carbamate, ≥ 99 %, CAS 51-79-6.

5.11 Butyl carbamate, ≥ 98 %, CAS 592-35-8.

5.12 d_5-Ethyl carbamate, ≥ 98% chemical purity, ≥ 99% isotopic purity, CAS 73962-07-9.

5.13 Ethyl carbamate stock solution, mass concentration ρ(EC) = 1 000 mg/l.

Weigh to the nearest 0,01 mg, 50 mg of ethyl carbamate (5.10) into a 50 ml volumetric flask and fill to the mark with ethanol (5.1).

5.14 Ethyl carbamate working solution 1, ρ(EC) = 100 mg/l.

Pipet 5 ml of ethyl carbamate stock solution (5.13) into a 50 ml volumetric flask and dilute to the mark with ethanol (5.1).

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5.15 Ethyl carbamate working solution 2, ρ(EC) = 10 mg/l.

Pipet 5 ml of ethyl carbamate working solution 1 (5.14) into a 50 ml volumetric flask and dilute to the mark with ethanol (5.1).

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5.16 Butyl carbamate stock solution, ρ(BC) = 1 000 mg/l.

Weigh to the nearest 0,01 mg, 50 mg of butyl carbamate (5.11) into a 50 ml volumetric flask and fill to the mark with ethanol (5.1).

5.17 Butyl carbamate working solution, ρ(BC) = 40 mg/l.

Pipet 2 ml of butyl carbamate stock solution (5.16) into a 50 ml volumetric flask. Add 33 ml of ethanol (5.1) and dilute to the mark with water.

5.18 d_5-Ethyl carbamate stock solution, ρ(d5-EC) = 1 000 mg/l.

Weigh to the nearest 0,01 mg, 50 mg of d_5-ethyl carbamate (5.12) into a 50 ml volumetric flask and fill to the mark with ethanol (5.1).

5.19 d_5-Ethyl carbamate working solution, ρ(d5-EC) = 40 mg/l.

Pipet 2 ml of d_5-ethyl carbamate stock solution (5.18) into a 50 ml volumetric flask. Add 33 ml of ethanol (5.1) and dilute to the mark with water.

5.20 Ethyl carbamate standard solutions for simplified method, dry extract < 10 g/l.

The ethyl carbamate standard solutions for the simplified method can be prepared according to Table 1. A minimum of 6 standard solutions shall be prepared.

[1] This information is given for the convenience of users of this European Standard and does not constitute an endorsement by CEN of these products. Equivalent products may be used if they can be shown to lead to the same results.

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