AdBlue Storage & Handling



The latest emissions standards, referred to as Euro 6, came into force in 2016, creating a particular challenge for the development of diesel engines. The main focus of the new standards is on further protecting the air quality and health of the wider population, necessitating new approaches to ensure the reduction of harmful nitrogen oxide emissions.

One of the latest techniques being employed to clean up diesel emissions is known as Selective Catalytic Reduction, or SCR which is used to treat exhaust gases and remove harmful pollutants in conjunction with AdBlue.

What is it?

When diesel engines burn fuel, it's well-known that a wide range of polluting compounds and chemicals are pumped out of the exhaust pipe and into the atmosphere. Nitrogen Oxide and Nitrogen Dioxide are two of the most unpleasant tailpipe pollutants, and have been attributed to breathing and respiratory problems in vulnerable people. They also build up in the atmosphere to cause smog and acid rain.

The liquid used to facilitate SCR is AdBlue, which is stored in a dedicated tank on the vehicle, separate from the one for diesel. Although non-toxic, AdBlue is corrosive and so appropriate handling of the liquid is imperative as it can cause irritation to the skin, eyes and lungs.

When AdBlue meets a hot exhaust system it releases ammonia which is a catalyst to a chemical reaction that converts dangerous Nitrogen Oxides into two harmless products – water vapour and Nitrogen. Both products occur naturally, and so can be pumped out of an AdBlue equipped vehicle without any ill effects.

AdBlue is a colourless non-toxic liquid and intrinsically safe, it has a composition that's 67.5 percent de-ionised water and 32.5 percent urea. The liquid is a man-made substance created by exposing synthetic ammonia and carbon dioxide to heat.



Why is it important to me?

If stored, handled and used according to manufacturers' instructions AdBlue poses a minimal risk to operators and a limited risk to the environment. However, urea solution is polluting to groundwater and watercourses and the ammonia contained within this is corrosive to some metals, such as copper and its alloys. If tanks and pipework become corroded there is a higher risk of a spill that could cause pollution and may contravene the Anti-Pollution Works Regulations 1999.

It's important that AdBlue is stored in containers specifically designed and manufactured from materials that are suitable for use with urea. The same applies to all storage ancillary equipment, such as valves, dispensing nozzles and pipework.

AdBlue is soluble in water and should be kept out of surface water drainage systems that discharge to the environment. It will not be removed in an oil separator and so is important to isolate the dispensing area drainage from the surface water system, reducing the possibility of spills and drips causing pollution.

Recommended good practice for the storage of AdBlue is as follows:

- Ensure containers, pipework and dispensing equipment is suitable for use with urea.
- A secondary containment for the container and ancillary equipment is in place (i.e. bund or sump).
- The dispensing area drainage is isolated from surface water drains.
- A trigger nozzle with an auto shutoff should be used to dispense AdBlue. Ensuring the nozzle cannot be left in the open position.
- Appropriate emergency equipment should be in place to deal with any level of spills, for example proprietary spill kits, drain mats, pipe blockers, or permanent valves on drainage systems to provide containment.
- An emergency plan and suitable training for dealing with spillages or other accidents is in place.

Ideally AdBlue should be stored between 0 and 30°C, and protected from direct sunlight. It should be properly sealed when it is not being used and free from contamination. It is possible for AdBlue to freeze at -11°C, however, when thawed it returns to its original state.

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Below are some of the AdBlue storage options available from Ace Plant. These options provide safe storage, transportation & handling to ensure good practice from both a health and safety and environmental viewpoint.

IBC Storage Solution



The Ace Plant Bunded Bundie Store is an innovative method of storing 1000L IBC's.

The Bundie Store is complete with two fully opening, lockable front doors for ease of access and high security. The unit is also complete with a fully opening and lockable roof so IBC's can easily be loaded and unloaded using a telehandler or forklift.

Complete with fork pockets as well as corner lifting points, the unit can be conveniently and safely re-sited.

The fully enclosed Bundie Store also ensures the stored liquid is out of direct sunlight, poor weather conditions and dust, helping prevent crystallisation and contamination – making it an ideal AdBlue specific IBC storage solution.

Available fully bunded, the Bundie Store assists in preventing the stored liquid coming into contact with the environment in the event of a spillage or leak.

Trailed Storage and Handling Solution

Another method of storing AdBlue is inside the easily portable site-tow AdBlue Bundie Bowser.

The unit is fully bunded and complete with either its own hand pump or a 12v electric delivery pump, hose and autostop nozzle. This provides safe storage of the liquid whilst enabling the Bowser to be completely self-sufficient.



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As with the Bundie Store, the access lid of the AdBlue Bundie Bowser can be locked, making the unit secure and sealing the liquid inside the tank from the elements, minimising the risk of contamination. The bowser can also be fitted with either a plastic or stainless-steel tank both of which comply with good practice directions for storage.

Combined Diesel/AdBlue Storage and Handling Solution

Available in either static, bucket, site-tow or road tow, Ace Plant have also incorporated AdBlue tanks into their already existing fleet of Bunded Fuel Storage systems.



The static Bunded Fuel and AdBlue Bowser combination (above) has a capacity of 1000L of Diesel and 200L of AdBlue.



The larger tandem axle site-tow Bunded Fuel and AdBlue Bowser combination (above) has a capacity of 7000L of Diesel and 3000L of AdBlue. Other sizes and combinations are available to suit site requirements.

Trailed units offer the additional advantage of greater flexibility onsite, helping to reduce the down time of mobile plant requiring AdBlue by providing a mobile filling point.



Institute of Quarrying

IQ supports professionals working within the quarrying and minerals products industry through membership and training. These factsheets are produced across a range of topics to share ideas and best practice.

Further information can be found via the knowledge section on the IQ website <u>https://www.quarrying.org/careers</u>

Ace Plant

To uncover more about Ace Plant and their range of innovative site solutions visit <u>www.aceplant.co.uk</u>

This factsheet was produced by Ace Plant in conjunction with the IQ. Please ensure you consult the manufacturers/suppliers Material Safety Data Sheet for additional handling information on AdBlue before use.

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