Bauly

BAULY CHEMICALS

The Complete AdBlue Guide

For Vehicle Owners, Fleet Managers & Industry Operators in Australia

adblue@bauly.com.au · bauly.com.au

ISO 22241 Certified · Australian Made · Nationwide Supply

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DISCLAIMER

Please read before using this guide

1. General Information Only

This guide — 'The Complete AdBlue Guide' — is published by Bauly Chemicals for general informational and educational purposes only. The content is intended to provide Australian vehicle owners, fleet operators, industry professionals, and members of the public with a broad understanding of AdBlue (Aqueous Urea Solution / AUS 32), its use in Selective Catalytic Reduction (SCR) systems, and related topics.

Nothing in this guide constitutes technical advice, professional engineering advice, legal advice, regulatory advice, or any other form of professional advice specific to your individual circumstances, vehicle, equipment, or operation. Bauly Chemicals strongly recommends that readers consult qualified professionals — including licensed automotive technicians, engineers, legal advisors, and regulatory authorities — for advice specific to their situation.

2. Accuracy and Currency of Information

Bauly Chemicals has taken reasonable care in preparing the information contained in this guide and believes it to be accurate at the time of publication. However, Bauly Chemicals makes no warranty, express or implied, regarding the accuracy, completeness, reliability, suitability, or currency of the information provided.

Vehicle specifications, AdBlue system requirements, Australian Design Rules (ADRs), emissions standards, regulatory requirements, product specifications, and industry practices are subject to change over time without notice. Readers should verify all technical and regulatory information against current manufacturer documentation, relevant Australian standards, and applicable legislation before relying on it.

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3. Vehicle and Equipment-Specific Advice

The information in this guide is general in nature and does not account for the specific requirements of individual vehicle makes, models, engine types, or equipment variants. AdBlue system specifications, tank capacities, consumption rates, warning light indicators, filler locations, and operational procedures vary significantly between manufacturers and model years.

Readers must consult their vehicle or equipment owner's manual, the manufacturer's official documentation, or a qualified mechanic or dealer for instructions specific to their vehicle or equipment. Bauly Chemicals accepts no responsibility for any loss, damage, or injury arising from the application of general information in this guide to a specific vehicle or equipment that has different requirements.

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The regulatory and legal information contained in this guide is provided for general awareness only. Australian emissions standards, the Heavy Vehicle National Law (HVNL), Australian Design Rules (ADRs), state and territory environmental regulations, and related legislation are complex, jurisdiction-specific, and subject to amendment. The information in this guide does not constitute legal advice and should not be relied upon as a substitute for obtaining independent legal advice.

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5. Safety Information

The safety information provided in this guide, including guidance on handling, storage, spill response, and personal protective equipment, is general guidance only. It does not replace or supersede the Material Safety Data Sheet (MSDS/SDS) for AdBlue, applicable workplace health and safety legislation, Australian Standards, site-specific safety procedures, or professional safety assessments.

Readers involved in the bulk storage, dispensing, or transport of AdBlue are advised to comply with all applicable Work Health and Safety (WHS) laws in their state or territory, obtain and review the current MSDS for AdBlue, implement appropriate site-specific safe work procedures, and consult with qualified WHS professionals where required.

> **SAFETY FIRST** Always refer to the current Bauly Chemicals AdBlue Material Safety Data Sheet (MSDS) for complete safety, handling, and emergency response information. The MSDS is available at bauly.com.au/resources.

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- Any action taken or not taken based on information in this guide;
- Damage to vehicles, equipment, or SCR systems arising from AdBlue handling, storage, or use in a manner inconsistent with manufacturer specifications;
- Non-compliance with applicable Australian regulations, laws, or standards;
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References to ISO 22241, Australian Design Rules, Euro emission standards, VDA licensing, and other standards or frameworks are provided for context and educational purposes only. Readers should obtain current, official versions of all referenced standards and regulations from the relevant issuing authorities.

8. Product Selection and Purchase Advice

Information about AdBlue products, pack sizes, storage formats, and pricing structures is provided as general guidance only. Product specifications, availability, pricing, and delivery capabilities are subject to change. Readers should contact Bauly Chemicals directly at adblue@bauly.com.au or via bauly.com.au for current product availability, specifications, and pricing applicable to their location and requirements.

The inclusion of product information in this guide does not constitute a binding offer or guarantee of supply, pricing, or delivery. All supply is subject to Bauly Chemicals' current Sales Terms and Conditions available at bauly.com.au/sales-terms-and-conditions/.

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11. Updates to This Guide

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Disclaimer Summary	Key Points at a Glance
Purpose of this guide	General information and education only — not professional advice.
Accuracy	Believed correct at time of writing. Verify against current sources.
Vehicle-specific advice	Always consult your owner's manual and qualified mechanic.
Regulatory advice	Consult the relevant Australian regulatory authority and legal advisors.
Safety information	Refer to current MSDS and applicable WHS legislation.
Liability	Bauly Chemicals is not liable for loss arising from reliance on this guide.
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Chapter 1: What is AdBlue?

AdBlue is one of the most important fluids in a modern diesel vehicle — yet it remains one of the least understood by everyday Australian drivers and operators. This chapter explains exactly what AdBlue is, where it comes from, and why it exists.

1.1 Definition and Composition

AdBlue is a clear, non-toxic, non-flammable aqueous urea solution consisting of precisely two ingredients: 32.5% high-purity automotive-grade urea and 67.5% deionised water. That specific 32.5% concentration is not arbitrary — it is the eutectic point of the urea-water mixture, meaning it has the lowest possible freezing point (-11°C) for any urea-water combination. This makes it both chemically optimal and practical for use in real-world operating environments.

The urea used in AdBlue is synthetic automotive-grade urea — not the agricultural urea used as fertiliser. Automotive-grade urea has far lower levels of impurities such as biuret, aldehydes, and heavy metals. Using agricultural urea or any other non-certified urea solution in your vehicle's AdBlue system will cause serious and expensive damage to SCR catalysts and injectors.

Property	Specification
Chemical name	Aqueous urea solution (AUS 32)
Urea concentration	32.5% ± 0.7%
Water type	Deionised / demineralised water
Appearance	Clear, colourless liquid
Odour	Faint ammonia-like smell
Freezing point	Approximately -11°C
Boiling point	Approximately 103°C
Density at 20°C	Approximately 1.09 kg/L
pH	9.0 – 9.5
Flammability	Non-flammable
Toxicity	Non-toxic, non-hazardous
Quality standard	ISO 22241

1.2 The Name 'AdBlue'

'AdBlue' is a registered trademark of the German Association of the Automotive Industry (Verband der Automobilindustrie, or VDA). The trademark is licensed exclusively to manufacturers who produce urea solution that meets the ISO 22241 standard. In North America, the same product is marketed under the name Diesel Exhaust Fluid (DEF). In the ISO standard, it is referred to as AUS 32 — Aqueous Urea Solution at 32.5%.

In Australia, 'AdBlue' is the universally recognised term, used by vehicle manufacturers, suppliers, fleet operators, and vehicle owners. When you see the AdBlue name and logo on packaging, it is a guarantee that the product inside meets the ISO 22241 quality standard — provided it is purchased from a licensed manufacturer or authorised distributor.

1.3 Why Does AdBlue Exist?

AdBlue was developed as a consequence of increasingly strict global emissions regulations targeting diesel engines. Diesel combustion produces nitrogen oxides (NOx) — a group of harmful gases that include nitric oxide (NO) and nitrogen dioxide (NO2). NOx emissions are a significant contributor to urban air pollution, photochemical smog, and respiratory health problems in humans.

Traditional methods of reducing NOx — such as Exhaust Gas Recirculation (EGR) — reduce engine efficiency and have significant limitations at the NOx reduction rates required by modern Euro 5 and Euro 6 standards. Selective Catalytic Reduction (SCR) using AdBlue proved far more effective, achieving NOx reductions of up to 90% while maintaining fuel efficiency.

AdBlue is therefore not a fuel efficiency product, a lubricant, or a cleaning agent — it is purely an emissions treatment fluid. Its sole purpose is to convert harmful NOx emissions into harmless nitrogen gas and water vapour before they exit the exhaust system.

> **KEY FACT** AdBlue reduces diesel NOx emissions by up to 90%. It is a legal emissions compliance requirement for all vehicles fitted with SCR systems under Australian emissions standards.

Chapter 2: How Does AdBlue Work?

Understanding how AdBlue works helps every diesel operator appreciate why it is so important — and why quality, storage, and uninterrupted supply all matter. This chapter explains the SCR process in clear, practical terms.

2.1 The Selective Catalytic Reduction (SCR) Process

The SCR system is an aftertreatment technology fitted to the exhaust system of Euro 5 and Euro 6 compliant diesel engines. Here is how the process works step by step:

1. Diesel fuel burns in the engine, producing exhaust gases that include harmful nitrogen oxides (NOx).
2. Before the exhaust gases reach the tailpipe, a small, precise quantity of AdBlue is injected into the exhaust stream by the SCR dosing injector.
3. The heat of the exhaust gases (typically 150–500°C) causes the AdBlue to decompose. First, the water evaporates. Then the urea breaks down into ammonia (NH3) and carbon dioxide (CO2) through a process called thermolysis and hydrolysis.
4. The ammonia-rich exhaust gases pass through the SCR catalyst — a ceramic honeycomb structure coated with catalytic metals (typically vanadium or zeolite-based catalysts).
5. Inside the catalyst, the ammonia reacts with the nitrogen oxides in the presence of oxygen. This chemical reaction — called selective catalytic reduction — converts the NOx into nitrogen gas (N2) and water vapour (H2O). Both are harmless and naturally abundant in the atmosphere.
6. The clean exhaust gases exit through the tailpipe. What remains of the AdBlue reaction products is nitrogen and water — nothing harmful.

2.2 The Key Chemical Reactions

The core SCR reaction that converts NOx using ammonia is:

$$4\ NO + 4\ NH_3 + O_2 \rightarrow 4\ N_2 + 6\ H_2O$$

$$4\ NO_2 + 4\ NH_3 + O_2 \rightarrow 4\ N_2 + 6\ H_2O$$

In simple terms: Nitrogen oxides + Ammonia (from AdBlue) → Nitrogen + Water. The result is a dramatic reduction in the vehicle's NOx output — up to 90% compared to an engine running without AdBlue treatment.

2.3 SCR System Components

The SCR system in a modern diesel vehicle comprises several key components that work together:

Component	Function

AdBlue tank	Stores AdBlue separately from diesel. Typically blue-capped filler.
AdBlue pump & lines	Delivers AdBlue from tank to the dosing injector under controlled pressure.
Dosing injector	Injects a precisely calculated quantity of AdBlue into the exhaust stream.
Decomposition tube	Allows AdBlue to evaporate and convert to ammonia before the catalyst.
SCR catalyst	Ceramic honeycomb where the NOx + ammonia reaction occurs.
Ammonia slip catalyst	Captures any excess unreacted ammonia to prevent it escaping the exhaust.
NOx sensors	Monitor NOx levels before and after the catalyst to verify performance.
Control unit (ECU/DCU)	Calculates the precise AdBlue dosing rate and monitors system health.

2.4 Why Dosing Precision Matters

The SCR system does not simply spray AdBlue — it calculates the precise amount needed based on engine load, exhaust temperature, NOx sensor readings, and vehicle speed. Too little AdBlue and NOx reduction is insufficient. Too much AdBlue and excess ammonia ('ammonia slip') passes through the catalyst and escapes from the exhaust — itself a pollutant. This is why the quality and concentration of AdBlue matters: off-spec product disrupts the dosing calculations and can compromise both emissions performance and catalyst health.

Chapter 3: Which Vehicles and Equipment Need AdBlue?

AdBlue is required by a wide and growing range of diesel vehicles, machinery, and equipment. This chapter identifies which vehicles need it and helps you determine whether your specific vehicle or equipment is AdBlue-dependent.

3.1 The Euro Emissions Standards Connection

AdBlue is required in any diesel engine that uses SCR technology to meet emissions standards. In Australia, these are primarily Euro 5 and Euro 6 compliant diesel engines, adopted under the Australian Design Rules (ADRs). As a general guide, if your diesel vehicle was manufactured after the dates shown below, there is a strong likelihood it requires AdBlue — though you should always confirm via the owner's manual or by looking for the blue AdBlue filler cap.

Vehicle Category	Approximate AdBlue Introduction	Notes
Heavy trucks (>12t GVM)	2010 onwards	Euro V / ADR 80/03 compliance
Medium trucks (3.5–12t)	2011 onwards	Manufacturer-dependent
Passenger cars & SUVs	2014–2016 onwards	Varies by brand and model
Light commercial vehicles	2016 onwards	Vans, cab-chassis, utes
Agricultural machinery	2013–2016 onwards	Final Tier 4 / Stage IV
Mining & construction	2013 onwards	Varies by equipment class
Buses & coaches	2011 onwards	Urban and intercity
Rail / locomotives	Varies	Some modern diesel locomotives

3.2 Passenger Vehicles and Light Commercial

The following popular Australian vehicles are confirmed AdBlue users. This is not a complete list — always check your owner's manual:

- Ford Ranger Wildtrak (2.0L Bi-Turbo, recent model years)
- Ford Everest (2.0L and 3.0L diesel, recent model years)
- Mitsubishi Triton (2.4L MIVEC diesel, MY2019 onwards)
- Mitsubishi Pajero Sport (recent model years)
- Volkswagen Amarok (TDI 580 and TDI 600 variants)
- Mercedes-Benz Sprinter (all recent diesel variants)
- Mercedes-Benz GLE, GLS, and E-Class diesels
- BMW 3 Series, 5 Series, 7 Series diesels (xDrive20d, 30d, etc.)

- Audi A6, A7, A8, Q5, Q7, Q8 diesels
- Toyota HiAce (300 Series, 2.8L diesel)
- Isuzu MU-X (3.0L diesel, recent model years)
- Nissan Navara (2.3L twin-turbo diesel, recent model years)

3.3 Heavy Trucks

All modern heavy prime movers and trucks sold in Australia for on-road operation require AdBlue to meet Euro V or Euro VI emissions standards. This includes all models from:

- Kenworth (T659, T909, T410, T610 and all current series)
- Volvo Trucks (FH, FM, FMX series)
- Western Star (5700XE, 6900 series)
- Mack (Anthem, Trident, Super-Liner)
- Scania (R, S, G series)
- Mercedes-Benz Actros
- MAN (TGX, TGS, TGM series)
- Isuzu trucks (FXZ, GXZ, FYJ and larger models)
- Hino (700 series and many 500 series models)

3.4 Agricultural and Off-Road Equipment

Modern agricultural and off-road machinery increasingly requires AdBlue under Final Tier 4 (FT4) and Stage V emissions regulations:

- John Deere: 6R, 7R, 8R, 9R tractors; S, T, W series combines
- Case IH: Magnum, Puma, Optum tractors; Axial-Flow combines
- New Holland: T7, T8, T9 tractors; CR, CX combines
- Fendt: 700, 800, 900, 1000 series tractors
- Massey Ferguson: 7700S, 8700S series tractors
- CLAAS: Lexion combines; Arion, Axion tractors
- Caterpillar: D series dozers, 700 series haul trucks, excavators
- Komatsu: PC and WA series equipment, 730E haul trucks
- Liebherr: R 9 series mining excavators

> **HOW TO CHECK** Look for a blue filler cap on your vehicle or equipment. If present, it uses AdBlue. Alternatively, check your owner's manual under 'AdBlue', 'DEF', 'SCR', or 'Emissions'. If unsure, contact your dealer.

Chapter 4: AdBlue Consumption Rates

One of the most practical questions for any AdBlue user is: how much will I use, and how often do I need to buy more? This chapter provides consumption rate guidance across all major vehicle and equipment categories.

4.1 The Consumption Ratio Principle

AdBlue consumption is directly proportional to diesel consumption. As a general rule, AdBlue consumption runs at 3–6% of diesel consumption. This means for every 100 litres of diesel used, you consume approximately 3–6 litres of AdBlue. The exact ratio depends on the engine's SCR calibration, operating load, and duty cycle.

4.2 Consumption by Vehicle Type

Vehicle / Equipment Type	Approx. AdBlue Consumption	Typical Tank Capacity
Passenger diesel SUV/ute	1–1.5 L per 1,000 km	13–25 litres
Passenger diesel sedan/wagon	0.5–1 L per 1,000 km	10–15 litres
Light commercial van	1–2 L per 1,000 km	15–25 litres
Medium truck (cab-chassis)	1.5–3 L per 100 km	50–100 litres
Heavy prime mover	1.5–3.5 L per 100 km	100–150 litres
Agricultural tractor (large)	0.4–0.8 L per engine hour	45–90 litres
Combine harvester	0.5–1 L per engine hour	60–120 litres
Mining haul truck (mid-size)	5–20 L per engine hour	200–500 litres

4.3 Factors That Affect Consumption

Your actual AdBlue consumption can vary from the averages above based on several factors:

- Engine load: Higher loads mean more diesel burned and more AdBlue consumed.
- Driving conditions: Stop-start urban driving increases consumption vs. highway cruising.
- Terrain: Hilly terrain and towing heavy loads increase both diesel and AdBlue consumption.
- Engine condition: A well-maintained engine with an optimally functioning SCR system uses AdBlue most efficiently.

- Ambient temperature: Very cold temperatures can affect SCR system warm-up and dosing behaviour.
- Vehicle age: Older SCR systems may dose AdBlue less efficiently than new systems.

4.4 Calculating Your Annual AdBlue Requirement

Use this simple formula to estimate your annual AdBlue needs:

> **FORMULA** Annual AdBlue (litres) = Annual diesel use (litres) × AdBlue ratio (use 0.04 for 4%) × 1.2 (20% safety buffer)

Example: A transport company runs 10 trucks, each consuming 50,000 litres of diesel per year. At a 4% AdBlue ratio: 10 × 50,000 × 0.04 × 1.2 = 24,000 litres of AdBlue per year. This would point to bulk IBC or tanker delivery as the most cost-effective supply method.

Chapter 5: AdBlue Warning Lights & What to Do

Understanding your vehicle's AdBlue warning system is essential knowledge for every diesel vehicle owner. This chapter explains the warning stages, what they look like, and exactly what to do at each stage.

5.1 The AdBlue Warning Light

The AdBlue warning light varies between manufacturers but typically appears as a yellow or amber symbol resembling an exhaust pipe with fluid droplets, or the word 'AdBlue' or 'DEF' displayed in your instrument cluster. Some vehicles display text messages such as 'AdBlue: 2,400 km remaining' or 'Top up AdBlue.' Check your owner's manual to identify the specific symbols used in your vehicle.

5.2 The Warning Stages

Warning Stage	What It Means & What to Do
Stage 1 — First Warning (~2,400 km remaining)	Amber light appears. Vehicle operates normally. This is your prompt to arrange an AdBlue top-up. Do not ignore it.
Stage 2 — Urgent Warning (~800 km remaining)	Warning becomes more prominent. May flash or turn red. Vehicle still operates normally but you are now in urgent territory. Top up immediately.
Stage 3 — Critical (<200 km remaining)	Continuous red warning. Some vehicles enter reduced power mode. Top up at the very next opportunity — do not wait.
Stage 4 — Empty (0 km remaining)	If the engine is switched off with an empty AdBlue tank, most Euro 5/6 vehicles will not restart until AdBlue is added. You are now stranded.

5.3 Emergency Procedure if You Run Out

If your AdBlue tank has run dry and your vehicle will not start, follow these steps:

7. Do not panic — the vehicle is not damaged, just immobilised by the emissions management system.
8. Source AdBlue as quickly as possible. For passenger vehicles, 5–10 litres is usually enough to allow the vehicle to restart. For trucks, you may need 20–50 litres or more.
9. Add AdBlue to the correct filler (blue cap). Do not add to the diesel tank — this will cause serious damage.
10. Wait 2–5 minutes after adding AdBlue for the level sensor to register the new level.
11. Attempt to start the vehicle. The warning light should extinguish once the system registers sufficient AdBlue.
12. If the vehicle still does not start after adding AdBlue, a fault may have been triggered. Contact your dealer or a qualified mechanic.

5.4 Other AdBlue System Warning Codes

In addition to low-level warnings, your vehicle may display fault codes related to the AdBlue system. Common fault indicators include:

- AdBlue quality fault: The system has detected that the AdBlue in the tank does not meet the required specification. This may occur if contaminated or incorrect fluid was added. Drain and refill with certified ISO 22241 AdBlue.
- SCR system fault: A component of the SCR system (injector, catalyst, NOx sensor, pump) has failed. Requires diagnosis by a qualified mechanic.
- AdBlue tank heater fault: In cold climates, the tank heater ensures AdBlue doesn't freeze. A heater fault may affect cold-weather starting.

WARNING Never use agricultural urea, windscreen washer fluid, water, or any other substitute in your AdBlue tank. Only use ISO 22241-certified AdBlue. Incorrect fluids will damage your SCR system and may cost thousands to repair.

Chapter 6: Storing AdBlue Correctly

Proper storage is critical to maintaining AdBlue quality. This chapter covers everything you need to know about storing AdBlue safely and effectively — with special attention to Australia's often extreme climate conditions.

6.1 Temperature Requirements

AdBlue is sensitive to temperature in both directions. The ideal storage temperature range is 5°C to 25°C. This presents a real challenge across much of Australia, where ambient temperatures regularly exceed 35–40°C in summer, particularly in Queensland, Western Australia, South Australia, and the Northern Territory.

Temperature Condition	Effect on AdBlue
Below -11°C	AdBlue freezes. Modern vehicles have heated tanks; ground storage containers may need insulation in alpine areas.
0°C to 5°C	Acceptable for short periods. Product quality maintained.
5°C to 25°C	Optimal storage range. Full shelf life maintained.
25°C to 35°C	Acceptable but shelf life begins to reduce. Minimise exposure time.
Above 35°C	Significant degradation begins. Urea breaks down, releasing ammonia. Shelf life reduces sharply.
Above 40°C (e.g. unventilated containers in direct sun)	Rapid degradation. Do not store AdBlue in these conditions.

6.2 Approved Storage Materials

AdBlue reacts with certain metals, causing contamination. This is one of the most commonly overlooked aspects of AdBlue storage. Always use approved materials only.

Material	Suitable for AdBlue?
High-density polyethylene (HDPE)	YES — the preferred material for AdBlue containers and tanks.
Polypropylene (PP)	YES — suitable for containers and fittings.
Stainless steel (grade 316L)	YES — suitable for tanks and pipework.
Carbon steel / mild steel	NO — reacts with AdBlue, causes contamination and corrosion.
Aluminium	NO — reacts with AdBlue, introduces metal ions that degrade the product.
Copper and copper alloys (brass, bronze)	NO — severely reactive with AdBlue. Even trace contact causes degradation.
Zinc and galvanised surfaces	NO — causes rapid contamination.

Standard rubber	NO — some rubber compounds degrade in contact with AdBlue. Use EPDM or specified AdBlue-compatible rubber only.

6.3 Shelf Life

Under optimal storage conditions (below 25°C, out of direct sunlight, in sealed approved containers), AdBlue has a shelf life of 12–18 months from the date of manufacture. In Australian conditions this can reduce significantly. As a practical guide:

- Stored at 15–20°C consistently: full 18-month shelf life expected.
- Stored at 25–30°C: shelf life reduces to approximately 12 months.
- Stored at 30–35°C: shelf life reduces to approximately 6–9 months.
- Stored above 35°C: shelf life may be less than 6 months — product should be tested before use.

Always check the manufacture date on delivery and implement first-in, first-out (FIFO) stock rotation. Do not use AdBlue that has been stored beyond its recommended shelf life without testing.

6.4 Signs of Degraded or Contaminated AdBlue

Fresh, quality AdBlue should be clear and colourless with only a faint ammonia odour. Signs that AdBlue may have degraded or been contaminated include:

- Strong, sharp ammonia smell — indicates urea breakdown from heat exposure.
- Yellow or brown discolouration — may indicate contamination from metal contact or other fluids.
- Cloudiness or turbidity — may indicate contamination or incorrect mixing.
- Crystalline deposits in the container — urea crystallisation from water evaporation or temperature cycling.

If you suspect your AdBlue is compromised, do not use it. Contact your supplier for guidance. Using degraded AdBlue can trigger quality fault warnings and damage SCR components.

6.5 Storage Format Recommendations by Volume

Operation Size	Recommended Storage Format	Typical Volume Range
Individual / 1–2 vehicles	10L–20L sealed containers in cool shed	Up to 40 litres on hand
Small fleet / farm (3–10 vehicles)	200L HDPE drums in shaded, ventilated storage	200–600 litres on hand
Medium fleet / site (10–30 vehicles)	1,000L IBC totes with HDPE-compatible pump	1,000–5,000 litres on hand

Large fleet / mine / depot (30+ vehicles)	Purpose-built HDPE bulk storage tank + metered dispenser	5,000+ litres on hand

Chapter 7: Buying AdBlue — Pack Sizes and What to Choose

AdBlue is available in a wide range of pack sizes, each suited to different consumption volumes and operational contexts. This chapter helps you choose the right format and understand the cost implications of each option.

7.1 Available Pack Sizes

Pack Size	Best Suited For
10 Litres	Passenger vehicle owners, emergency top-ups, infrequent users.
15 Litres	Light commercial vehicles, small passenger SUVs, occasional users.
20 Litres	Light commercial vehicles, tradies, farm utes, regular individual users.
205 Litres (drum)	Small fleets, farms, construction sites, fuel retailers.
1,000 Litres (IBC tote)	Medium fleets, transport companies, farms during harvest, mining contractors.
Bulk tanker delivery	Large transport fleets, major mine sites, large agricultural operations, fuel depots.

7.2 Understanding Volume Pricing

AdBlue pricing follows a clear tiered structure: the larger the volume, the lower the per-litre cost. As a rough guide to the price differential across formats:

- 10L–20L retail containers: highest per-litre cost. Convenience premium applies.
- 205L drums: typically 30–50% lower per-litre cost than retail containers.
- 1,000L IBC totes: typically 40–60% lower per-litre cost than retail containers.
- Bulk tanker: typically 50–70% lower per-litre cost than retail containers. Maximum value for high-volume users.

For businesses with consistent AdBlue demand, the investment in moving up one or two tiers in format almost always delivers a rapid return through per-litre savings. Bauly Chemicals can provide a custom pricing comparison for your specific consumption volume and location.

7.3 ISO 22241 Certification — What to Look For

When purchasing AdBlue from any supplier, confirm that the product meets ISO 22241 standards. Reputable suppliers should be able to provide:

- Certification documentation confirming ISO 22241 compliance.

- Country of manufacture — Australian-made product avoids import variability.
- VDA licensing of the manufacturer (for products sold as 'AdBlue' branded product).
- Manufacture date and batch traceability.

IMPORTANT Never purchase AdBlue from unlicensed suppliers who cannot provide ISO 22241 certification. Off-spec AdBlue may appear identical to certified product but can cause thousands of dollars in SCR system damage. Bauly Chemicals supplies only ISO 22241-certified, Australian-made AdBlue.

Chapter 8: AdBlue Safety and Handling

AdBlue is a safe, non-hazardous product under normal conditions — but it does require correct handling procedures to prevent contamination and avoid minor irritation. This chapter covers safe handling, spill response, and first aid.

8.1 Health and Safety Overview

AdBlue is classified as non-hazardous under the Australian Workplace Health and Safety framework. It is non-flammable, non-explosive, and non-toxic. However, as with any chemical, basic precautions should be followed during handling:

- Skin contact: AdBlue is mildly irritating to skin on prolonged contact. Wash thoroughly with water if contact occurs. No long-term health risk from incidental skin contact.
- Eye contact: Rinse immediately with plenty of clean water for at least 15 minutes if AdBlue enters the eyes. Seek medical attention if irritation persists.
- Ingestion: AdBlue is not intended for consumption. If ingested, drink water and seek medical advice.
- Inhalation: Vapours from degraded or heated AdBlue contain ammonia, which can be irritating. Ensure adequate ventilation in storage and dispensing areas.

8.2 Personal Protective Equipment (PPE)

For routine top-up operations (passenger vehicles): no PPE is strictly required, though gloves are recommended to prevent skin contact and staining. For bulk dispensing, drum pumping, or IBC operations: chemical-resistant gloves, safety glasses, and chemical-resistant boots are recommended. A chemical apron is advisable when handling large quantities.

8.3 Spill Response

AdBlue spills are generally low-risk but should be cleaned up promptly:

13. Small spills (up to 20 litres): Absorb with clean sand, dry earth, or an inert absorbent material. Collect in a container for disposal. Flush remaining residue with large amounts of water.
14. Large spills: Prevent the product from entering drains, waterways, or sewers — AdBlue introduces nitrogen into waterways, which can cause algal blooms. Contain the spill with bunding, absorbent materials, or sandbags. Notify your environmental officer and local authorities as required.
15. Environmental obligation: While AdBlue is not acutely toxic, it is an environmental concern in large quantities due to its nitrogen content. Large spills near waterways must be reported to your local environment authority (EPA).

8.4 Handling and Dispensing Best Practices

- Always use AdBlue-compatible equipment (HDPE or 316L stainless steel containers, pumps, and hoses).
- Never use the same pump, funnel, or container for both diesel and AdBlue. Even trace diesel contamination will trigger an AdBlue quality fault.
- Keep AdBlue containers sealed when not in use to prevent dust and moisture contamination.
- Do not dispense AdBlue in strong winds that could blow contamination into the open container.
- After dispensing, wipe the filler nozzle and vehicle filler cap to prevent urea crystal buildup.
- Label all AdBlue storage containers and dispensing equipment clearly to prevent accidental diesel/AdBlue mix-ups.

Chapter 9: AdBlue and Australian Regulations

For Australian fleet operators, understanding the regulatory framework surrounding AdBlue is essential for compliance management. This chapter outlines the key regulations that apply.

9.1 Australian Emissions Standards Framework

Australia's on-road vehicle emissions are regulated through the Australian Design Rules (ADRs), administered by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts. The relevant ADRs for diesel emissions are ADR 79/04 (light vehicles, Euro 5 equivalent) and ADR 80/03 and 80/04 (heavy vehicles, Euro V and Euro VI equivalent). These standards set mandatory limits on NOx, particulate matter, and other pollutants. SCR technology with AdBlue is the dominant method used by manufacturers to achieve compliance.

9.2 AdBlue Defeat Devices Are Illegal

The use of defeat devices — any hardware or software that circumvents or disables the AdBlue/SCR system — is illegal in Australia. The Australian Competition and Consumer Commission (ACCC) and state-based regulators have taken enforcement action against suppliers and installers of such devices. Penalties can include substantial fines for both businesses and individuals. Vehicles found to be fitted with defeat devices will fail roadworthiness inspections and can be prohibited from operation.

9.3 Heavy Vehicle National Law (HVNL) and Chain of Responsibility

Under the Heavy Vehicle National Law (HVNL), chain of responsibility provisions extend emissions compliance obligations beyond just the driver. Fleet managers, transport operators, schedulers, and even executives can face liability if systemic non-compliance with vehicle standards — including AdBlue system tampering or negligent maintenance — is found. Maintaining vehicles in proper working order, including functional SCR systems and consistent AdBlue supply, is part of an operator's HVNL duty of care.

9.4 Off-Road Equipment and Mine Site Compliance

Off-road diesel equipment used in mining, agriculture, and construction is regulated separately. Modern equipment certified to EPA Tier 4 Final or EU Stage V standards requires AdBlue as part of its certification. Operating such equipment without AdBlue may void the manufacturer's warranty, breach mine site environmental permits, and violate equipment certification conditions. State mining regulatory bodies and mine site HSE departments typically require operators to demonstrate emissions compliance as part of site access and operational licencing.

Chapter 10: Troubleshooting Common AdBlue Problems

This chapter addresses the most common AdBlue-related issues experienced by Australian vehicle owners and operators, with practical solutions for each.

10.1 Common Problems and Solutions

Problem	Likely Cause & Solution
AdBlue warning light on, tank recently filled	Possible causes: sensor delay (wait 5 mins), level sensor fault, or AdBlue quality issue. If light persists, have the SCR system diagnosed.
Vehicle won't restart after AdBlue ran empty	Normal. Add at least 5–10L of certified AdBlue and wait 2–5 minutes for sensor to register. Try starting again.
AdBlue quality warning / fault code	Off-spec AdBlue was likely added. Drain tank completely and refill with certified ISO 22241 AdBlue. May require SCR system diagnosis.
AdBlue consumption seems unusually high	Possible SCR dosing fault, injector leak, or engine operating under unusual loads. Have the system inspected.
White crystalline deposits around AdBlue filler	Normal. Urea crystallises when AdBlue dries. Clean with warm water and a cloth. Does not indicate a fault.
AdBlue froze in the tank or storage container	AdBlue freezes at -11°C. Modern vehicles have heated tanks that resolve this on startup. Thaw storage containers naturally — do not heat artificially.
Strong ammonia smell from storage area	AdBlue has degraded from heat exposure. Check storage temperatures, replace degraded stock, and improve storage conditions.
AdBlue system warning after diesel entered AdBlue tank	Contaminated system. Do not start the vehicle. Have the entire AdBlue system professionally flushed and inspected before use.

10.2 When to Call a Mechanic

Some AdBlue-related issues require professional diagnosis. Contact a qualified mechanic or your vehicle dealer if:

- A fault code appears relating to the SCR system and does not clear after adding quality AdBlue.
- AdBlue consumption appears abnormally high or low without an obvious explanation.
- The AdBlue warning light comes on immediately after a full top-up.
- The vehicle enters limp mode or power restriction mode related to the SCR system.
- You suspect diesel or another fluid has been added to the AdBlue tank.

Chapter 11: Frequently Asked Questions

A comprehensive reference for the most commonly asked AdBlue questions from Australian vehicle owners, fleet managers, and operators.

Q: Is AdBlue the same as DEF (Diesel Exhaust Fluid)?

Yes. AdBlue and Diesel Exhaust Fluid (DEF) are the same product — a 32.5% aqueous urea solution meeting ISO 22241. 'AdBlue' is the registered trademark used in Australia, Europe, and many other markets. 'DEF' is the North American equivalent term. Both are interchangeable.

Q: Can I make AdBlue myself?

No. AdBlue requires automotive-grade urea with very low impurity levels and precisely deionised water. DIY solutions using agricultural urea and tap water will not meet ISO 22241 standards and will damage SCR systems. Always use certified AdBlue from a licensed supplier.

Q: Can I use agricultural urea instead of AdBlue?

No. Agricultural urea contains higher levels of biuret and other impurities that will damage SCR catalysts. It is also typically not dissolved at the correct 32.5% concentration. Never use agricultural urea as an AdBlue substitute.

Q: Does AdBlue expire?

Yes. Under optimal storage conditions (below 25°C, out of direct sunlight), AdBlue has a shelf life of 12–18 months from manufacture. In hot Australian conditions, shelf life can be significantly shorter. Always check the manufacture date and store correctly.

Q: What happens if AdBlue runs out while driving?

Most vehicles will continue to operate when AdBlue runs out while the engine is running, but will display urgent warnings. The critical moment is when the engine is switched off — many Euro 5 and Euro 6 vehicles will refuse to restart until AdBlue is added. Do not switch off the engine if AdBlue is critically low until you are at a safe location with access to AdBlue.

Q: Can I top up AdBlue myself, or does a mechanic need to do it?

AdBlue top-up is something any vehicle owner can do. Locate the blue-capped AdBlue filler (check your owner's manual for exact location), open the cap, and pour in the AdBlue. Use a funnel to avoid spillage. The filler nozzle is typically smaller than the diesel filler to prevent accidental cross-filling.

Q: What is the difference between AdBlue 10L, 205L drum, and 1000L IBC?

These are different packaging formats for the same ISO 22241-certified product, available in different volumes for different user needs. 10L containers are for individual vehicles or emergency top-ups. 205L

drums suit small fleets and on-site storage. 1000L IBCs suit medium to large fleets and operations. All contain the same quality AdBlue — the format simply determines volume and price per litre.

Q: Does the brand of AdBlue matter?

What matters is ISO 22241 certification, not the brand name. Any AdBlue that is certified to ISO 22241 and supplied by an authorised manufacturer or distributor is suitable for your vehicle. Bauly Chemicals supplies ISO 22241-certified, Australian-made AdBlue.

Q: Is AdBlue dangerous to handle?

AdBlue is classified as non-hazardous. It is non-flammable and non-toxic. It can cause mild skin irritation on prolonged contact and should be rinsed from eyes immediately if contact occurs. Wear gloves when handling, particularly for bulk dispensing operations.

Q: Can AdBlue damage my car if I spill it?

AdBlue can cause corrosion on bare metal surfaces over time due to its alkalinity. Rinse any spills on paintwork, metal surfaces, or engine components with clean water promptly. Urea crystals that form as AdBlue dries can be cleaned with warm water.

Chapter 12: AdBlue Supply from Bauly Chemicals

Bauly Chemicals is a leading Australian supplier of ISO 22241-certified AdBlue, servicing vehicle owners, fleet operators, and industry customers across all states and territories.

12.1 Our Products

Product	Description
AdBlue 10L	Convenient container for passenger vehicles and light commercial. Available in cartons.
AdBlue 15L	Mid-size container for light commercial vehicles and regular users.
AdBlue 20L	Popular size for farm utes, tradies, and small fleet vehicles.
AdBlue 205L Drum	For small fleets, farms, and on-site storage. HDPE drum with pump available.
AdBlue 1000L IBC	Most popular format for medium fleets and operations. Pallet-delivered.
Bulk AdBlue (tanker)	For large operations. Delivered direct to on-site storage tanks.
AUS 40	40% urea solution for marine/maritime SCR applications. ISO 18611 certified.
AdBlue Transfer Pumps	240V electric pumps and gravity kits for IBC and drum dispensing.

12.2 Distribution Areas

Bauly Chemicals supplies AdBlue across all Australian states and territories, with depots and distribution networks covering:

- Victoria (VIC): Depots in Sunshine 3020 and Dandenong 3175
- New South Wales (NSW): Sydney and regional NSW
- Queensland (QLD): Brisbane and regional QLD
- Western Australia (WA): Perth and regional WA
- South Australia (SA): Adelaide and regional SA
- Northern Territory (NT): Darwin and regional NT
- Tasmania (TAS): Statewide supply
- Australian Capital Territory (ACT): Canberra and surrounds
- International: Export available — contact for details

12.3 How to Purchase

16. Visit bauly.com.au or complete the online Sales Enquiry form.
17. Receive a prompt, competitive quote from our team by email.
18. Confirm your order and pay on invoice.
19. Bauly Chemicals delivers to your location, or you collect from our depot.

12.4 Contact Bauly Chemicals

Email: adblue@bauly.com.au

Website: www.bauly.com.au

Online Store: www.bauly.com.au/adblue-aus-40-store/

Sales Enquiry: www.bauly.com.au/salesenquiry/

> **READY TO ORDER?** Contact Bauly Chemicals today for a free, no-obligation quote on AdBlue supply for your vehicle, fleet, farm, or operation. ISO 22241 certified, Australian made, nationwide delivery.

Appendix: Quick Reference Charts

A. AdBlue at a Glance

Item	Quick Answer
What is it?	32.5% urea + 67.5% deionised water. Exhaust treatment fluid.
What does it do?	Reduces diesel NOx emissions by up to 90% via SCR reaction.
Is it a fuel?	No. It does not power the engine. Goes in a separate tank.
Quality standard	ISO 22241 (also called AUS 32)
Shelf life	12–18 months at below 25°C
Freezing point	Approximately -11°C
Consumption rate	Approximately 3–6% of diesel consumption
Filler cap colour	Blue
What if you run out?	Vehicle may not restart. Top up with ISO 22241 AdBlue immediately.
Is it hazardous?	Non-flammable, non-toxic, non-hazardous

B. Approved vs Non-Approved Storage Materials

Material	Approved for AdBlue?
HDPE (High-Density Polyethylene)	YES
Polypropylene (PP)	YES
Stainless Steel 316L	YES
Carbon steel / mild steel	NO
Aluminium	NO
Copper / Brass / Bronze	NO
Zinc / Galvanised steel	NO
Standard rubber	NO (use EPDM only)

C. Glossary of Key Terms

Term	Definition
AdBlue	Registered trademark for AUS 32 — 32.5% aqueous urea solution meeting ISO 22241.

AUS 32	ISO standard designation for 32.5% aqueous urea solution (AdBlue).
AUS 40	40% aqueous urea solution for marine SCR applications. ISO 18611.
DEF	Diesel Exhaust Fluid — North American term for the same product as AdBlue.
SCR	Selective Catalytic Reduction — the exhaust aftertreatment technology that uses AdBlue.
NOx	Nitrogen oxides — harmful pollutants produced by diesel combustion that AdBlue neutralises.
ISO 22241	International standard specifying AdBlue (AUS 32) quality and test methods.
Euro 5 / Euro 6	European emission standards adopted by Australia for new diesel vehicles.
VDA	Verband der Automobilindustrie — German Automotive Industry Association, owner of the AdBlue trademark.
IBC	Intermediate Bulk Container — 1,000-litre pallet-mounted HDPE container for AdBlue supply.
HDPE	High-Density Polyethylene — the approved plastic material for AdBlue containers and tanks.
Defeat device	Illegal hardware or software that circumvents the SCR/AdBlue emissions system.