AS 1876—1990

Australian Standard®

# Petrol (gasoline) for motor vehicles

This Australian Standard was prepared by Committee CS/15, Petrol for Motor Vehicles. It was approved on behalf of the Council of Standards Australia on 28 February 1989 and published on 4 June 1990.

---

The following interests are represented on Committee CS/15:

Australian Automobile Association
Australian Federation of Consumer Organizations
Australian Institute of Petroleum
Automotive and Petroleum Industry Consultative Council
Consumer Affairs Bureau, A.C.T.
Department of Defence
Department of Primary Industries and Energy
Department of Transport and Communications
Federal Chamber of Automotive Industries
Institution of Mechanical Engineers
Society of Automotive Engineers—Australasia
State Pollution Control Commission, N.S.W.
The Royal Australian Chemical Institute

---



---

*This Standard was issued in draft form for comment as DR 88168.*

Australian Standard®

# Petrol (gasoline) for motor vehicles

First published as AS 1876 — 1976.
AS 1876 — 1976 revised and redesignated AS 1876.1— 1982.
AS 1876.2 first published 1984.
AS 1876.1 — 1982 and AS 1876.2— 1984 revised, amalgamated and redesignated AS 1876— 1990.

Incorporating:
Amdt 1 — 1994

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 6182 3

# PREFACE

This Standard was prepared by the Standards Australia Committee on Petrol for Motor Vehicles under the direction of the Consumer Standards Advisory Committee. This Standard supersedes both AS 1876.1— 1982 Petrol (gasoline) for motor vehicles, Part 1: Leaded petrol, and AS 1876.2 —1984 Petrol (gasoline) for motor vehicles, Part 2: Unleaded petrol.

This edition differs from the earlier editions not only because it combines two separate documents into a single document but it deletes all reference to standard grade leaded petrol (which was taken-off the market) and includes requirements for premium grade unleaded petrol (which was recently introduced onto the market).

# CONTENTS

# FOREWORD

Although this Standard relates to leaded and unleaded petrol (also known as gasoline or motor spirit), it is not a comprehensive specification for these formulations as it does not address all considerations relating to petrol performance. Essentially, the properties specified in this Standard are confined to general composition, limits on chemical content, limits on some performance properties (including antiknock), colour identification and marking. Properties such as distillation ranges, vapour pressure, water content etc. have not as yet been resolved.

In revising the Standard all the properties specified were reviewed. The areas of most concern related primarily to—

(a) the colour of premium grade unleaded petrol;

(b) the antiknock values of premium grade unleaded petrol; and

(c) the maximum sulfur content of unleaded petrol.

With regard to the colour of premium grade unleaded petrol a number of different colours were considered. However, as the purpose of colouring petrol is to provide not only a means for distinguishing between the various grades of petrol but also to identify possible dilution of premium grade with regular grade, it was believed that the colour of the premium grade petrol had to be considered in conjunction with the colour of the regular grade petrol. In order to satisfy the above requirements it was agreed that premium unleaded petrol should be a light colour (yellow was selected) whilst the regular unleaded petrol should be a substantially darker colour (in this case purple was selected).

As to the question of the appropriate antiknock value of the premium grade unleaded petrol, the value specified in Table 2 was selected because it was believed that unleaded petrol with such an octane rating would improve the performance of vehicles with engines designed and tuned for use with such fuel.

The Antiknock Index (AKI) (i.e. the average of the Motor Octane Number (MON) and the Research Octane Number (RON)) was again discussed but, it was again agreed to specify the octane rating with more familiar MON and RON values only.

With regard to the sulfur content in unleaded petrol, Clause 5.2 was agreed to because it reflected the basic requirements specified in a Code of Practice Agreement and Joint Undertaking between the Australian Institute of Petroleum and the Federal Chamber of Automotive Industries.

Finally, concern was also expressed about the application of the notes in Clause 4. In this regard, it was agreed that the intent of the notes was to merely explain the requirements of the Clause. That is, as notes are not mandatory, the limitations specified need not be justified, but the spirit of the intent should be complied with.

STANDARDS AUSTRALIA

# Australian Standard
# Petrol (gasoline) for motor vehicles

**1 SCOPE.** This Standard specifies selected requirements for leaded and unleaded petrol for use in motor vehicles powered by spark-ignition internal-combustion engines.

NOTES:

1. This Standard does *not* apply to aviation petrols (AVGAS).
2. In Australia, the most common term for motor fuel is 'petrol'. Alternative terms are 'gasoline' and 'motor spirit'.

**2 REFERENCED DOCUMENTS.** The following documents are referred to in this Standard:

BS

| | |
|---|---|
| 3195 | Methods for sampling petroleum products |
| 3195.1 | Part 1: Liquid hydrocarbons — Manual sampling |
| 4306 | Determination and application of precision data in relation to methods of test for petroleum products |

ASTM

| | |
|---|---|
| D 130/IP 154 | Method for detection of copper corrosion from petroleum products by the copper strip tarnish test (BS 4351 is technically identical) |
| D 381/IP 131 | Test method for existent gum in fuels by jet evaporation (BS 4348 is technically identical) |
| D 525/IP 40 | Test method for oxidation stability of gasoline (induction period method) (BS 4347 is technically identical) |
| D 1266/IP 107 | Test method for sulfur in petroleum products (lamp method) (BS 4350 is technically identical) |
| D 2622 | Test method for sulfur in petroleum products (X-ray spectrographic method) |
| D 2699/IP 237 | Test method for knock characteristics of motor fuels by the research method |
| D 2700/IP 236 | Test method for knock characteristics of motor and aviation fuels by the motor method |
| D 3116 | Test method for trace amounts of lead in gasoline |
| D 3231 | Test method for phosphorus in gasoline |
| D 3237 | Test method for lead in gasoline by atomic absorption spectometry |
| D 3341 | Test method for lead in gasoline — Iodine monochloride method |
| D 3606 | Test method for benzene and toluene in finished motor and aviation gasoline by gas chromatography |
| D 4057 | Practice for manual sampling of petroleum and petroleum products |
| D 4177 | Method for automatic sampling of petroleum and petroleum products |

IP

| | |
|---|---|
| 270 | Total lead in gasoline — Iodine monochloride method |
| 336 | Sulfur in petroleum product by energy-dispersive X-ray fluorescence (non-dispersive X-ray fluorescence) |

**3 DEFINITIONS.** For the purpose of this Standard, the following definitions apply:

**3.1 Additive**—chemical substances added to petrol to impart desirable properties to, or prevent deterioration of, the petrol.

**3.2 Extenders**—oxygenates that may be added to petrol.

**4 COMPOSITION.** The composition of petrol shall be as follows:

(a) Leaded and unleaded petrol—

(i) shall consist essentially of volatile hydrocarbons;

(ii) shall not contain any water or suspended matter which is visible, without any aids, to a person with normal vision; and

(iii) may contain additives or extenders or both provided that it is ensured that such compounds do not have a measurable deleterious effect on the catalysts or fuel system components that are used in conjunction with unleaded petrol engines, and that they do not measurably increase noxious exhaust emissions.

NOTE: Although Clause 4(a)(iii) permits the use of additives and extenders in petrol, the toxic nature of such compounds should be taken into consideration. Where additives or extenders or both are used, the concentration of these compounds should be such that they are no more hazardous to health than the volatile hydrocarbons specified in Clause 4(a)(i).