Australian Standard™

Evaluation of devices, additives and processes which claim to improve vehicle performance

Part 1: Engines designed for leaded petrol to operate on regular unleaded petrol

Standards Australia

This Australian Standard was prepared by Committee ME-020, Internal Combustion Engines. It was approved on behalf of the Council of Standards Australia on 31 August 2003 and published on 5 September 2003.

The following are represented on Committee ME-020:

Australian Automobile Association

Australian Automotive Aftermarket Association

Australian Industry Group

Australian Institute of Petroleum

Construction and Mining Equipment Association of Australia

Environment Australia

Federation of Automotive Products Manufacturers

University of Melbourne

Victorian Automobile Chamber of Commerce

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Part 1: Engines designed for leaded petrol to operate on regular unleaded petrol

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PREFACE

This Standard was prepared by the Standards Australia Committee ME-020, Internal Combustion Engines to supersede AS 4430.1:1996, *Evaluation of devices and additives which claim to improve vehicle performance*, Part 1: *Engines designed for leaded petrol to operate on unleaded petrol*.

Of the interests represented on the Committee listed on the inside front cover, the Australian Automotive Aftermarket Association (AAAA) did not support the publication of this Standard.

This Standard is Part 1 of AS 4430 series, which, when complete, will comprise the following:

AS	
4430	Evaluation of devices, additives and processes which claim to improve vehicle performance
4430.1	Part 1: Engines designed for leaded petrol to operate on regular unleaded petrol (this Standard)
4430.2	Part 2: Spark ignition petrol engine system
4430.3	Part 3: Compression ignition diesel engine system

This Part covers the testing procedure for devices or additives or processes which claim to allow internal combustion engines designed for use with leaded petrol to be used with regular unleaded petrol. It has been developed as a test procedure to ensure a credible process to verify the claims made by the suppliers of such devices or additives or processes.

These engines will most usually be used in road vehicles but this Standard is similarly applicable to internal combustion engines used for other purposes.

The term ‘normative’ has been used in this Standard to define the application of the appendix to which it applies. A ‘normative’ appendix is an integral part of a Standard.

CONTENTS

Page

FOREWORD

From time to time proprietary devices, off-the-shelf additives and processes, claiming to enable vehicles, which are designed to operate on leaded petrol, to operate satisfactorily on regular unleaded petrol, are offered for sale. The need for this Standard arises from the lack of a means of verifying the claims made for these devices, additives or processes. This verification involves test methods and performance requirements for evaluating the results.

Regular unleaded petrol was mandated for all new vehicles registered in Australia from 1 February 1986. Leaded petrol was removed from the Australian market on 1 January 2002 by regulation.

Lead alkyls were added to petrol to increase the antiknock qualities, also known as the octane rating. They also protect the valve seats from excessive recession.

This unavailability of leaded petrol has heightened interest in devices, additives or processes that are claimed to enable internal combustion engines designed for leaded petrol to operate on regular unleaded petrol. They must thereby provide for the lesser octane number of regular unleaded petrol and for valve seat recession protection.

The Australian vehicle fleet comprises the following:

(a) Post-1985 vehicles, which were designed to operate on—

  (i) unleaded petrol with a research octane number (RON) in the range of 91–93; and in some cases

  (ii) unleaded petrol with a research octane number (RON) of 95.

(b) Pre-1986 vehicles, which were designed to operate on—

  (i) leaded petrol with a minimum research octane number (RON) of 97 or 98 depending upon year of manufacture;

  (ii) lower octane leaded petrol; or

  (iii) lower octane unleaded petrol.

A process to test the claims that are made by suppliers of devices, additives or processes to improve petrol engine system performance when no longer able to use the fuel for which they were designed, is given in AS 4430.2.

STANDARDS AUSTRALIA

Australian Standard

Evaluation of devices, additives and processes which claim to improve vehicle performance

Part 1: Engines designed for leaded petrol to operate on regular unleaded petrol

1 SCOPE

This Standard specifies a test procedure and assessment criteria for evaluating claims that a device, additive or process can enable an engine system designed to operate on 97/98 RON leaded petrol to operate with comparable antiknock performance and/or durability on unleaded petrol (ULP) or premium unleaded petrol (PULP).

2 OBJECTIVE

The objective of this Standard is to provide a test method and performance requirements for evaluating claims made by suppliers of devices, additives and processes that their product will enable an engine designed to operate on leaded petrol to operate with comparable antiknock performance and durability on regular unleaded petrol.

3 REFERENCED DOCUMENT

The following document is referred to in this Standard:

EA (Environment Australia)
Fuel Standard (Petrol) Determination 2001 of the *Fuels Quality Standards Act 2000*

4 DEFINITIONS

For the purpose of this Standard the definitions below apply.

4.1 Accreditation

Certification, by a duly recognized body, of the facilities, capability, objectivity, data management, competence and integrity of an agency, service or operational group or individual to provide the specified service and/or required operation.

4.2 Additive

A substance added to fuel to improve or maintain engine system performance when operating on unleaded fuel of an octane number equal to or lower than that for which it was designed.

4.3 Certification

The authoritative act of documenting compliance with requirements.

NOTE: The requirements can relate to personnel, process, products, organization and services.

4.4 Device

A contrivance applied to the engine system to improve or maintain its performance and durability when operated on unleaded fuel of an octane number equal to or lower than that for which it was designed.