Vehicle Standard (Australian Design Rule 111/00 – Advanced Emission Control for Light Vehicles) 2024

Made under section 12 of the *Road Vehicle Standards Act 2018*

Explanatory Statement

Approved by the Hon Catherine King MP, Minister for Infrastructure, Transport, Regional Development and Local Government

February 2024

Authorised Version Explanatory Statement registered 15/04/2024 to F2024L00446

CONTENTS

1. LEGISLATIVE AUTHORITY

1.1 National Road Vehicle Standards

Vehicle Standard (Australian Design Rule 111/00 – Advanced Emission Control for Light Vehicles) 2024, also referred to as ADR 111/00, is made under section 12 of the *Road Vehicle Standards Act 2018* (the Act). Section 12 of the Act allows the Minister to determine National Road Vehicle Standards.

1.2 Exemption from Sunsetting

ADR 111/00 is exempt from the sunsetting provisions of the *Legislation Act 2003.*

Source of the Exemption

A standard made under section 12 of the Act is not subject to the sunsetting provisions of section 50 of the *Legislation (Exemptions and Other Matters) Act 2003* through section 12 of the *Legislation (Exemptions and Other Matters) Regulation 2015* (table item 56C). A similar exemption was previously granted in respect of national road vehicle standards made under section 7 of the *Motor Vehicle Standards Act 1989* (MVSA) (item 40, section 12 of the *Legislation (Exemptions and Other Matters) Regulation 2015*). This exemption is important to ensure that ADR 111/00 continues to remain in force, and available to regulators and industry.

Justification of Exemption

It is appropriate that standards made under section 12 of the Act, also known as the Australian Design Rules (ADRs), remain enduring and effective to regulate ongoing road worthiness of vehicles throughout their useful life and reduce regulatory burden on vehicle manufacturers.

Intergovernmental dependencies

The exemption concerns ADRs which facilitate the establishment and operation of the intergovernmental vehicle standard regime that Commonwealth, State and Territory governments rely on to regulate the safety of vehicles on public roads.

The Commonwealth uses the ADRs as the basis on which approvals to supply types of road vehicles to the market are granted under the *Road Vehicle Standards Rules 2019*. States and territories use the ADRs as the primary criteria on which vehicles are assessed for road worthiness. This ‘in-service’ aspect is dependent on the date of manufacture, which determines the applicable version of the ADRs against which the vehicle can be assessed. The ability to rely on national standards is particularly relevant given the long service life of vehicles – the average age of vehicles in Australia is 12.1 years.

While the ADRs are regularly updated to reflect changes in technology, it is not possible to apply these new standards retrospectively to vehicles that are already in use. With former ADRs kept on the Federal Register of Legislation, State and Territory governments can use them to ensure vehicles continue to comply with the ADRs that were in force when they were first supplied to the market.

In the event that the Commonwealth could not justify the maintenance of the ADRs, State and Territory governments would be compelled to create their own vehicle standards. Whilst this could mean adopting the substance of the lapsed ADRs as an interim measure, the differing needs and agendas of each State and Territory

Authorised Version Explanatory Statement registered 15/04/2024 to F2024L00446

government may result in variations to in-service regulations. Having different vehicle standards across the states and territories would make the scheme operate contrary to the underlying policy intent of the Act which is to set nationally consistent performance-based standards.

Commercial dependencies

The effect on vehicle manufacturers to redesign existing models to comply with new ADRs would present a burden and be a costly and onerous exercise. Manufacturers should not be expected to continually go back to redesign existing vehicles. Furthermore, ongoing product recalls to comply with new ADRs would undermine consumer confidence with significant financial impact to manufacturers. This exemption allows vehicle manufacturers to focus their efforts to ensure new models supplied to the market continue to comply.

Review of Australian Design Rules

Despite exemption from sunsetting, ADRs are subject to regular reviews, as resources permit, and when developments in vehicle technology necessitate updates to requirements. Comprehensive parliamentary scrutiny is available through these reviews.

Reviews of the ADRs ensure the ongoing effectiveness of a nationally consistent system of technical regulations for vehicle design, which are closely aligned, wherever appropriate with leading international standards such as United Nations regulations. This enables the rapid introduction of the latest technological advances into the Australian market, while also contributing to the industry's cost competitiveness in the domestic market.

1.3 International Harmonisation

A majority of Australian road vehicle standards such as ADR 111/00 harmonise closely with international regulations. This is so that manufacturers can more easily comply with regulation, and so that regulations capture the well-developed views of the international community. This ultimately leads to safer and cheaper products for Australians.

ADRs often directly incorporate United Nations (UN) Regulations as an appendix, where the appendix provides the technical requirements of the ADR and the rest of the ADR facilitates its application to Australia. To this end, Section 6 creates exemptions and alternate procedures. For instance, manufacturers are exempt from requirements that pertain to UN type approvals, and instead, need to comply with the approvals process set out in the Act. Likewise, Section 7 provides for the acceptance of certain alternative standards that have equivalent requirements to the appendix. For instance, a vehicle covered by a type approval under the UN Regulation would be deemed to comply with the ADR.

Authorised Version Explanatory Statement registered 15/04/2024 to F2024L00446

2. PURPOSE AND OPERATION

2.1 Overview of the ADR

Clause 2.1 advises this national road vehicle standard sets exhaust emission requirements for light duty road motor vehicles (passenger (MA, MB, MC and MD category) and goods carrying (NA category) vehicles with a gross vehicle mass up to 3,500kg) to reduce the public health impacts of exhaust emissions produced by light duty road motor vehicles.

Noxious exhaust emissions such as oxides of nitrogen (NOx) and particulate matter (PM), can cause respiratory and cardiovascular illnesses and cancer. Light duty road motor vehicles, particularly petrol and diesel vehicles, are a significant source of noxious air pollutants, particularly in areas with high volumes of vehicle traffic.

Section 3 advises this national road vehicle standard applies for newly approved light vehicle models supplied to Australia for the first time from 1 December 2025 and all new light vehicles supplied to Australia from 1 July 2028.

As the alternative standards specified in Section 7 of ADR 79/05, adopt equivalent requirements to those adopted in ADR 111/00, clause 3.2 of this ADR advises that vehicles that comply with ADR 79/05, by demonstrating compliance to the full technical requirements of these alternative standards do not need to submit this evidence again to comply with ADR 111/00.

2.2 Design Requirement

Clause 5.1 requires all vehicles subject to the ADR to meet the 'Level 1A' requirements specified in Appendix A of this standard, as varied by Section 6 Exemptions and Alternative Procedures or the one of the alternative standards specified in Section 7.

Appendix A is based on the UN Regulation No. 154 – *Uniform provisions concerning the approval of light duty passenger and commercial vehicles with regards to criteria emissions, emissions of carbon dioxide and fuel consumption and/or the measurement of electric energy consumption and electric range (WLTP)*, incorporating the 02 series of amendments. This version of UN Regulation 154 is based on the 'Euro 6d' laboratory test requirements for tailpipe emissions, evaporative emissions, durability and on-board diagnostics adopted in European Union (EU) Regulation 2017/1151.

To comply with the ADR vehicles must meet the Level 1A requirements and emission limits for the laboratory tests specified in Appendix A. To meet the performance-based requirements of the ADR, most light duty diesel vehicles will need be fitted with a selective catalytic reduction (SCR) system (which uses a consumable reagent to break down oxides of nitrogen) to meet the limits for oxides of nitrogen. Most petrol vehicles will need to be fitted with a particulate filter to burn off particulate emissions produced from the combustion process to meet the particle number limit.

The key changes from ADR 111/00 relative to ADR 79/04 are:

- a 55 per cent reduction in the emissions limits for NOx for light duty diesel vehicles;

- the introduction of a limit on the number of particles for petrol vehicles with a direction injection fuelling system to control fine particle emissions, which can go further into the bloodstream and lungs;
- an improved laboratory test (known as the Worldwide harmonised Light vehicle Test Procedure or WLTP) for noxious and carbon dioxide emissions, fuel consumption, energy consumption and battery range. The WLTP is intended to better reflect how vehicles are used on the road; and
- more stringent requirements for on-board diagnostic systems that monitor the emissions control systems, including a reduction in the thresholds at which a malfunction is detected and an increased frequency of monitoring (in-use performance ratio).

Table 1 - Euro 5 and Euro 6d emissions limits for light passenger vehicles

Pollutant	**Euro 5 (ADR 79/04)**		**Euro 6d (ADR 111/00)**	
	Petrol/LPG[1]	**Diesel**	**Petrol/LPG**	**Diesel**
Oxides of nitrogen	60 mg/km	180 mg/km	60 mg/km	80 mg/km
Particulate matter	4.5 mg/km	4.5 mg/km	4.5 mg/km	4.5 mg/km
Particle number limit	No limit	$6x10^{11}$/km	$6x10^{11}$/km	$6x10^{11}$/km

Table 2 - Euro 5 and Euro 6 emissions limits for light commercial vehicles[2]

Pollutant	**Euro 5 (ADR 79/04)**		**Euro 6d (ADR 111/00)**	
	Petrol/LPG[3]	**Diesel**	**Petrol/LPG**	**Diesel**
Oxides of nitrogen	82 mg/km	280 mg/km	82 mg/km	125 mg/km
Particulate matter	4.5 mg/km	4.5 mg/km	4.5 mg/km	4.5 mg/km
Particle number limit	No limit	$6x10^{11}$/km	$6x10^{11}$/km	$6x10^{11}$/km

[1] Particulate and particle number limits for petrol vehicles only apply to vehicles with a direct injection fuelling system
[2] For light commercial vehicles with a reference mass over 1760kg, which account for the majority of light commercial vehicles sold in Australia. Light commercial vehicles with a lower reference mass are subject to lower emissions limits.
[3] Particulate and particle number limits for petrol vehicles only apply to vehicles with a direct injection fuelling system

2.3 Exemptions and Alternative Procedures

Exemptions

Clause 6.1 creates exemptions from some requirements of Appendix A (UN R154) which pertain to gaining a Type Approval in the UN context. This is because they are not required in the Australian context where the Commonwealth administers approvals through the Act and the ADRs. Consequently, manufacturers supplying new vehicles to Australia are exempt from most administrative (non-technical) requirements of UN R154.

Specifically, Clause 6.1 states that compliance with sections 4, 5, 7, 8, 9, 10, 11, 12 and 13 and Appendices 1 to 4 and Annexes A1, A2 and A3, Appendix 8 to Annex B8 and Appendix 3b to Annex C4 of UN R154 are not required for the purposes of complying with ADR 111/00. This is because they refer to administrative requirements to obtain and maintain a Type Approval under the UN 1958 Agreement.

Alternative Procedures

Clause 6.2 states that documentation required in specified parts of Appendix A need not be supplied in an application for a vehicle or component type approval under the *Road Vehicle Standards Rules* but must be recorded in the supporting information held by the manufacturer and supplied to the Department on request.

Clauses 6.3 modifies Clauses 2.6.8.4 and 2.8.8.5 of Annex B6 of Appendix A to clarify that information required in these clauses is to be supplied to the Department upon request as part of a compliance and enforcement activity.

Clause 6.4 provides for the Level 1B requirements for the Type 1 (tailpipe emissions) laboratory test to be used lieu of Level 1A requirement. Level 1B is based on the 'low', 'medium' and 'high' speed phases of Worldwide harmonised Light vehicles Test Cycle adopted by Japan, but does not include the 'Extra High' speed phase required in Level 1A and equivalent EU regulations. Notwithstanding this clause, clauses 6.4.1 and 6.4.2 advise that vehicles tested in accordance with Level 1B must still meet the Level 1A emission limits and durability requirements, which are stricter than the Level 1B requirements adopted in Japan.

2.4 Alternative Standards

Section 7 sets out standards that are considered to be equivalent to ADR 111/00. If a vehicle meets the requirements of one of these standards, it also complies with ADR 111/00. These alternative standards are acceptable because they are expected to achieve an equivalent policy outcome. Vehicle manufacturers have the flexibility to demonstrate compliance to ADR 111/00 through clause 5.1 and Appendix A as varied by Section 6 Exemptions and Alternative Procedures, or through Section 7 Alternative Standards.

Clause 7.1 identifies United Nations Regulation No. 154 – *Uniform provisions concerning the approval of light duty passenger and commercial vehicles with regards to criteria emissions, emissions of carbon dioxide and fuel consumption and/or the measurement of electric energy consumption and electric range (WLTP)*, as an acceptable alternative standard. UN Regulation 154 is based on the laboratory test requirements for tailpipe emissions, evaporative emissions, durability and on-board diagnostics adopted in European Union (EU) Regulation 2017/1151.

Authorised Version Explanatory Statement registered 15/04/2024 to F2024L00446

3. MATTERS INCORPORATED BY REFERENCE

Section 12 of the Act allows the Minister to incorporate a broad range of documents, both as in force at a particular time and as in force from time to time, when making national vehicle standards. This ensures that Australia's legislative framework is well-prepared for future developments in the international road vehicle space. ADR 111/00 makes use of this provision as specified below.

3.1 Other Legislative Instruments

Clause 4.1.2 and 4.2.1 of ADR 111/00 includes a reference to the Vehicle Standard (Australian Design Rule Definitions and Vehicle Categories) 2005 (which may also be cited as the Australian Design Rule – Definitions and Vehicle Categories). This sets out definitions for many terms used in the ADRs, including the vehicle categories used in ADR applicability tables. Clause 4.1.3 includes a reference to the Road Vehicle Standards Rules 2019 (the Rules), which specify administrative requirements for a vehicle or component type approval.

The Rules and the ADRs may be freely accessed online through the Federal Register of Legislation. The website is www.legislation.gov.au.

In accordance with subsection 12 of the Act, each of these ADRs are incorporated as in force or existing from time to time. The ellipses (…) indicates the version(s) (e.g. 00, 01 etc.) of the ADR in force at the time.

3.2 International Vehicle Regulations

United Nations Regulations and/or Resolutions

Clause 7.1 includes a reference to 00, 01, 02 or 03 series of amendments to United Nations Regulation No. 154 – *Uniform provisions concerning the approval of light duty passenger and commercial vehicles with regards to criteria emissions, emissions of carbon dioxide and fuel consumption and/or the measurement of electric energy consumption and electric range (WLTP)* Level 1A of UN Regulation 154 is based the Euro 6d laboratory test requirements for light vehicle tailpipe emissions, evaporative emissions, durability and on-board diagnostics.

Appendix A (which adopts the text of UN Regulation 154/02) includes a number of references to UN vehicle regulations and resolutions. Further information on these references can be found in table 3.

Table 3 – UN Regulations and Resolutions referenced in Appendix A.

UN Regulations/Resolutions	***References in Appendix A***
Consolidated Resolution on the Construction of Vehicles (R.E.3.), document ECE/TRANS/WP.29/78/Rev.6.	*Cl.5.2.1, 6.3.4, Annex A1, Annex A2*
UN Regulation No. 83 - Uniform provisions concerning the approval of vehicles with regard to the emission of pollutants according to engine fuel requirements	*Cl.12.1, 12.2 Annex A3*

UN Regulations/Resolutions	***References in Appendix A***
UN Regulation No. 85 - Uniform provisions concerning the approval of internal combustion engines or electric drive trains intended for the propulsion of motor vehicles of categories M and N with regard to the measurement of net power and the maximum 30 minutes power of electric drive trains	*Cl. 3.71, 6.3.7.2, 6.3.7.3,* *Annex A1 - Cl.3.5.7.1.1.* *Annex B2 - Cl.2(h)* *Annex B8 - Cl.1.4.1.2*
UN Regulation No. 68 – Uniform provisions concerning the approval of power-driven vehicles with regard to the measurement of the maximum speed	*Cl.3.72*
UN Regulation No. 67 - Uniform provisions concerning the approval of: *I. Approval of specific equipment of vehicles of category M and N using liquefied petroleum gases in their propulsion system* *II. II. Approval of vehicles of category M and N fitted with specific equipment for the use of liquefied petroleum gases in their propulsion system with regard to the installation of such equipment*	*Annex A1 - Cl.3.2.15.1*
UN Regulation 110 - Uniform provisions concerning the approval of: *I. Specific components of motor vehicles using compressed natural gas (CNG) and/or liquefied natural gas (LNG) in their propulsion system* *II. Vehicles with regard to the installation of specific components of an approved type for the use of compressed natural gas (CNG) and/or liquefied natural gas (LNG) in their propulsion system*	*Annex A1 - Cl.3.2.16.1*
UN Regulation 134 - Uniform provisions concerning the approval of motor vehicles and their components with regard to the safety-related performance of hydrogen fuelled vehicles (HFCV)	*Annex A1 - Cl.3.2.18.1*

UN Regulations/Resolutions	***References in Appendix A***
UN Regulation 154 - Uniform provisions concerning the approval of light duty passenger and commercial vehicles with regards to criteria emissions, emissions of carbon dioxide and fuel consumption and/or the measurement of electric energy consumption and electric range (WLTP).	*Annex A1 – Appendix 1 - Part I, Cl.2.1.1.2.1, Part II, Cl.2.1.2* *Annex A2 - Cl.2.1, 2.11, 2.5.1.1.3, 2.5.1.2.3, 2.5.1.2.4, 2.5.1.3.3, 2.5.1.3.4, 2.5.1.4, 2.5.1.4.1, 3* *Annex A3*
UN Regulation 117 - Uniform provisions concerning the approval of tyres with regard to rolling sound emissions and/or to adhesion on wet surfaces and/or to rolling resistance	*Annex A2 - footnote to Cl. 1.14* *Annex B4 - Cl. 4.2.2.1*

The Consolidated Resolution on the Construction of Vehicles (R.E.3.), document ECE/TRANS/WP.29/78/Rev.6, and the UN Regulations (including Regulations 83, 85, 68, 67,110, 134, 154 and 117), may be freely accessed online through the UN World Forum for the Harmonization of Vehicle Regulations (WP.29). The WP.29 website is www.unece.org/trans/main/welcwp29.html.

In accordance with subsections 14(1)(b) and 14(2) of the *Legislation Act 2003*, each of these UN documents are incorporated as in force on the date this national road vehicle standard is made.

3.3 Technical standards

Appendix A (which adopts the text of UN Regulation 154) includes a number of references to technical standards developed by organisations. These are:

- American Society for Testing and Materials (ASTM)
- International Organization for Standardization (ISO)
- European Committee for Standardization (CEN)
- Japanese Industrial Standards Committee (JIS)
- Korean Standards Association (KSA)
- Institute of Environmental Sciences and Technology (IEST)

Authorised Version Explanatory Statement registered 15/04/2024 to F2024L00446

- U.S.A. Department of Defense

Table 4 contains a list of the standards referenced in Appendix A.

ASTM standards may be freely accessed online through the ASTM International Reading Room. This requires the user to register using an email and password. The ASTM International Reading Room website is www.astm.org/readinglibrary/.

ISO, CEN, SAE, JIS, IEST and IEC Technical Standards are available for purchase from Intertek Inform (formerly SAI Global). Intertek Inform's website is: https://www.intertekinform.com/en-au/

KSA standards are available for purchase from the e-NARA Standard Certification website: https://standard.go.kr/KSCI/portalindex.do

The U.S.A. Department of Defense standards can be accessed at https://assist.dla.mil.

Subject to copyright conditions, people may also view a copy of these documents at the Offices of the Department of Infrastructure, Transport, Regional Development, Communications and the Arts in Canberra.

While not freely available, these standards are all readily accessible and widely used by vehicle manufacturers and test facilities as part of their professional libraries. Section 49 of the explanatory memorandum for the Road Vehicle Standards Bill 2018 explains the importance of being able to incorporate technical standards that are not available free of charge and this arrangement was accepted by the Parliament through the passing of the Road Vehicle Standards Bill 2018.

In accordance with subsections 14(1)(b) and 14(2) of the *Legislation Act 2003*, each of these standards are incorporated as in force on the date this national road vehicle standard is made.

Table 4 – Technical Standards adopted by reference in Appendix A

Technical Standard	**References in Appendix A**
ASTM D 3231 - Standard Test Method for Phosphorus in Gasoline	*Annex B3 – Table A3/6, Table A3/7*
ASTM E 1064 - Standard Test Method for Water in Organic Liquids by Coulometric Karl Fischer Titration	*Annex B3 – Table A3/7*
ASTM D 6423 - Standard Test Method for Determination of pHe of Denatured Fuel Ethanol and Ethanol Fuel Blends	*Annex B3 – Table A3/7*
ASTM D 1613 - Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products	*Annex B3 – Table A3/7*
ASTM D 2158 - Standard Test Method for Residues in Liquefied Petroleum (LP) Gases	*Annex B3 – Table A3/8*

Technical Standard	**References in Appendix A**
ASTM D 6667– Standard Test Method For Determination Of Total Volatile Sulfur in Gaseous Hydrocarbons and Liquefied Petroleum Gases by Ultraviolet Fluorescence	*Annex B3 – Table A3/8*
ASTM D 4486 - Standard Test Method for Kinematic Viscosity of Volatile and Reactive Liquids	*Annex B3 – Table A3/8*
ASTM D 5504 - Standard Test Method for Determination of Sulfur Compounds in Natural Gas and Gaseous Fuels by Gas Chromatography and Chemiluminescence	*Annex B3 – Table A3/8*
EN ISO 5164 - Petroleum products - Determination of knock characteristics of motor fuels - Research method	*Annex B3 – Tables A3/6, A3/7 and A3/19*
EN ISO 5163 - Petroleum products - Determination of knock characteristics of motor and aviation fuels - Motor method	*Annex B3 – Tables A3/6 and A3/7*
ISO 3675 - Crude Petroleum and Liquid Petroleum Products. Laboratory Determination of Density. Hydrometer Method	*Annex B3 – Table A3/7*
EN 13016-1 - Liquid petroleum products - Vapour pressure - Part 1: Determination of air saturated vapour pressure (ASVP) and calculated dry vapour pressure equivalent (DVPE)	*Annex B3 – Table A3/7, A3/19*
EN ISO 20846 - Petroleum products - Determination of sulfur content of automotive fuels - Ultraviolet fluorescence method	*Annex B3 – Tables A3/6, A3/7*
EN ISO 20884 - Petroleum products - Determination of sulfur content of automotive fuels - Wavelength-dispersive X-ray fluorescence spectrometry	*Annex B3 - Tables A3/6, A3/7, A3/17, A3/19*
EN 12937 - Petroleum products — Determination of water — Coulometric Karl Fischer titration method	*Annex B3 - Tables A3/6, A3/17*
EN-ISO 3405 - Petroleum and related products from natural or synthetic sources - Determination of distillation characteristics at atmospheric pressure	*Annex B3 – Tables A3/6, A3/17*
EN 22854 - Liquid petroleum products — Determination of hydrocarbon types and oxygenates in automotive-motor gasoline and in ethanol (E85) automotive fuel — Multidimensional gas chromatography method	*Annex B3 – Tables A3/6, A3/19*

Technical Standard	**References in Appendix A**
EN 238 - Liquid petroleum products - Petrol - Determination of the benzene content by infrared spectrometry	*Annex B3 – Tables A3/6, A3/19*
EN-ISO 7536 - Petroleum products - Determination of oxidation stability of gasoline - Induction period method	*Annex B3 – Table A3/6*
EN-ISO 6246 - Petroleum products - Gum content of fuels - Jet evaporation method	*Annex B3 – Tables A3/6, A3/7*
EN-ISO 2160 - Petroleum products - Corrosiveness to copper - Copper strip test	*Annex B3 – Tables A3/6, A3/17*
EN 237 - Liquid petroleum products - Petrol - Determination of low lead concentrations by atomic absorption spectrometry	*Annex B3 – Tables A3/6, A3/19*
EN ISO 7536 - Petroleum products - Determination of oxidation stability of gasoline - Induction period method	*Annex B3 – Table A3/7*
EN 1601 - Liquid petroleum products - Determination of organic oxygenate compounds and total organically bound oxygen content in unleaded petrol - Method by gas chromatography (O-FID)	*Annex B3 – Table A3/7*
EN 13132 - Liquid petroleum products - Unleaded petrol - Determination of organic oxygenate compounds and total organically bound oxygen content by gas chromatography using column switching	*Annex B3 – Table A3/7*
EN 14517 - Liquid petroleum products - Determination of hydrocarbon types and oxygenates in petrol - Multidimensional gas chromatography method	*Annex B3 – Table A3/7*
EN 228 - Automotive fuels - Unleaded petrol - Requirements and test methods	*Annex B3 – Table A3/6, A3/7*
ISO 6227 - Chemical products for industrial use — General method for determination of chloride ions — Potentiometric method	*Annex B3 – Table A3/7*
EN ISO 2160 - Petroleum products — Corrosiveness to copper — Copper strip test	*Annex B3 – Table A3/7*
ISO 4259 - Petroleum products – Determination and application of precision data in relation to methods of test	*Annex B3 – Table A3/6, A3/7, A3/17*

Technical Standard	**References in Appendix A**
ISO 2575:2010 Road vehicles -- Symbols for controls, indicators and tell-tales	*Cl 6.1.5.2.2*
ISO 15031-7:2013 Road vehicles — Communication between vehicle and external equipment for emissions-related diagnostics — Part 7: Data link security	*Cl. 6.1.7.1*
ISO 3780:2009 Road vehicles — World manufacturer identifier (WMI) code	*Cl. 6.2.6*
ISO 31000:2018 Risk management — Guidelines	*Cl. 8.1.4.1, 8.1.6*
ISO 15765-4 'Road vehicles, diagnostics on controller area network (CAN) — Part 4: requirements for emissions-related systems'	*Annex A1, Cl. 3.2.12.2.7.6.3.*
ISO 612:1978 — Road vehicles — Dimensions of motor vehicles and towed vehicles — terms and definitions.	*Annex A1, footnote (g) Annex B4, Cl. 5.2.2*
ISO/KS M ISO 7941 - Commercial propane and butane - Analysis by gas chromatography	*Annex B3, Table A3/8*
EN 15470 - Liquefied petroleum gases - Determination of dissolved residues - High temperature Gas chromatographic method	*Annex B3, Table A3/8*
EN 15469 - Petroleum products - Test method for free water in liquefied petroleum gas by visual inspection	*Annex B3, Table A3/8*
ISO 8819 - Liquefied petroleum gases - Detection of hydrogen sulfide - Lead acetate method	*Annex B3, Table A3/8*
ISO/KS M ISO 6251 - Liquefied petroleum gases — Corrosiveness to copper — Copper strip test	*Annex B3, Table A3/8*
KS M ISO 4256 - Liquefied petroleum gases — Determination of gauge vapour pressure — LPG method	*Annex B3, Table A3/8*
KS M ISO 8973 - Liquefied petroleum gases — Calculation method for density and vapour pressure	*Annex B3, Table A3/8*
KS M ISO 3993 - Liquefied petroleum gas and light hydrocarbons — Determination of density or relative density — Pressure hydrometer method	*Annex B3, Table A3/8*
KS M 2150 - Liquefied petroleum gas (LPG)	*Annex B3, Table A3/8*

Technical Standard	**References in Appendix A**
EN 589 - Automotive fuels - LPG - Requirements and test methods	*Annex B3, Table A3/8*
ISO 6974 - Natural gas. Determination of composition with defined uncertainty by gas chromatography	*Annex B3, Tables A3/9, A3/11*
ISO 6326-5 Natural Gas - Determination of Sulfur Compounds - Part 5: Lingener Combustion Method	*Annex B3, Tables A3/9, A3/11*
EN-ISO 4264 - Petroleum products - Calculation of cetane index of middle-distillate fuels by the four variable equation	*Annex B3, Table A3/17*
EN-ISO 5165 - Petroleum products - Determination of the ignition quality of diesel fuels - Cetane engine method	*Annex B3, Table A3/17*
EN ISO 12185 - Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method	*Annex B3, Table A3/17, A3/19*
EN ISO 2719 - Determination of flash point — Pensky-Martens closed cup method	*Annex B3, Table A3/17*
EN 116 - Diesel and domestic heating fuels - Determination of cold filter plugging point - Stepwise cooling bath method	*Annex B3, Table A3/17*
EN-ISO 3104 - Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity	*Annex B3, Table A3/17*
EN 12916 - Petroleum products - Determination of aromatic hydrocarbon types in middle distillates - High performance liquid chromatography method with refractive index detection	*Annex B3, Table A3/17*
EN-ISO 10370 - Petroleum products - Determination of carbon residue - Micro method	*Annex B3, Table A3/17*
EN-ISO 6245 - Petroleum products - Determination of ash	*Annex B3, Table A3/17*
EN 12662 - Liquid petroleum products - Determination of total contamination in middle distillates, diesel fuels and fatty acid methyl esters	*Annex B3, Table A3/17*

Authorised Version Explanatory Statement registered 15/04/2024 to F2024L00446

Technical Standard	**References in Appendix A**
EN-ISO 12937 - Petroleum products - Determination of water - Coulometric Karl Fischer titration method	*Annex B3, Table A3/17*
ISO 6618:1997 - Petroleum products and lubricants — Determination of acid or base number — Colour-indicator titration method	*Annex B3, Table A3/17*
EN ISO 12156 - Diesel fuel — Assessment of lubricity using the high-frequency reciprocating rig (HFRR)	*Annex B3, Table A3/17*
EN 15751 - Automotive fuels - Fatty acid methyl ester (FAME) fuel and blends with diesel fuel - Determination of oxidation stability by accelerated oxidation method	*Annex B3, Table A3/17*
EN 14078 - Liquid petroleum products - Determination of fatty acid methyl ester (FAME) content in middle distillates - Infrared spectrometry method	*Annex B3, Table A3/17*
ISO 21087 - Gas analysis — Analytical methods for hydrogen fuel — Proton exchange membrane (PEM) fuel cell applications for road vehicles	*Annex B3, Table A3/17*
ISO 3833:1977 - Road vehicles - Types - Terms and definitions	*Annex B4, Cl. 2.1*
ISO 10521-1:2006 - Road vehicles — Road load — Part 1: Determination under reference atmospheric conditions	*Annex B4, Cl. 4.3.2.1.3, 4.3.2.1.4*
ISO 27891:2015 - Aerosol particle number concentration — Calibration of condensation particle counters	*Annex B5, Cl. 5.7.1.3*
ISO 23828 - Fuel cell road vehicles — Energy consumption measurement — Vehicles fuelled with compressed hydrogen	*Annex B8 - Appendix 7 Cl. 1*
ISO 5725 Part 6 - Accuracy (trueness and precision) of measurement methods and results — Part 6: Use in practice of accuracy values	*Annex B9, Cl.1.2*
ISO 15765-4 - Road vehicles — Diagnostic communication over Controller Area Network (DoCAN) — Part 4: Requirements for emissions-related systems	*Annex C5, Cl.6.5.3.1*

Technical Standard	**References in Appendix A**
ISO 15031-5 - Road vehicles - communication between vehicles and external test equipment for emissions-related diagnostics – Part 5: Emissions-related diagnostic services	*Annex C5, Cl.6.5.3.2(a)* *Annex C5 – Appendix 1, Cl. 7.6.1*
ISO 15031-4 - Road vehicles – Communication between vehicle and external test equipment for emissions related diagnostics – Part 4: External test equipment	*Annex C5, Cl.6.5.3.2(b)*
ISO 15031-3 - Road vehicles – Communication between vehicle and external test equipment for emissions related diagnostics Part 3: Diagnostic connector and related electrical circuits: specification and use	*Annex C5, Cl.6.5.3.2(c)*
ISO 15031-6 - Road vehicles – Communication between vehicle and external test equipment for emissions related diagnostics – Part 6: Diagnostic trouble code definitions	*Annex C5, Cl.6.5.3.2(d)*
ISO 27145 Road vehicles – Implementation of World-Wide Harmonized On-Board Diagnostics (WWH-OBD)	*Annex C5, Cl.6.5.3.2(e)*
SAE J2951 - Drive Quality Evaluation for Chassis Dynamometer Testing	*Annex A1 - Appendix 3* *Annex B7, Cl.7.2*
SAE J1962 - Diagnostic Connector	*Annex B6 – Appendix 2, Cl.2.2.1(c)* *Annex C5 – Appendix 1, Cl.6.5.3.2(c)*
SAE J2572 - Recommended Practice for Measuring Fuel Consumption and Range of Fuel Cell and Hybrid Fuel Cell Vehicles Fueled by Compressed Gaseous Hydrogen	*Annex B7, Cl.6.13*
SAE J2841 - Utility Factor Definitions for Plug-In Hybrid Electric Vehicles Using Travel Survey Data	*Annex B8 – Appendix 5, Cl.2*
SAE J1979 - E/E Diagnostic Test Modes	*Annex C5 – Appendix 1, Cl.6.5.3.2(a)*

Technical Standard	**References in Appendix A**
SAE J1979-2 E/E Diagnostic Test Modes: OBDonUDS	*Annex C5 – Appendix 1, Cl.6.5.3.2(f)*
SAE J1978 - OBD-II Scan Tool	*Annex C5 – Appendix 1, Cl.6.5.3.2(b)*
SAE J2012 - Diagnostic Trouble Code Definitions	*Annex C5 – Appendix 1, Cl.6.5.3.2(d)*
JIS K2280 - Petroleum Products - Fuels - Determination of Octane Number, Cetane Number and Calculation of Cetane Index	*Annex B3, Tables A3/1, A3/3, A3/14*
JIS K2249 - Testing Methods For Density Of Crude Oil And Petroleum Products, And Petroleum Measurement Tables Based On A Reference Temperature 15 Degree C	*Annex B3, Tables A3/1, A3/3, A3/14*
JIS K2258 - Crude petroleum and petroleum products-Determination of vapour pressure	*Annex B3, Tables A3/1, A3/3, A3/19*
JIS K2254 - Petroleum products - Determination of distillation characteristics	*Annex B3, Tables A3/1, A3/3, A3/14*
JIS K2536 - Liquid Petroleum Products - Testing Method of components	*Annex B3, Tables A3/1, A3/3, A3/19*
JIS K2261 - Petroleum Products - Motor Gasoline And Aviation Fuels - Determination Of Existent Gum - Jet Evaporation Method	*Annex B3, Tables A3/1, A3/3*
JIS K2541 - Crude Oil and Petroleum Products - Determination of Sulfur Content	*Annex B3, Tables A3/1, A3/3, A3/14, A3/19*
JIS K2255 - Petroleum Products - Gasoline - Determination of Lead Content	*Annex B3, Tables A3/1, A3/3, A3/19*
IEST-RP-CC021: Testing HEPA and ULPA Filter Media	*Annex B5, Cl 4.2.1.3.5.3*
U.S.A. Department of Defense Test Method Standard, MIL-STD-282 method 102.8: DOP-Smoke Penetration of Aerosol-Filter Element;	*Annex B5, Cl 4.2.1.3.5.3*

Technical Standard	References in Appendix A
U.S.A. Department of Defense Test Method Standard, MIL-STD-282 method 502.1.1: DOP-Smoke Penetration of Gas-Mask Canisters;	*Annex B5, Cl 4.2.1.3.5.3*
IEC 60050-482 International Electrotechnical Vocabulary (IEV) - Part 482: Primary and secondary cells and batteries	*Annex B6, App 2, Cl. 4.1*

4. CONSULTATION

4.1 General Consultation Arrangements

It has been longstanding practice to consult widely on proposed new or amended vehicle standards. For many years, there has been active cooperation between the Commonwealth and the state/territory governments, as well as consultation with industry and consumer groups. Much of the consultation takes place within institutional arrangements established for this purpose. The analysis and documentation prepared in a particular case, and the bodies consulted, depend on the degree of impact the new or amended standard is expected to have on industry or road users.

Proposals that are regarded as significant need to be supported by an Impact Analysis meeting the requirements of the Office of Impact Analysis (OIA) as published in the *Australian Government Guide to Policy Impact Analysis* where the decision maker is the Australian Government's Cabinet, the Prime Minister, minister, statutory authority, board or other regulator.

The Impact Analysis evaluating the costs and benefits of the ADR package mandating Euro 6d equivalent standards and associated changes to fuel quality standards conform to the requirements established by the OIA. The reference number for this Impact Analysis is OBPR22-02515.

4.2 Specific Consultation Arrangements

A draft Impact Analysis 'Light Vehicle Emission Standards for Cleaner Air' was published on the Department's website for public comment from 20 October 2020 to 26 February 2021.

Formal feedback was received from members of the public, government agencies, industry bodies, health and environmental organisations. A majority of the feedback received strongly or conditionally supported the implementation of a new ADRs mandating Euro 6 for light vehicles from the mid-2020s.

Authorised Version Explanatory Statement registered 15/04/2024 to F2024L00446

The Department also consulted members of its Vehicle Standards Consultative Forum on an exposure draft of ADR 111/00 in January 2024. This forum comprises representatives of government (Australian and state/territory), the manufacturing and operational arms of the industry (including organisations such as the Federal Chamber of Automotive Industries and the Australian Trucking Association) and organisations representing consumers and road users (such as the Australian Automobile Association).

5. REGULATORY IMPACT

There are costs associated with mandating Euro 6 equivalent noxious emission standards for light vehicles, but the related Impact Analysis shows that there will be positive net benefits. Overall, it is estimated that the implementation of ADR 111/00 in conjunction with ADR 112/00 (Control of Real Driving Emissions from Light Vehicles) and ADR 79/05 (Emission Control for Light Vehicles) and associated amendments to the Fuel Quality Standards (Petrol) Determination from 2025 will result in a net benefit of $4,508 million by 2040 and a benefit-cost ratio of 3.44. The estimated health benefits and fuel savings from this package ($6,338 million by 2040) were found to outweigh any expected increases in capital costs for light vehicle manufacturers ($1,484 million over the same period) and associated capital and operating costs for refineries and importers to supply a Euro 6 compatible grade of petrol ($334.7 million by 2040).

6. STATEMENT OF COMPATIBILITY WITH HUMAN RIGHTS

The following Statement is prepared in accordance with Part 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011.*

6.1 Overview

ADR 111/00 specifies minimum performance-based requirements for exhaust emissions produced by light vehicles to reduce air pollution and associated health impacts borne by the community.

6.2 Human Rights Implications

ADR 111/00 engages the following human rights and freedoms recognised or declared in the international instruments listed in section 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

Right to life and right to health

Article 6(1) of the International Covenant on Civil and Political Rights (ICCPR) includes a duty on governments to take appropriate steps to protect the right to life of those within its jurisdiction. The United Nations Committee General Comment 6 (1982) states: '…the Committee has noted that the right to life has been too often narrowly interpreted. The expression "inherent right to life" cannot properly be understood in a restrictive manner, and the protection of this right requires that States adopt positive measures.'

Article 12 (1) of the International Covenant on Economic Social and Cultural Rights (ICESCR) contains the right to health – that is, the right to the enjoyment of the highest attainable standard of physical and human health. The ICESCR has stated that

the right to health extends to the underlying determinants of health such as a healthy environment.

A key objective of ADR 111/00 is to promote the right to life and the right to health (and a healthy environment) by ensuring that road vehicles imported into Australia, or introduced for use in transport in Australia for the first time are fitted with technologies that minimise noxious emissions that can impact on the quality of the air we breathe increase the risk of heart and lung diseases and cancers. ADR 111/00 is intended to achieve this objective by setting stricter limits on noxious exhaust emissions and stricter test procedures for new road vehicles supplied to Australia

6.3 Conclusion

ADR 111/00 is compatible with human rights because it promotes the protection of human rights and to the extent that it may limit human rights, those limitations are reasonable, necessary and proportionate.