

**Using Unleaded Petrol (Mogas) in
Aircraft**

Safety Leaflet



IGA 9 R3

Using Unleaded Petrol (Mogas) in Aircraft

The aircraft owner/operator is responsible for the grade of fuel used in their aircraft. Some light aircraft are approved to use Unleaded Petrol, sometimes called “Mogas,” conforming to EN 228, as amended. This Safety Leaflet outlines some precautions which pilots should be aware of when operating an aircraft on Unleaded Petrol.

Ethanol in Fuel

European regulations regarding fuel have resulted in the reduced availability for ethanol-free unleaded petrol. Since 2011, more renewable additives have been added to unleaded petrol. This is for important environmental reasons. Certain aircraft are approved to use unleaded petrol containing ethanol, but most are not. Most type-certified aircraft are prohibited from using unleaded petrol containing any ethanol. Ethanol can cause corrosion of some rubbers and alloys used in the engine and fuel system when not designed to use such fuel.

Using unapproved fuel types in an aircraft can cause damage to aircraft, engines and their components. This may result in engine failure. It is the responsibility of the pilot to ensure that the correct grade of fuel is used in the aircraft. Using fuel, other than that specified by the manufacturer, may invalidate any warranty on the component or aircraft.

Fuel available in forecourts is likely to be E10, which contains 10% ethanol. This is double the amount previously contained, which makes it much more likely that problems will be experienced in aircraft not designed to be ethanol-proof.

Some engines are designed to use E10 fuel, some may be modified to use it, and others are forbidden from using it. The pilot-in-command must ensure that the correct fuel is used. Operating an aircraft on a mixture of different fuel types may be hazardous.

“Fuel Stretching”

Fuel stretching involves illegally adding cheaper liquids like kerosene, ethanol or methanol to fuel. Contaminated petrol can contain up to 20% kerosene, sometimes with a further 5% methanol. This fuel causes serious damage to engines and may result in engine failure.

There is currently no easy test to check if the fuel is contaminated. Pilots are urged to be extra vigilant when choosing their fuel source.

Further Information:

IAA Aeronautical Advisory Memorandum 07
IAA Aeronautical Notice A.16
EGAST Safety Promotion Leaflet ‘Piston Engine Icing’
SFAA Special Airworthiness Information Bulletin CE-07-06

Irish Aviation Authority

Continuing Airworthiness (non-scheduled) Division,
The Times Building,
11-12 D’Olier Street,
Dublin 2.



Precautions

- Ethanol absorbs water which increases the likelihood of carburettor icing.
- Alcohol (ethanol) in Mogas can adversely affect seals and elastomers; it also affects the fuel's vapour pressure, leading to an increase probability of vapour lock.
- An engine will use more fuel as the percentage of added alcohol increases.
- Ethanol mixed with water is corrosive and may attack part of the fuel system. In long-term storage, ethanol may oxidise with exposure to air. This process produces a mild acidic solution which can attack fuel system fittings.
- Ethanol can be particularly harmful to composite fuel tanks and/or their internal coating materials. Degradation of coating material may result in material disbonding and potentially blocking the fuel supply.
- Some elastomers used in older aircraft models and which are otherwise compatible with Avgas may deteriorate on contact with ethanol.
- Use only freshly obtained supplies of fuel.
- If you need to transport the fuel, use designated containers which are free from contamination.
- Check the fuel for presence of water and alcohol (ethanol) if appropriate, prior to the first flight of the day.
- During the daily check and other maintenance inspections, pay particular attention to non-metallic fuel pipes and seals for signs of leakage or deterioration.
- Pay particular attention to the serviceability of carburettor heating (if fitted). If carburettor heating is selectable, ensure that a satisfactory RPM drop is obtained when heating is selected during pre-take-off checks.
- The ability to maintain take-off power must be verified before the aircraft is committed to completing a take-off.

Please report any problems encountered using Unleaded Petrol (Mogas) to the IAA and the AAIU, as applicable.

Ph: +353 1 603 1100

info@iaa.ie

www.iaa.ie