

Automotive fuels — Unleaded petrol — Requirements and test methods

The European Standard EN 228:1998 has the status of a
British Standard

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National foreword

This British Standard is the English language version of EN 228:1998. It supersedes BS EN 228:1995 which is withdrawn.

The UK participation in its preparation was entrusted by Technical Committee PTI/2, Liquid fuels, to Subcommittee PTI/2/1, Unleaded petrol, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

EN 228 requires that each country implementing it establishes national annexes detailing requirements for, “pump marking” “RON” and “MON” requirements for regular grade, and “seasonal volatility”. Also, if the methods for sampling given in ISO 3170 or ISO 3171 are not to be used, a national annex has to detail the national requirements for the sampling of unleaded petrol. National annex NA of BS EN 228 gives additional requirements on sampling, in particular for sampling from the pump; national annex MB gives details of requirements for pump marking; national annex NC gives details of RON and MON requirements for regular grade; and national annex ND gives details of seasonal volatility requirements.

The principal differences between BS EN 228:1995 and this edition are as follows:

- the normative test methods have been reviewed and many are now no longer dated;
- the minimum vapour pressure of class 8 has been changed from 65 kPa to 70 kPa.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 12, an inside back cover and a back cover.

This British Standard, having been prepared under the direction of the Sector Committee for Materials and Chemicals, was published under the authority of the Standards Committee and comes into effect on 15 July 1999

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English version

Automotive fuels — Unleaded petrol — Requirements and test methods

Carburants pour automobiles — Essence sans plomb — Exigences et méthodes d'essai

Kraftstoffe für Kraftfahrzeuge — Unverbleite Ottokraftstoffe — Mindestanforderungen und Prüfverfahren

This European Standard was approved by CEN on 23 November 1998.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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 Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 19, Petroleum products, lubricants and related products, the Secretariat of which is held by NNL.

This European Standard replaces EN 228:1993.

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 June 1999, and conflicting national standards shall be withdrawn at the latest by June 1999.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

In this third edition of EN 228 all relevant characteristics, requirements and test methods are specified. Significant technical changes between this European Standard and the previous edition are:

- normative references have been updated;
- the years of publication of normative references have been deleted, with some exceptions;
- sulfur content is specified more precisely;
- the minimum vapour pressure of class 8 has been changed from 65 kPa to 70 kPa.

For climate-related requirements are provisions included for national bodies to specify seasonal grades from a limited number of options given in this European Standard.

In this standard annex A is informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies requirements and test methods for marketed and delivered unleaded petrol. It is for use in petrol engine vehicles designed to run on unleaded petrol, including those equipped with devices to reduce emitted pollutants.

All requirements apply equally to regular and premium grade unleaded petrol, unless indicated otherwise. The requirements regarding the regular grade apply only if a regular grade unleaded petrol is marketed.

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

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 237, *Liquid petroleum products — Petrol — Determination of low lead concentrations by atomic absorption spectrometry*.

EN 238, *Liquid petroleum products — Petrol — Determination of the benzene content by infrared spectrometry*.

EN 1601, *Liquid petroleum products — Unleaded petrol — Determination of organic oxygenate compounds and total organically bound oxygen content by gas chromatography (O-FID)*.

EN ISO 2160, *Petroleum products — Corrosiveness to copper — Copper strip test*. (ISO 2160:1985, including Corrigendum 1:1993)

EN ISO 3675, *Crude petroleum and liquid petroleum products — Laboratory determination of density or relative density — Hydrometer method*. (ISO 3675:1993).

EN ISO 4259, *Petroleum products — Determination and application of precision data in relation to methods of test*. (ISO 4259:1992/Cor 1:1993).

EN ISO 6246, *Petroleum products — Gum content of light and middle distillate fuels — Jet evaporation method*. (ISO 6246:1995).

EN ISO 7536, *Petroleum products — Determination of oxidation stability of gasoline — Induction period method*. (ISO 7536:1994).

EN ISO 8754, *Petroleum products — Determination of sulfur content — Energy-dispersive-X-ray fluorescence method*. (ISO 8754:1992).

EN 12177, *Liquid petroleum products — Unleaded petrol — Determination of benzene content by gas chromatography*.

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

prEN 13016-1:1997, *Liquid petroleum products — Vapour pressure — Part 1: Determination of air saturated vapour pressure (ASVP)*.

EN ISO 14596, *Petroleum products — Determination of sulfur content — Wavelength-dispersive X-ray fluorescence spectrometry*.

EN 24260, *Petroleum products and hydrocarbons — Determination of sulfur content — Wickbold combustion method*. (ISO 4260:1987).

EN 25163: 1993, *Motor and aviation-type fuels — Determination of knock characteristics — Motor method*. (ISO 5163:1990).

EN 25164: 1993, *Motor fuels — Determination of knock characteristics — Research method*. (ISO 5164:1990).

ISO 3170, *Petroleum liquids — Manual sampling*.

ISO 3171, *Petroleum liquids — Automatic pipeline sampling*.

ISO 3405, *Petroleum products — Determination of distillation characteristics*.

ASTM D 1613:1991, *Volatile solvents and chemical intermediates — Determination of acidity — Titration method*.

3 Sampling

Samples shall be taken as described in ISO 3170 or ISO 3171 and/or in accordance with the requirements of national standards or regulations for the sampling of unleaded petrol. The national requirements shall be set out in detail or shall be referred to by reference in a national annex to this European Standard.

NOTE It is essential that for sampling of unleaded petrol the containers used to take and store the samples before test are not contaminated with lead.

4 Pump marking

Information to be marked on dispensing pumps used for delivering unleaded petrol, and the dimensions of the marking shall be in accordance with the requirements of national standards or regulations for the marking of pumps for unleaded petrol. Such requirements shall be set out in detail or shall be referred to by reference in a national annex to this European Standard.

5 Requirements and test methods

5.1 Dyes and markers

The use of dyes and markers is allowed.

5.2 Additives

In order to improve the performance quality the use of additives is allowed. Suitable fuel additives without known harmful side-effects are recommended in the appropriate amount, to help to avoid deterioration of driveability and emissions control durability. Other technical means with equivalent effect may also be used.