

DIESEL TANKS EXPERT GUIDE

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1. What are diesel and biodiesel fuels?

Conventional diesel fuel is a mixture of hydrocarbons obtained by the distillation of crude oil. Unlike a spark-ignited petrol engine, diesel engines are ignited by the heat generated through air compression. Diesel is a fossil fuel meaning it's non-renewable and we will eventually deplete the world's diesel reserves.

Biodiesel is an alternative to conventional diesel. As biodiesel is primarily derived from plants it's considered a renewable resource. Usually, biodiesel is blended with ordinary diesel and works in most diesel engines without the need for engine modification. Because the UK government aims to reduce vehicle emissions – and burning biodiesel releases lower emissions than conventional diesel – it is most commonly used in transport.

2. What are the advantages of owning a diesel storage tank?

Diesel storage tanks are commonly used when a business requires onsite fuel storage and diesel drums are too small or inconvenient. Owning your own diesel tank is often a prudent decision to save time, reduce costs, improve the efficiency of operations, or all three. The potential benefits of owning a storage tank depend upon the industry but for some businesses, it's a basic necessity.

TRANSPORT AND LOGISTICS

For industries such as transport and logistics which regularly use large quantities of diesel, proper fuel storage is a necessity. Buying fuel in bulk reduces the price you pay per litre. This is especially important for the transport industry where small savings are multiplied over dozens, hundreds, or thousands of vehicles. Secondly, onsite fuel storage allows a fleet to stay on the road for the maximum time possible without the need for queuing at fuel stations.

One of the biggest benefits of fuel tanks for the logistics industry is the tanks synchronisation with fuel management systems. This enables a company to control and monitor fuel consumption for cost analysis and to improve fuel efficiency. We supply a [Piusi MC Box Fuel Management System](#) to new or existing installations. This controls up to 120 users, each with a pin or magnetic fob to ensure that only authorised users can dispense fuel.

AGRICULTURE

Storing red diesel onsite is often a necessity for farmers as legally the fuel is only meant for usage off public roads. Storing white diesel is also a popular practice in the agricultural industry to speed up workload during busy times. In the late summer and early autumn diesel storage is particularly essential as farmers work long hours to harvest but also to plough, cultivate and sow ready for the following year. This requires big machines working long hours against the seasonal clock and on-site diesel storage can really make a difference.



Tuffa 2500 litre bunded diesel fuel station

COMMERCIAL

Diesel storage isn't always about convenience or reducing fuel costs. We've manufactured standard and bespoke diesel tanks for a whole range of purposes such as feeding back-up generators to power hospitals and [city councils](#) for emergency electricity in the event of a blackout. We've also manufactured smaller tanks for more conventional purposes such as refuelling forklifts or powering construction sites.

3. What are the disadvantages of owning a diesel storage tank?

The biggest reason not to invest in your own diesel tank is often that you are taking the responsibility of storing your own fuel – rather than letting the fuel station take the risk. Probably the greatest risk is fuel theft. Thousands of litres of diesel amounts to a small fortune and can be a target for would-be thieves. For someone with a very secure yard sited in a quiet area theft may not be a big issue. If that isn't you, then this is a serious consideration. Check the [crime rates in your area](#) to see if theft has been a big problem.

Another reason not to own your own diesel tank is the risk of oil spillage. Oil leaks can also occur due to human error or damage to the tank. Decontaminating the area after an oil spill can cost thousands.

However, there are ways to avoid oil spills. Providing a secondary containment will capture oil leaks from the inner tank. Additionally, steel provides greater impact resistance for tanks and armco barriers offer additional protection for plastic and steel tanks.

Finally, diesel tanks require regular maintenance to remove contaminants from the tank and ensure it's kept in good condition. Whether this is dealt with internally or externally the labour and monetary costs need to be accounted for.



Armco barrier surrounding a fuel tank

4. What types of diesel tanks are available?

Diesel storage comes in a variety of types and sizes from drums and bowers to above-ground diesel tanks and underground tanks. As above-ground diesel tanks are made for bulk liquid storage they tend to be used commercially. These are available for regular diesel and biodiesel, in plastic (polyethylene) and steel. Our stock tanks are available in sizes from 1,350 litres to 90,000 litres.

BUNDED DIESEL TANKS

[Bunded diesel tanks](#) have two layers – an inner tank and an outer tank (bund) which acts as a secondary containment (a tank within a tank). In the event of a leak from the main tank, the outer layer will contain all the oil which would otherwise risk contaminating the local area. Integrally banded tanks are the most popular kind of secondary containment. The alternative involves constructing a bund from masonry or concrete which is inconvenient, costly and makes a time-consuming installation. All of our diesel tanks are banded.

PLASTIC DIESEL TANK

Our [polyethylene diesel tanks](#) are manufactured from a recyclable plastic known to be extremely durable. They are a hardy but more cost-effective alternative to steel tanks. To increase the strength of our plastic tanks they are roto moulded – a process which creates a single unit without joints and seams which create weaker areas. When appropriately installed, used and maintained, our plastic tanks have a working life of at least 20 years.

STEEL DIESEL TANK

[Steel tanks](#) are more expensive to manufacture than plastic but offer greater adaptability and protection with a serviceable lifespan in excess of 30 years. Generally steel diesel tanks are made to order meaning they can meet bespoke requirements, capacities and dimensions. This makes steel tanks popular with people who need to install a diesel tank to fit into an exact area such as those who want to replace a tank with the same footprint. Because steel tanks are fabricated by hand and don't rely on moulds they can reach a much bigger capacity than plastic tanks.



Bespoke 80,000 litre tank with three dispensers

BIODIESEL TANKS

Tuffa's [biodiesel tanks](#) are also made from polyethylene and are roto moulded to produce a seamless tank. We manufacture our biodiesel tanks in polyethylene because it has greater anti-corrosion properties than steel at a more cost-effective price.

MANUFACTURING AND QUALITY STANDARDS

All diesel tanks should meet British Standards and trade association standards. At a minimum, tanks need to comply with BS EN ISO 9001, should be made of a material suitable for the oil stored with sufficient strength to ensure it won't burst or leak with ordinary use and are expected to last at least 20 years with proper maintenance. Rotationally moulded polyethylene tanks must also meet BS EN 13341 standards and be CE marked to indicate conformity with health, safety and environmental protection standards. Steel tanks must meet BS 799 standards. Your manufacturer, supplier, or installer should advise you on whether a tank meets these standards.

5. What size diesel storage tank do I need?

Accurately calculating the size of diesel tank required can be difficult and depends upon the fuel-efficiency of the machinery being used, the frequency and duration of use, and how often you want to resupply the tank. Another consideration is purchasing a bigger tank than necessary to benefit from the extra storage and fluctuations in the price of diesel.

However, as a general guide, we recommend the following tank sizes for transport, logistics and agricultural use:

WHAT SIZE DIESEL TANK DO I NEED?



INDUSTRY TYPE:



**HEAVY GOODS
TRANSPORTERS**



**LIGHT
COMMERCIAL
VEHICLES**



AGRICULTURE

<p>1-2 VEHICLES</p> <p>1,350L plastic 1,400L plastic</p>		<p>1-10 VEHICLES</p> <p>1,350L plastic 1,400L plastic</p>		<p>1-50 ACRES</p> <p>1,350L plastic 1,400L plastic</p>
<p>3-5 VEHICLES</p> <p>2,500L plastic 3,500L plastic</p>		<p>11-20 VEHICLES</p> <p>2,500L plastic 3,500L plastic</p>		<p>51-100 ACRES</p> <p>2,500L plastic 3,500L plastic</p>
<p>6-10 VEHICLES</p> <p>5,000L steel 6,000L plastic</p>		<p>21-40 VEHICLES</p> <p>5,000L steel 6,000L plastic</p>		<p>101-200 ACRES</p> <p>5,000L steel 6,000L plastic</p>
<p>11-15 VEHICLES</p> <p>10-15,000L plastic 10-15,000L steel</p>		<p>41-60 VEHICLES</p> <p>10-15,000L plastic 10-15,000L steel</p>		<p>201-300 ACRES</p> <p>10-15,000L plastic 10-15,000L steel</p>
<p>16-25 VEHICLES</p> <p>20,000L steel</p>		<p>61-100 VEHICLES</p> <p>20,000L steel</p>		<p>301-500 ACRES</p> <p>20,000L steel</p>
<p>26+ VEHICLES</p> <p>30,000L steel 50,000L steel 90,000L steel</p>		<p>101+ VEHICLES</p> <p>30,000L steel 50,000L steel 90,000L steel</p>		<p>501+ ACRES</p> <p>30,000L steel 50,000L steel 90,000L steel</p>

6. Where do I bulk buy diesel from?

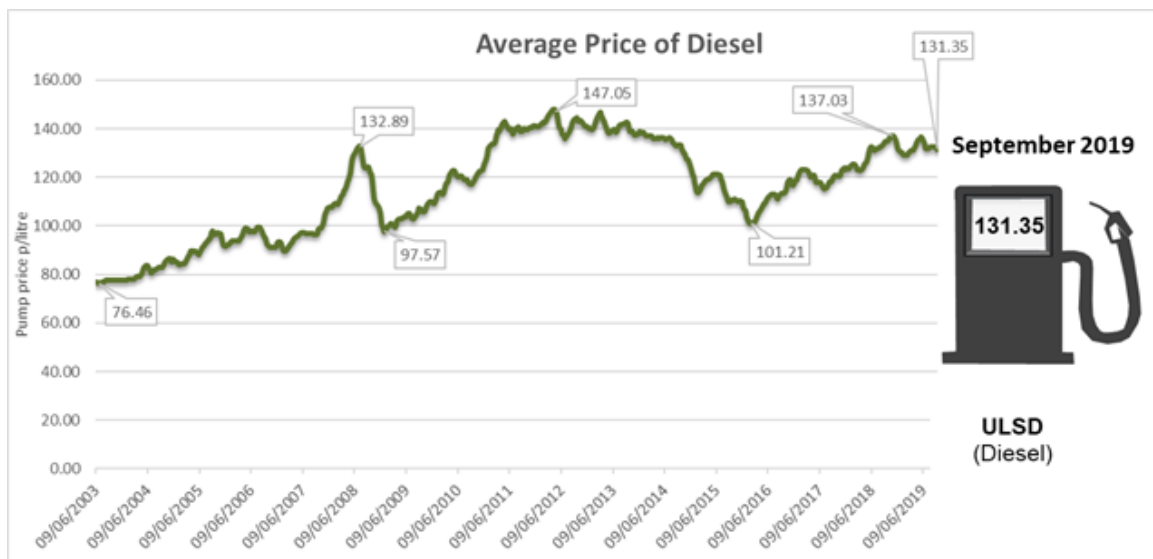
There are many fuel suppliers in the UK offering regional or national delivery. Unfortunately, bulk diesel seems to be the only product which doesn't appear on price-comparison websites. This puts the onus on you to shop around and find the best deal. Initially, you want to check the fuel supplier delivers the quantity of fuel you require; a typical minimum order is 500 or 1,000 litres. It's also worth getting quotes from regional and national suppliers as, with the inclusion of delivery, the prices will vary.

Once you've shortlisted the top diesel suppliers and received a quote from each it's well worth pitching the top few against each other to lower the price.

7. How do I get the best price on diesel?

The price of diesel fluctuates for many reasons including demand, the exchange rate, natural disasters, and political unrest. Because of these fluctuations, there will always be an expensive time to buy diesel and a time when bulk buying can really save you money. Graph 1 indicates just how much you stand to save with the average price of diesel ranging from 101.21p to 131.35p in the past 4 years alone.

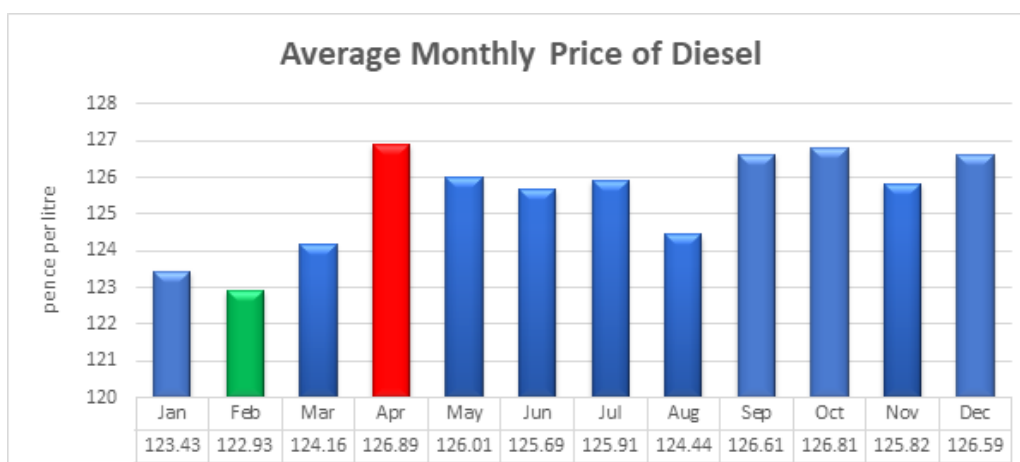
GRAPH 1: AVERAGE PRICE OF DIESEL 2003 – 2019



While fuel price fluctuations are unpredictable and difficult to proactively benefit from, you can save money with greater regularity by purchasing fuel at the right time of year. Graph 2 shows a breakdown by month of the average price of diesel. While you can't guarantee cheaper fuel at a given month, prices tend to drop after the Christmas period. This means January and February are often the best time to purchase. With a difference of 3.88p per litre between February and October, purchasing 10,000 litres of fuel at the right time will save you nearly £400.



GRAPH 2: AVERAGE MONTHLY PRICE OF DIESEL 2008 – 2019



IS BIGGER BETTER FOR DIESEL TANKS?

Our top recommendation for getting the best price on bulk diesel is to purchase the biggest tank you can for your budget, usage, and the size of your site. This is because fuel suppliers offer incremental savings on the price you pay per litre – the more diesel you buy, the lower the cost per litre. A mainstream national fuel supplier we contacted had incremental savings for purchasing diesel in these quantities: 500, 900, 2000, 4500, 7500, 10000, 15000, 18500, 24000, 30000 and 36000 litres. You may also find the price difference between tanks of different sizes (e.g. a 10,000 and a 15,000 litre plastic diesel tank) is smaller than you think. This means the savings will quickly outweigh the greater initial cost.

The major reason not to invest in your own diesel storage tank is often that the cost of the fuel delivery outweighs the savings from bulk buying. The more diesel you buy the less the delivery costs eat into your savings. The exception to this rule is when you reach over 36,000 – the typical quantity a single tanker can deliver. Anything over this amount will cost you for multiple deliveries. For that reason a diesel tank with a capacity of 40-50,000 litres can be the most cost-effective: this covers the ideal 36,000 litre delivery while still leaving diesel in the tank.

8. Which diesel storage regulations apply to me?

Everyone storing oil (including diesel, biodiesel, kerosene and petrol) in a container with a capacity of over 200 litres must follow oil storage regulations. The exact regulations that apply to you depend on the quantity of diesel you are storing, whether it's used for commercial or domestic applications, and the country in which your diesel tank resides.

Oil storage regulations for diesel storage tanks are largely concerned with whether the tank is required to have a secondary containment, often called a "bund". A bund is an outer container surrounding the inner tank which stores the fuel and is required to have a capacity of at least 110% of the inner tank. The bund works to catch any spillages from the inner tank and reduces the risk of oil contaminating waterways and the environment.

DOMESTIC DIESEL STORAGE REGULATIONS

In England, oil stored in containers with a capacity under 3,501 litres used for domestic applications aren't required to have a secondary containment unless they are sited in locations where oil spills can reach public water sources. This includes:

- Where oil spills could run over hard ground and reach coastal waters, inland fresh waters or a drinking water source.
- Where oil spills could run into an open drain or a loose manhole cover.
- Where the tank vent pipes cannot be seen when the tank's being filled, for example, because the delivery tanker is parked too far away.
- Within 10 metres of coastal waters or inland fresh waters like lakes or streams.
- Within 50 metres of a drinking water source, for example, wells, boreholes or springs.
- In the inner zone of [groundwater source protection zone 1](#)
- While in these circumstances a bund isn't compulsory, we still recommend bunding all tanks as good environmental practice. Additionally, when you install a single skin tank you face the risk of regulation updates making your tank no longer compliant.

COMMERCIAL DIESEL STORAGE REGULATIONS

Commercial oil storage regulations must be followed if your business (including marinas and public sector premises) stores oil in a tank with a capacity of 201 litres or higher, or if your domestic premises stores oil in a tank with a capacity over 3,500 litres.

Regulations state that all commercial diesel tanks must be bunded.



A Tuffa 1350 litre diesel dispensing tank










Plastic bunded diesel tank - Tuffa 10000VBFS



AGRICULTURAL DIESEL STORAGE REGULATIONS

Diesel stored for agricultural usage follows slightly different rules in England. Diesel storage containers with a capacity over 1,500 litres must be bunded. Additionally, no part of the oil storage installation – including yard drains, dry ditches and land drains – can be within 10 meters of inland or coastal waters.

DO I NEED A BUNDED TANK?

DO I NEED A BUNDED TANK?					
		ENGLAND	WALES	SCOTLAND	NORTHERN IRELAND
	DOMESTIC	OVER 3,500 LITRES	OVER 200 LITRES	OVER 2,500 LITRES	OVER 3,500 LITRES
	COMMERCIAL	OVER 200 LITRES	OVER 200 LITRES	OVER 200 LITRES	OVER 200 LITRES
	AGRICULTURE	OVER 1,500 LITRES	OVER 200 LITRES	OVER 1,250 LITRES	OVER 1,250 LITRES

REGULATIONS IN WALES, SCOTLAND AND NORTHERN IRELAND

With an increased focus on protecting the environment oil storage regulations are becoming increasingly strict and [new regulations in Wales](#) now require all new oil tank installations with a capacity over 200 litres to be bunded. In Scotland all oil tanks with a capacity above 2,500 litres must to bunded. Diesel tanks in Northern Ireland follow the same secondary containment requirements as England and must be bunded when above 3,500 litres. Tanks in Scotland and Ireland used for agricultural applications with a capacity above 1,250 litres must be bunded.

To find out more about oil storage regulations in your country click on the appropriate link:

England

Domestic and commercial
Agriculture

[Control of Pollution \(Oil Storage\) Regulations 2001
Storing Silage, Slurry & Agricultural Fuel Oil](#)

Wales

Domestic and commercial
Agriculture

[Control of Pollution \(Oil Storage\) Regulations 2016
Control of Pollution \(Oil Storage\) Regulations 2016](#)

Scotland

Domestic and commercial
Agriculture

[The Water Environment \(Controlled Activities\) Regulations 2011
Prevention of Environmental Pollution from Agricultural Activity](#)

Northern Ireland

Domestic and commercial
Agriculture

[Control of Pollution \(Oil Storage\) Regulations 2010
Silage Slurry and Agricultural Fuel Oil Storage](#)

9. How long can diesel be stored and how can I extend the lifespan?

Over an extended period of time diesel will begin to age. As the ageing process occurs components within the diesel react with oxygen, which in turn creates sediment and a sticky gum residue. These new elements do not burn well and can lead to both carbon and soot.

The rate of sediment buildup, and therefore the storage life of the fuel, depends upon the condition it's kept in. Ideally, diesel should be kept below 20°C, out of direct sunlight (especially for polyethylene tanks), and free from water. If diesel is kept in these optimum conditions then the degradation process can be decelerated and diesel can be stored for up to a year without the need for additives.

HOW LONG CAN BIODIESEL BE STORED FOR?

Like conventional diesel, oxygenation, heat and water degrade biodiesel. However, because biofuel is made from plant or animal products it is more susceptible to contamination from microorganisms, accelerating the degradation. In optimum conditions biodiesel can be stored for up to four or five months. This can be extended with the use of additives.

HOW TO PROLONG THE LIFESPAN OF YOUR DIESEL:

As well as keeping your tank cool and free of water there are a number of initiatives which will help to prolong the lifespan of your diesel:



- Keep away from copper, zinc and other metal alloys
- Ensure proper maintenance of your diesel storage tank
- Keep your storage tank free from condensation
- Empty and clean your tank fully, at least, every ten years
- Use thoroughly refined fuel, for better stability
- Use additives which help to aid the safe storage of your fuel; from metal de-activators, fungicides, biocides, antioxidants and fuel stability foams.

10. How do I maintain and clean a diesel storage tank?

As stated in the previous chapter, diesel stored over a long period of time will deteriorate. This causes a slimy residue made from bacteria, algae and fungi, sometimes known as 'diesel bug', to appear in your tank. Often the first sign of this is when filters become blocked on dispensing pumps.

Water is the primary cause of diesel bug as it creates an environment where microorganisms can grow. For that reason, water prevention and removal makes up the greatest part of maintenance. Water enters the tank due to condensation from temperature changes and rainwater entering faulty seals. However, water isn't the only contaminant. Dirt, debris and must also be removed from the tank.

MAINTENANCE

- To properly maintain your tank you should:
- Establish a fuel maintenance program to detect when water is present.
- Check the tank for water – on a basic level, this can be achieved by using a water finding paste which you apply to a gauge line or rod. The detection of water will make this change colour. For a more comprehensive method, you can use a filtration tank sampler kit which is then sent off to a lab for analysis.
- Remove water and debris from the tank before microorganisms can grow.
- Inspect fill points and gaskets for damage which may permit water to enter the tank.

CLEANING

There are numerous fuel additives on the market which work to clean the fuel and prevent contamination. Fungicides and biocides prevent the growth of fungus and bacteria which keeps the tank clean and ultimately extends the life of diesel. Anti-oxidant additives prevent fuel from oxidising which reduces the formation of diesel bug.

As well as using cleaning additives in a tank, the tank itself should be emptied and thoroughly cleaned at least every 10 years. This is quite a complicated procedure and we recommend using a professional tank cleaning service.

11. What should I do with a diesel spillage and what insurance do I need?

Diesel can be spilt for various reasons including cracks, splits, over-fueling, theft and human error. Spilt oil is a serious environmental issue causing pollution, contaminating the earth and potentially mixing with groundwater which can be directly or indirectly consumed. This is one of the reasons why oil clean-up is expensive, time consuming and requires appropriate insurance.

DIESEL SPILLAGE

If there's a diesel spillage you need to act quickly to reduce any impact to the environment. You should store a [spill kit](#) near the tank which contains commercial sorbent products, sand and earth. The appropriate members of staff should be trained to take immediate action and soak up the spilt oil with the contents of the spill kit. You should then report the environmental incident on the 24-hour emergency hotline 0800 807060. Check out oilcare.org for more info.

INSURANCE

It's vital to ensure your insurance to ensure it covers you for cleaning up oil spills as the costs can be astronomical. Make sure your policy covers you for:

- Expenses for cleaning up oil on your own property.
- Environmental cleanup for accidental oil loss.
- Liability expenses to cover neighbouring land and boreholes.

12. How do I prevent diesel fuel theft?

With diesel fuel tanks storing anything from 100 to 200,000 litres, and diesel costing around £1.30 per litre, it's no wonder that diesel tanks are a target for crime. This is a real problem in the UK and in 2018 there were over 25,000 confirmed fuel thefts leading to losses over £1.75m.

Even if your fuel tank is hidden from site you still present a target as criminals follow fuel supplier tankers, and reportedly even using Google Maps Satellite, to locate fuel. That's why it's important to be extra vigilant when tanks have just been filled as this presents an ideal time to steal fuel.

The best way to stop theft is to prevent thieves from even trying to steal from your tank. These visual deterrents increase the risk to the intruder while alerting them that they're dealing with a security-conscious tank owner. This is often enough to make intruders pick an easier target.

Prevention techniques include:



CCTV

CCTV cameras are probably the most effective way to deter would-be thieves from stealing fuel. Of course, the footage also gives police the chance of identifying and catching the criminal.

You might be surprised how cheap CCTV is now with 4 cameras including night vision, DVR recorder and a mobile app selling for less than £150. You can also get very realistic looking 'dummy cameras' for just over £6, giving you the deterrent but not the footage.

Perimeter alarms

Perimeter alarms alert you to trespassers on your land. Simple systems have a short-range and sound when an infra-red beam is broken. At the high-tech end of the scale, you can be alerted to any motion in a large area and even receive alerts via your mobile so you don't even have to be in on your premises.

Security lighting

Darkness works to the criminal's advantage, making it much easier to take what they want without being detected. Security lighting is a great deterrent as it increases the chance of getting caught, decreases the intruders feeling of safety, and suggests that the premises owner is security-alert.

Security lighting can either automatically activate when it gets dark, or work by motion detection, and is available from around £20.

The environment

When installing your tank, you should do so with security in mind. Obviously siting tanks within secure areas with protective barriers such as fences and walls makes it harder to see and access tanks. A tip from [Farmers Weekly](#) also suggests siting the tank next to a prickly hedge – or planting the hedge next to the tank – to use nature to your advantage. This has the added bonus of helping the police to identify intruders from traces of blood or clothing left on the prickles.

Protection

As well as simply preventing diesel theft you can physically protect your tank or become alerted to when theft is occurring. If you haven't yet bought your tank then you should also consider how much protection each tank offers as standard.

Lockable lid, door or shutter

Some diesel tanks (including our bunded and fire protected ranges) are equipped with a lockable lid which can be fitted with a padlock. This gives the fill points protection from siphoning. We recommend using round-shackle padlocks as they leave little room for bolt cutters to grip and

break the lock. Also, shackle padlocks are not spring-loaded so they will not unlock if the key barrel is drilled into.

Lockable fill points

One of the easiest ways to steal fuel is simply to siphon it from a fill point or inspection hole in the tank. If these points are exposed then tank arms (which act like a steering wheel lock) and security locks can be used to offer extra protection to these vulnerable points.

Tanks alarms

A tank alarm such as a Watchman Alarm is used to alert you when there is a sudden drop in oil in your diesel tank. A leak in your tank or someone stealing fuel will trigger an alarm to the monitor or mobile device.

Steel tanks

Unsurprisingly steel is more difficult to penetrate than plastic and drilling into a steel tank is noisier and more time-consuming than accessing a plastic tank. There have even been reports of thieves heating metal rods to melt holes into plastic tanks.

Preventing theft and physically protecting your tank does not have to cost to a fortune and in the very least it is worth purchasing basic equipment to keep your fuel safe.

If you have any more questions about diesel storage tanks, or if you would like to enquire about prices, then please contact our sales team on 01889 567700 by emailing sales@tuffa.co.uk or complete the enquiry form below.

You can also [subscribe to our newsletter](#) to stay up to date with news, guides, product updates and more.



Lockable security cabinet with roller shutter door

