

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

Safety Leaflet



IGA 9 R1

Using Unleaded Petrol (Mogas) in your 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. Certain aircraft are approved to use unleaded petrol containing ethanol, but most are not. Most type-certified aircraft using unleaded petrol, as approved through a Supplemental Type Certificate (STC), are prohibited from using unleaded petrol containing any ethanol.

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.

While fuel pumps aren't usually labelled with the ethanol content, fuel can be tested for the presence of ethanol. Fuel should be tested for ethanol before use in an aircraft where the presence of ethanol is prohibited. Some of the dangers of using fuel containing ethanol are included in the list of 'Precautions.'

The precautions detailed in this Safety Leaflet should be observed when using Unleaded Petrol (Mogas) in aircraft.

“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. The IAA has received reports of engine damage and engine failure possibly as a result of running on contaminated fuel.

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 01/14
IAA Aeronautical Notices A16A and A16B
EGAST Safety Promotion Leaflet 'Piston Engine Icing'
SFAA Special Airworthiness Information Bulletin CE-07-06

Irish Aviation Authority



Airworthiness Standards Department,
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.
- 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 Airworthiness Standards Department and the AAIU, as applicable.

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