

### What happens if I run out on the road

Your vehicle's tank will normally contain up to two weeks supply of AdBlue and, provided the tank is topped up at the depot weekly, drivers will not normally need to fill-up on the road. Drivers may want to carry a small 10 litre plastic container of AdBlue on the vehicle in case they run-out... enough for about 400 miles of driving. For trucks registered after October 2007 an on-board-diagnostics vehicle sensor will ensure that genuine AdBlue is present in the special tank. If AdBlue runs-dry, the Engine Management System will progressively and gradually reduce engine power by 50% to a limp-home mode over the space of 100 Km distance.

### Can I use AdBlue with BioDiesel

Biodiesel and SCR are compatible even if 100% Biodiesel is used. Of course all special material demands on the engine running with biodiesel have to be considered for the complete SCR-equipment on the truck. That means that the truck operator needs a confirmation of the truck producer for the use of biodiesel on a certain truck.

Using biodiesel the exhaust gas contains more NOx and the AdBlue consumption of the SCR equipment will be slightly higher if used at 100% biodiesel but not at typical 5% additions.

### Is AdBlue corrosive

AdBlue is non-toxic and poses no serious risk to humans, animals or the environment if properly handled. The product is slightly alkaline with a pH of approx 9.0 so should not be kept in contact with aluminium, brass, mild steel. Stainless Steel and Plastic tanks and fittings are recommended. Prolonged skin contact may cause irritation. CEFIC guidance available at [www.petrochemistry.net](http://www.petrochemistry.net) [Automotive Grade Urea Group] provides the latest guidance.

For further information contact:

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## FAQs ABOUT SCR TECHNOLOGY AdBlue<sup>®</sup>

### What is SCR Technology

SCR Technology (Selective Catalytic Reduction) is the reduction of the emissions that are generated during the combustion of an engine through a catalytic converter in the exhaust system of the vehicle.

The main components of the SCR system are the SCR catalyst, the AdBlue injection unit, the AdBlue tank and the AdBlue dosing control unit. The harmful NOx molecules in the exhaust are converted to harmless nitrogen and water. This happens when NOx reacts inside the catalyst with the ammonia in the AdBlue injected into the exhaust pipe upstream of the catalyst, where its urea molecules react with heat and water to form the ammonia needed.

SCR Technology needs a continuous supply of AdBlue (maximum quality Urea solution at 32.5%) as a reducing agent. AdBlue is dispensed into the AdBlue tank of the vehicle; this is separate to the diesel tank. AdBlue NEVER goes into the engine, it is an exhaust additive.

### What are the principal advantages of SCR Technology?

- **Fuel saving:** It is estimated that Euro 4 and Euro 5 vehicles equipped with SCR Technology obtain a fuel saving of approximately 5% (Euro 4) to increase to 7% (Euro 5).
- **Technology prepared for the future:** SCR Technology not only fulfills the emission levels of Euro 4 and Euro 5 but also the ones of Euro 6.
- **Respects the environment**
- **Cost savings:** Possible cost savings as the SCR system improves engine efficiency.

### Have all manufacturers chosen the same technology?

- **Euro 4 fulfillment:** Manufacturers including Mercedes, Iveco, Volvo, Renault and DAF have chosen SCR Technology. MAN and SCANIA have chosen EGR Technology.
- **Euro 5 fulfillment:** Almost all manufacturers' vehicles, use this SCR Technology.
- **Euro 6 fulfillment:** All manufacturers' vehicles will have to use the SCR Technology.

“ DAF have no hesitation in recommending BlueCat Adblue supplies and equipment for use in all SCR equipped DAF trucks ”

**DAF**

# Questions & Answers

**AdBlue** The solution in Ireland to reduce emissions from diesel vehicle engines and generators.



**BlueCat aims to be the Number One supplier of choice for AdBlue solutions with easy ordering and economic & rapid delivery in bulk or packages direct to you from locally based manufacturing facilities or via local distribution partners.**

Legislation from Europe and the US to limit the emissions of NOx from vehicles will converge and the current consensus is that the ultimate limit will be 0.4 g/kWh for both on and off road diesel vehicles. This level will cover trucks, buses and off road vehicles >130kW.

In Europe the European Union currently has Euro V in place for on road and Stage IIIB for off road. These will be replaced by the lower emission limit of 0.4 g/kWh in Euro VI due 2012 and Stage IV due 2014. In the US the Environmental Protection Agency Tier 4 (interim) will be replaced by Tier 4 Final in 2014 which will lower emission limit to 0.4 g/kWh for off road vehicles >130kW.

In Australia the government has introduced the European legislation under its Australian Design Rules. It also accepts the US and Japanese standards.

## FAQs ABOUT AdBlue®

### What is AdBlue

AdBlue is a light, colourless 32.5% Aqueous Urea Solution used as a fluid in the latest generation of diesel-powered Trucks and Off Road Vehicles. AdBlue must comply with the ISO22241 specification and is known as automotive grade urea solution, AUS 32 and AdBlue.

### How does AdBlue work

AdBlue is stored in a separate tank on the vehicle. It is precisely metered into the hot exhaust manifold where the urea solution breaks-down into Ammonia and reacts with exhaust gasses in the presence of a catalytic converter.

The oxides of nitrogen formed at combustion are converted into harmless elementary nitrogen and water. This method is called Selective Catalytic Reduction (SCR).

It is a common misconception that AdBlue is a fuel additive.

### Why do I need to use AdBlue

For trucks and buses most Euro V compliant vehicles and all Euro VI will require AdBlue. For Non Road Mobile Machinery >130kW most Stage IIIB and all Stage IV will require AdBlue.

### What is the relevant legislation

For trucks and buses Euro V legislation came into force in 2009 limiting NOx levels to 2.0 g/kWh of NOx, Euro VI legislation which comes into force in 2013 will further reduce this to 0.4 g/kWh of NOx. For Non Road Mobile Machinery >130kW Stage IIIB is already in place, Stage IV will come into effect in 2014 and will limit NOx to 0.4 g/kWh.

### How will vehicles manufacturers satisfy the legislation

Up to Euro V vehicle manufacturers have used either Selective Catalytic Reduction or Exhaust Gas Recirculation. For Euro VI and Stage IV Selective Catalytic Reduction will be the main technology sometimes used in conjunction with Exhaust Gas Recirculation.

### How much AdBlue will a vehicles use

The consumption of AdBlue is 3-4 percent that of diesel for a Euro 4 engine, and 5-7 percent for a Euro 5 engine, depending on driving, load and road conditions.

AdBlue Consumption as percentage of diesel consumption	Euro 4	Euro 5
Light Duty [City Traffic]	3.23%	4.79%
Medium Duty [Motorway Cruising]	4.14%	6.15%
Heavy Duty [Over the Alps]	4.23%	6.29%

The consumption in litres can also be calculated using the guideline figures in the table below.

AdBlue Consumption in Litres	Litre per week	Litres per month	Litres per year
44-tonne truck	30-40	160	2000
18-tonne runabout	20-25	100	1200

(Source - DAF Trucks, AdBlue Conference, Brussels, June 2005)

As vehicles will typically be fitted with a 70 or 90 litre AdBlue tank, most vehicles will need to be topped-up with AdBlue every week-to-ten-days.

### Will much will AdBlue save

The combination of 5% less fuel consumption and lower servicing costs result in a saving when AdBlue is used. The savings on diesel cost alone can be seen from the following table.

Cost of AdBlue	€0.50	€0.55	€0.60	€0.65	€0.70
Diesel Consumption (litres)	48,426.67	48,426.67	48,426.67	48,426.67	48,426.67
Diesel Spend (€)	46,005.33	46,005.33	46,005.33	46,005.33	46,005.33
Diesel Saving (€)					
(5% improved efficiency)	2,190.73	2,190.73	2,190.73	2,190.73	2,190.73
AdBlue Consumption	2,421	2,421	2,421	2,421	2,421
AdBlue Spend (€)	1,210.67	1,331.73	1,452.80	1,573.87	1,694.93
Net Saving per vehicle (€)	980.06	859.00	737.93	616.86	495.80

(Figures based on diesel @95c per litre, 80,000 annual mileage, 7.5 miles/gallon)

### What is BlueCat

BlueCat is our brand of AdBlue solution. BlueCat AdBlue is officially licensed by the VDA and fully complies with the official DIN70070 and CEFIC standards.

BlueCat AdBlue can be purchased in bulk, IBC's or in Drums with appropriate dispensing equipment. Alternatively one can

refill the AdBlue tank on the vehicle at a BlueCat AdBlue retailer.

### In which forms will BlueCat AdBlue be available

- Large users can purchase AdBlue in bulk from 4000-25000 litres.
- Smaller users can choose from a variety of pack sizes 1000 litre IBCs, 200 litre drums to 10 litre jerricans.
- Alternatively a user can refill the vehicle AdBlue tank at their local retailer.

### How must the AdBlue be stored

AdBlue must remain at a temperature between -11° C and +30° C preferably out of direct sunlight.

### What equipment will I need

IBC's are the popular pack size for AdBlue, BlueCat recommend an electric stainless steel pump, meter and dispensing unit with a nozzle cut off to prevent crystallization of the product.

Many standard dispensing systems are incompatible with AdBlue. Equipment constructed from aluminium, brass or mild steel fittings, even if nickel plated must be avoided. Stainless Steel and plastic equipment with special seals must be used in all AdBlue.

Smaller hand operated pumps are available for entry level users of AdBlue, your local BlueCat AdBlue supplier will be happy to recommend the equipment which will suit your requirements.

### BlueCat telemetry for bulk storage tanks



Customers with BlueCat telemetry can use their web based log in to check their current tank levels and historical levels. Email and SMS alerts can also be set for predetermined levels and events. No re-ordering is necessary with this system.



**AdBlue Products**

1000 Litre IBCs



1000 Litre IBCs



5000, 7500 & 1000 litre self-bundled tanks



10 Litre Cans



200 Litre Tank

