



SLOVENSKI STANDARD

SIST EN 15691:2023

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Nadomešča:
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Etanol kot komponenta za dodajanje motornemu bencinu - Določevanje suhega ostanka (nehlapna snov) - Gravimetrična metoda

Ethanol as a blending component for petrol - Determination of dry residue (involatile material) - Gravimetric method

Ethanol zur Verwendung als Blendkomponente in Ottokraftstoff - Bestimmung des Trockenrückstandes (nichtflüchtige Bestandteile) - Gravimetrisches Verfahren

Ethanol comme base de mélange à l'essence - Détermination du résidu sec (produits non volatils) - Méthode gravimétrique

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EUROPEAN STANDARD

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English Version

Ethanol as a blending component for petrol -
Determination of dry residue (involatile material) -
Gravimetric method

Éthanol comme base de mélange à l'essence -
Détermination du résidu sec (produits non volatils) -
Méthode gravimétrique

Ethanol zur Verwendung als Blendkomponente in
Ottokraftstoff - Bestimmung des Trockenrückstandes
(nichtflüchtige Bestandteile) - Gravimetrisches
Verfahren

This European Standard was approved by CEN on 7 May 2023.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 15691:2023) has been prepared by Technical Committee CEN/TC 19 “Gaseous and liquid fuels, lubricants and related products of petroleum, synthetic and biological origin”, the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2023, and conflicting national standards shall be withdrawn at the latest by December 2023.

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

This document supersedes EN 15691:2009.

It was originally prepared by CEN/TC 19’s Ethanol Task Force based on a regulated analysis method for neutral alcohol [1].

In comparison with the previous edition EN 15691:2009, based on a re-evaluation of the interlaboratory study the precision statement (Clause 10) has been replaced by the recalculated version. Following the same re-evaluation the scope of the method (Clause 1) has not been extended.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

1 Scope

This document specifies a procedure for the determination of dry residue in ethanol by gravimetric (desiccation) method in the range (10 to 25) mg/100 ml.

NOTE In an interlaboratory study [2] the method described has been tested at levels down to 3,5 mg/100 ml, but the precision appeared to be insufficient at such low levels.

WARNING — Use of this document can involve hazardous equipment, materials and operations. This method does not purport to address to all of the safety problems associated with its use. It is the responsibility of the user of this document to take appropriate measures to ensure the safety and health of personnel prior to the application of the document, and to fulfil statutory and regulatory restrictions for this purpose.

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.

EN ISO 3170, *Petroleum liquids - Manual sampling (ISO 3170)*

3 Terms and definitions

No terms and definitions are listed in 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 <https://www.electropedia.org/>

4 Principle

Dry residue is determined by the weighing of the residue left by evaporation of alcohol on a boiling water bath and drying in a drying oven.

Dry residue includes all matter that is non-volatile under specified physical conditions.

5 Apparatus

5.1 **Evaporating dish** (100 ml to 250 ml).

5.2 **Boiling water bath.**

5.3 **Pipette**, 100 ml, class A.

5.4 **Oven**, capable of being held at a temperature of (103 ± 2) °C.

5.5 **Desiccator**, containing freshly activated silica gel (or equivalent desiccant) with moisture content indicator.

5.6 **Analytical balance**, capable of weighing to the nearest 0,1 mg.

6 Sampling

6.1 Preparation of samples

Unless otherwise specified in the commodity specification, samples shall be taken as described in EN ISO 3170.

Collect the samples in glass bottles. Samples shall be stored at room temperature prior to analysis.

6.2 Verification and quality control

It is recommended to prepare a sodium chloride solution with a content of 100 mg/l in ethanol from neutral ethanol free of dry residue and from an aqueous sodium chloride solution the content of which is 10 g/l. For example, 10 ml of the aqueous solution can be introduced in 1 l of this neutral alcohol without residue. This is a solution with a dry residue content of 10 mg/100 ml.

7 Procedure

Place clean dry evaporating dishes (5.1) into the oven for 30 min, then place them into the desiccator (5.5) for 30 minutes.

Use a tool to manipulate dishes, do not touch directly with fingers.

Weigh to the nearest 0,1 mg, the clean dry evaporating dishes (5.1) (M_0).

Pipette (5.3) 100 ml of sample or quality control and introduce respectively into the dishes. Place the dishes with sample on the boiling water bath (5.2) and allow to dry.

NOTE In general, it takes about two hours to evaporate the alcohol on the water bath.

Place the dishes in the oven (5.4) at (103 ± 2) °C for 30 minutes and then transfer dishes with residue into a desiccator (5.5). Allow the dishes to cool for 30 minutes and then weigh, to the nearest 0,1 mg, the dishes with residue (M_1).

8 Calculation

The content of dry residue, D , expressed in mg/100 ml is given by:

$$D = M_1 - M_0 \quad (1)$$

where

D is the expression for dry residue;

M_1 is the mass, in mg, of the dish and residue after drying;

M_0 is the mass, in mg, of the clean dry dish.

9 Expression of results

Report the content of dry residue rounded to the nearest 1 mg/100 ml.