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Petrol fuel for small internal combustion engines -
Requirements and test methods

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>See Eesti standard EVS-EN 17867:2023+A1:2025 sisaldab Euroopa standardi EN 17867:2023+A1:2025 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 30.04.2025.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN 17867:2023+A1:2025 consists of the English text of the European standard EN 17867:2023+A1:2025.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 30.04.2025.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
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EUROPEAN STANDARD

EN 17867:2023+A1

NORME EUROPÉENNE

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English Version

Petrol fuel for small internal combustion engines - Requirements and test methods

Essence pour petits moteurs à combustion interne -
Exigences et méthodes d'essai

Benzin für Kleinmotoren - Anforderungen und
Prüfverfahren

This European Standard was approved by CEN on 7 May 2023 and includes Amendment 1 approved by CEN on 20 February 2025.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 17867:2023+A1:2025) 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of an identical text or by endorsement, at the latest by October 2025, and conflicting national standards shall be withdrawn at the latest by October 2025.

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.

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A1 This document supersedes EN 17867:2023. **A1**

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **A1**.

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Introduction

[A1] This document is intended to provide a standardized quality for petrol fuels for small engines, with the purpose to reduce engine emissions for workers safety and environmental reasons and to extend the lifetime of devices. **[A1]**

Petrol fuels from an alkylate production process as specified in this document are mainly composed of paraffinic hydrocarbons, contain only small amounts of olefins and are substantially free of aromatic compounds, especially benzene. They are oxygen free, low in sulfur and are mainly used for small engines (chain saws, mowing machines etc.) requiring pure petrol fuels or petrol fuels with an admixture of engine oil depending on the design of the engine. Typically these fuels are produced in alkylation units but other production methods are possible.

This document describes both a petrol fuel for externally lubricated four-stroke engines and a petrol fuel for mixture-lubricated engines containing a lubricating oil component.

1 Scope

This document specifies requirements on petrol fuel for use as fuel in small engines, together with the methods to be applied for testing these properties.

This document specifies requirements for two types of petrol fuel having low aromatics and sulfur content:

- one type for use in four-stroke engines with separate lubrication; and
- one mixed petrol fuel type for use in mixture-lubricated engines.

Testing the properties of the added engine oil is out of the scope of this document.

NOTE For the purposes of this document, the terms “% (m/m)” and “% (V/V)” are used to represent respectively the mass fraction and the volume fraction.

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 13016-1:2018, *Liquid petroleum products - Vapour pressure - Part 1: Determination of air saturated vapour pressure (ASVP) and calculated dry vapour pressure equivalent (DVPE)*

EN 13016-3:2018, *Liquid petroleum products - Vapour pressure - Part 3: Determination of vapour pressure and calculated dry vapour pressure equivalent (DVPE) (Triple Expansion Method)*

EN 16942, *Fuels - Identification of vehicle compatibility - Graphical expression for consumer information*

EN ISO 2160, *Petroleum products - Corrosiveness to copper - Copper strip test (ISO 2160)*

EN ISO 3405:2019, *Petroleum and related products from natural or synthetic sources - Determination of distillation characteristics at atmospheric pressure (ISO 3405:2019)*

EN ISO 3675, *Crude petroleum and liquid petroleum products - Laboratory determination of density - Hydrometer method (ISO 3675)*

EN ISO 4259-2, *Petroleum and related products - Precision of measurement methods and results - Part 2: Interpretation and application of precision data in relation to methods of test (ISO 4259-2)*

EN ISO 5163:2014, *Petroleum products - Determination of knock characteristics of motor and aviation fuels - Motor method (ISO 5163:2014)*

EN ISO 5164:2014, *Petroleum products - Determination of knock characteristics of motor fuels - Research method (ISO 5164:2014)*

EN ISO 6246:2017¹, *Petroleum products - Gum content of fuels - Jet evaporation method (ISO 6246:2017)*

EN ISO 12185, *Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method (ISO 12185:1996)*

EN ISO 20846:2019, *Petroleum products - Determination of sulfur content of automotive fuels - Ultraviolet fluorescence method (ISO 20846:2019)*

EN ISO 20884:2019, *Petroleum products - Determination of sulfur content of automotive fuels - Wavelength-dispersive X-ray fluorescence spectrometry (ISO 20884:2019)*

¹ As impacted by EN ISO 6246:2017/A1:2019.

EN ISO 22854:2021, *Liquid petroleum products - Determination of hydrocarbon types and oxygenates in automotive-motor gasoline and in ethanol (E85) automotive fuel - Multidimensional gas chromatography method (ISO 22854:2021)*

ISO 13738, *Lubricants, industrial oils and related products (class L) - Family E (Internal combustion engine oils) - Specifications for two-stroke-cycle gasoline engine oils (categories EGB, EGC and EGD)*

ASTM D5134, *Standard Test Method for Detailed Analysis of Petroleum Naphthas through n-Nonane by Capillary Gas Chromatography*

JASO M345, *Two-stroke-cycle gasoline engine - Engine oils - Classifications*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

3.1 small engine

positive-ignition engine with a reference performance below 19 kW intended for use in both hand-held machines and devices, and ground-based machines and devices

Note 1 to entry: Hand-held machines are devices such as chain saws, brush cutters, blowing equipment etc. and ground-based machines are devices such as mowing machines, snow mobiles, ride-on mowers, shredders, motor hoes, etc.

3.2 alkylate production process

highly branched isoparaffin mixtures gained by alkylation of C4 olefins in the presence of concentrated sulfuric acid/hydrofluoric acid or strongly acidic zeolite catalysts at relatively low temperatures

Note 1 to entry: Alkylate-based petrol fuels are largely composed of C8 isoparaffins and often contain isooctane as major part.

3.3 base petrol fuel

A1 4S **A1**

petrol fuel without two-stroke oil (3.4)

3.4 two-stroke oil

engine oil used to mix with base petrol fuel **A1** 4S **A1** to produce two-stroke petrol fuel **A1** 2S **A1**

3.5 two-stroke mixture

A1 2S **A1**

petrol fuel with two-stroke oil (3.4)

Note 1 to entry: Content of two-stroke oil is calculated without consideration of the solvent serving as solubilizing agent.