



# FPS BRIEFING NOTE

## UNDERGROUND OIL STORAGE TANKS

*This Briefing Note does not apply to underground tanks at retail forecourts*

### Installation

**Environment Agency Pollution Prevention Guideline 27 - PPG 27** - gives guidance on installation of underground oil storage tanks. The main points listed in the Guidance that should be considered before installation are:

- the environmental sustainability of the site, tank design and materials used to construct tank and associated pipe work;
- planning permission is needed to install an underground system;
- proximity of or to watercourse;
- site geology and hydrogeology;
- subsurface pipes and structures;
- other site activities;
- corrosive nature of the soil;
- groundwater conditions, including high acidity, sulphate content or saline conditions.

### Tank

Regardless of the product stored, ALL tanks should:

- be double skinned and have an interstitial monitoring device with automatic alarms;
- be so designed that, if either skin fails, the stored product is prevented from entering the surrounding subsurface and the monitoring system will alert the operator/owner to the problem so that it can be corrected immediately;
- have some form of containment of the access chamber so that, in the event of a leak or spillage in this area, the spill remains contained while remedial action is taken;
- have overfill prevention;
- if steel tanks are installed, they must have durable anti-corrosion measures.

### Pipework

Pipework should be joint free or joints used only where necessary; ideally, joints should have an inspection cover and testing point.

### Industrial installations

These installations may require additional protective measures, which may include:

- Pipework should be double skinned and incorporate a monitoring system for leaks.
- Leak Detection:
  - The leak detection system should be robust and have an accurate means of monitoring the tank contents.

- Where installations are in sensitive areas, the environment agencies may require a much more responsive system, which may include groundwater monitoring boreholes.
- All leak detection systems must be managed by people who are trained to operate them effectively.
- Records should be easily and readily available and detail construction and build criteria, including the technical drawings, pipework routes, dimensions and materials used.

## **Safe deliveries to underground tanks**

On site, the driver should be able to establish easily:

- Tank contents – this must be accurate, available in litres and not to a percentage. The best method is a fully calibrated dipstick that is integral at the tank filler inlet.
- Grade of fuel – this should be displayed on a plate close to the filling point.
- Tank capacity – ideally, this information should be on the same plate as the grade of fuel. There should always be an allowance of at least 5% between tank full and tank top.
- There should be a permanent plate attached alongside the fill point giving the following information:
  - Grade of fuel.
  - Tank capacity. There should always be an allowance of at least 5% between the tank full level and the top of the tank.
  - Full delivery instructions
  - The location of the air vent. Care must be taken that the vent does not exhaust in an area where there is a means of ignition for the flammable vapours, eg close to a fence, barbeque, car port or building which fumes can enter and become trapped. The vent should be at least one metre above any surrounding roof or projection, whichever is the greater.

It has been industry safe practice that all underground tanks have product delivered by 'gravity drop', ie without the use of a pump. Petrol/diesel deliveries at retail forecourts and commercial premises are delivered by this method and it remains the safest system of delivery.

In a gravity drop, the tanker connects a hose from the vehicle outlet to the storage tank and allows the product to flow under gravity into the storage tank. The tanker's reeling hose, pump and meter are not part of this system.

Gravity drops prevent pressurisation of the tank during delivery, thus removing any stress forces in the tank beyond its design criteria that could result in tank failure. Fuel flow into the tank is controlled by the air's being vented during the delivery. It is not uncommon for vents to become restricted/blocked between deliveries.

If the tank manufacturer has built the storage tank specifically to accommodate a 'pumped' delivery, there must be clear guidance at the delivery site that confirms the tank is suitable for a pumped delivery, together with full delivery instructions for the driver to ensure the delivery can be made safely. The instructions should include the maximum pumped delivery pressure and/or flow rate and size of the vent.

The installer/tank owner must be aware that there is a need for a written delivery method dealing with all the issues that may be associated with the delivery. A copy can then be given to the delivery company to ensure that a safe delivery can be made.

### **Other issues that need to be considered in making a gravity drop:**

- The tanker needs to be within 20ft of the delivery access chamber. This is because the hose(s) used will be armoured and the maximum delivery hose that can be handled safely is 30ft.
- The access chamber must be dry and allow the safe connection of the delivery hose. The driver must be able to monitor the vent stack throughout the delivery without moving from the tanker.
- There must be suitable access/egress and hard standing for a 26 tonne vehicle, which is the size of the industry standard vehicle for domestic deliveries.
- The average delivery tanker has compartments of between 2,500 to 5,000 litres and, unlike metered deliveries, the whole compartment must be discharged. This is because the fuel is not discharged via the tanker's meter in a gravity drop so it is not possible to quantify a part-delivery from a compartment.
- Smaller volumes can be delivered by vehicles with pump back/product return systems, providing the vehicle has a suitable empty compartment on arrival at the delivery site. The driver can pump across the required amount, eg 900 litres, into an empty compartment using a meter and pump back ticket (an HMRC requirement) and then carry out the gravity drop procedure above.

Because of this, 'top up' orders cannot be accepted: the customer should order a specific amount, which can be safely accommodated in the storage tank.

### **Further information**

The Environment Agency publication Pollution Prevention Guidelines PPG27 *Installation, decommissioning and removal of underground storage tanks* can be downloaded from <http://www.environment-agency.gov.uk/static/documents/Business/ppg27.pdf>.

Further information on ordering fuel can be found in the FPS Briefing Note 'Information your oil distributor will need to know when you place an order', which can be found under the Information tab on the FPS website, [www.fpsonline.co.uk](http://www.fpsonline.co.uk).