

What Fuel Can I Use in my Aircraft?

The aircraft owner/operator and the pilot-in-command of the aircraft are responsible for ensuring that only fuel approved for use in that aircraft is used. This article provides guidance relating to use of alternate approved fuel in certain aircraft.

Fuels approved for use

Before an aircraft is granted a Type Certificate, it must be demonstrated that the aircraft, including its engine(s), complies with the applicable airworthiness requirements. The Type Certificate Holder will normally define, by reference to a recognised specification, the fuel or fuels used when showing compliance. The fuel(s) approved for use in an aircraft/engine combination is normally listed in the Type Certificate Data Sheet and/or Aircraft Flight Manual, or equivalent.

Use of alternate fuels

Pilots wishing to use a fuel, other than that approved by the Type Certificate Holder, require an approved modification to be applied to the aircraft. For an aircraft operating on a Certificate of Airworthiness, this is normally in the form of a Supplemental Type Certificate (STC). While the STC may only include a Flight Manual Supplement and some decals, having an approved STC demonstrates that your engine/airframe combination has been successfully tested using the alternate fuel e.g. Unleaded Motor Gasoline (Mogas). Contact your CAMO/Maintenance provider for more information regarding STCs.

Precautions to be taken when using Unleaded Motor Gasoline (Mogas)

As Unleaded Motor Gasoline (Mogas) is the most common alternate fuel used in aircraft and carburettor icing has been identified as a contributory factor in a number of events in Ireland, here are some precautions which should be taken when using Mogas.

- Use only freshly obtained supplies. Avoid long storage periods in the aeroplane fuel tank or in containers.
- The fuel must be checked for the presence of water and alcohol (ethanol) 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 on 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 involving Mogas to the IAA Airworthiness Standards Department and the AAIU, as applicable.





Modifications for aircraft operating on a Flight Permit may be approved by organisations holding Special Approval (e.g. ILAS/NMAI/IMA). When aircraft are operating with such modifications embodied, additional precautions should be observed.

Unleaded Motor Gasoline (Mogas) containing ethanol

The use of Mogas containing alcohol is not permitted, unless expressly stated in the Type Certificate Data Sheet, Aircraft Flight Manual or equivalent.

In accordance with published European and National legislation promoting the use of biofuels for motor transport, the percentage of alcohol contained in Mogas is due to increase. Users of Mogas must remain vigilant in verifying that the fuel does not contain alcohol, unless use of Mogas containing alcohol/ethanol is expressly permitted.

Ruth Bagnell,

Aeronautical Inspector, IAA

Mogas containing alcohol (ethanol)

- Alcohol (ethanol) in Mogas can adversely affect seals and elastomers; it also affects the fuel's vapour pressure, leading to an increased probability of vapour lock.
- Ethanol absorbs water which increases the likelihood of Carburettor Icing.
- An engine will use more fuel as the percentage of added alcohol increases. An approximate figure is that the engine must burn 3% more fuel to give the same power output if the fuel contains 10% ethanol.
- Ethanol mixed with water is corrosive and may attack parts 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 of the elastomers used in old aircraft models and which are otherwise compatible with Avgas may deteriorate on contact with ethanol.

Additional information on the use of alternate fuel

IAA Airworthiness Advisory Memorandum 01/14

IAA Aeronautical Notices A16 and A16A

EGAST Safety Promotion Leaflet 'Piston Engine Icing'

SFAA Special Airworthiness Information Bulletin CE-07-06

Shannon Airport

On 5th September the Shannon Group plc was established by the Minister for Transport, Tourism and Sport, Paschal Donohoe bringing together four strategic business units, Shannon Airport, Shannon Commercial Enterprises Ltd, trading as Shannon Commercial Properties, which includes the Shannon Free Zone and a significant property portfolio across the Shannon region, Shannon Heritage, one of Ireland's largest visitor experience operators, with six castles and various other day and evening visitor attractions and finally the International Aviation Services Centre, which builds on the activities of over 40 existing aviation companies already located in the region. Shannon Airport has already achieved significant growth following its establishment as an independent company in January 2013.

The Shannon Group managed to deliver an early illustration of its potential importance to the region with the news that Vortex Aviation, Based in Fort Lauderdale, Florida will invest up to \$3 million (€2.2 million) and create as many as 25 jobs in Shannon when it opens a new aircraft engine servicing facility within the next three months. While the company may base itself within the Shannon Free Zone trade area it was also examining other options that would still see it based close to the airport. It requires a facility that will deliver between 20,000 and 30,000 sq ft of operational space. Vortex Aviation describes itself as "a Global "On Wing" Turbine Engine Support Company providing 24/7 AOG engine maintenance and support as well as complementary shop services". Much of its business comes from servicing



Transport Minister Paschal Donohoe with Shannon Group Chairman Rose Hynes & CEO Neil Pakey

aircraft engines belonging to leasing companies. It primarily focuses on engines manufactured by General Electric.

Earlier on 26th August, Minister for Transport, Tourism and Sport Paschal Donohoe, paid his first official visit to the airport and county since his appointment in July. The Minister was in Shannon as part of a day-long visit to Clare to launch Bus Éireann's enhanced services to the Cliffs of Moher, Clare coast and the airport. The 343 Shannon Link route now services Shannon Airport from Limerick City from 05:00 to midnight, Monday to Saturday, while also providing 10 services on a Sunday. Stops en route include Ennis, Shannon Town, and Shannon Industrial Estate.