INFORMATION SHEET
STORAGE OF GASOLINE FUEL

Motor Gasoline (Petrol) is manufactured from several blending components that have different chemical and physical properties, and consist of a wide range of hydrocarbons. Gasoline also contains non-volatile detergent additives that are deliberately added to aid cleansing of the fuel delivery system of a motor vehicle.

Some of the components are highly volatile, and the nature of the Gasoline can be subject to physical and chemical change during protracted periods of storage – loss of light fractions.

Gasoline is manufactured to have a different volatility at certain times of the year to meet changing seasonal requirements (summer & winter grade). This is to ensure that the fuel, when used in a motor vehicle will readily ignite in a cold engine and maintain good combustion characteristics during warm up and extended running.

Oxidation Stability (or Induction Period) is a specification requirement, and is widely used as an indication of the storage stability of a gasoline (chemical stability), for its intended lifetime.

The most significant issue with the long term storage of Petrol is the evaporative loss of volatile components, and the performance deterioration that this can lead to. As a generalisation gasoline should be used within approximately 12 months of its purchase date, although some specific guidance notes are detailed below.

Typically, in the retail forecourt and vehicle fuel tanks, the fuel stocks are turned over and replenished within a matter of weeks and therefore no deterioration is seen in the fuel quality due to oxidation or loss in volatility.

General Advice on Extended Storage of Gasoline

If the vehicle or appliance is to be left unused for some time, then filling the fuel tank to about 95% of its capacity with fuel, rather than leaving the fuel tank low, is advisable. This minimises; the tank-breathing effect, the loss of volatile components and the ingress of moisture into the fuel tank. The later in extreme cases can cause the appearance of free-water in the fuel.

Motor Vehicles

If a fuel is to be stored in a motor vehicle fuel tank, then maintaining fuel quality is important in order to maintain good start-up and a good level of vehicle driveability. When an engine fails to start after a period of lay up, it may be less to do with fuel deterioration, and could be related to un-seasonal fuel, which may not be sufficiently volatile to start the engine from cold.

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Non volatile residues are often observed in the fuel tank, delivery system and/or carburettors in cases of severe evaporative loss of a gasoline. The reside can manifest itself as either a gum or lacquer-like film or deposit, or a gel-like substance. This residue would be a combination of low-volatility constituents and detergent additives that are found in gasoline, but concentrated after evaporation. Carburettor fed fuelled engines as opposed to those that are fuel injected are more susceptible to this problem.

We do not advise storing fuels in vehicles for more than 6 months. You should also take into account the differences between summer and winter grades of petrol. Petrol has a higher volatility in the winter in order to enable cold starting. For this reason it is better to fill the tank with a winter grade fuel (16th October – 14th April) rather than a summer grade.

Lawnmowers/Outboards

Fuel stored in lawnmowers or outboards over the winter months or for periods greater than 6 months may have deteriorated due to storage conditions, or may be the wrong grade of fuel for the time of year. However in these cases, where good driveability is not of prime importance, the fuel may still be good for use. If difficulty in starting the engine or poor running occurs, diluting the existing fuel with fresh fuel is likely alleviate the problem.

Recycling

Petrol must never either wilfully or negligently be permitted to enter into any sewer, or any drain communicating with a sewer. If disposal of petrol is required then the local authorities must be contacted to arrange collection and legal disposal.

Storage Safety Regulations

If volumes of petrol are to be stored separately to the fuel in the vehicle tank, then should be done in accordance with the **Petroleum Spirit (Motor Vehicles etc.) Regulations 1929**, and the **Petroleum Spirit (Plastic Containers) Regulations 1982**. Briefly, these state that petrol should only be stored in suitably designed containers, which are labelled accordingly.

The maximum volume allowed be stored in metal vessels is 10 litres, and for suitable plastic containers is 5 litres. The storage regulations should be available from the **Petroleum Licensing Officer, the Local Fire Service, or Trading** Standards.