UNLEADED AVGAS FACT SHEET

IS THERE A FLEET AUTHORIZATION, LEAD-FREE ALTERNATIVE AVGAS TO REPLACE 100LL?

No. Fleet authorization is the term used by the FAA to reference a replacement fuel, that does not require a Supplemental Type Certificate (STC) or airframe or engine manufacturer approval.

WHAT GRADES OF UNLEADED AVGAS ARE COMMERCIALLY AVAILABLE NOW?

Currently, Swift Fuel's UL94 is the only grade of Unleaded Avgas that is commercially produced and available at some airports. On September 1, 2022, General Aviation Modifications Inc. (GAMI) received an FAA issued STC, allowing their 100-octane unleaded fuel (G100UL) to be used in a broad portion of the spark-ignition piston-aircraft fleet. To use G100UL, STCs for both the airframe and engine must be obtained.

CAN I FIND UL82, UL87, UL91, AND G100UL AT MY LOCAL AIRPORT?

These grades of Unleaded Avgas exist, but are not commercially produced or available at airports as of now.

CAN MOGAS BE USED IN PLACE OF AVGAS?

There are significant differences between the ASTM fuel specifications for unleaded motor gasoline (Mogas) and unleaded aviation gasoline (Avgas). Mogas is tested to ASTM D4814-21c and UL94 Avgas is tested to ASTM D7547-21 (There is currently no ASTM specification for G100UL). Note, these two specifications differ widely from octane and shelf life to fuel chemistry and Reid Vapor Pressure. ASTM D4814-21c "provides for a variation of the volatility and water tolerance of automotive fuel in accordance with seasonal climatic changes at the locality where the fuel is used." It also allows for Ethanol, which is not approved for use in any aircraft. Avgas that meets ASTM D7547-21 does not contain ethanol nor does it change with the seasons which means its performance remains consistent throughout the year. Why does all this matter? Because if there is no guarantee of which Mogas blend is being dispensed from the pump, there is no guarantee of its performance in aircraft.

WHICH AIRCRAFT CAN OPERATE ON SWIFT'S UL94 AVGAS?

ONLY aircraft which are specifically approved can operate on UL94. To determine if your aircraft is eligible, please visit: https://www.swiftfuelsavgas.com/stc.

CAN UL94 AVGAS BE COMMINGLED IN AIRCRAFT WITH 100LL AVGAS?

It depends. If the aircraft is specifically approved for UL94, the answer is yes. If the aircraft is approved for 100LL only, the answer is no. The detonation suppression of UL94 is insufficient for aircraft approved for 100LL only.

WHAT HAPPENS IF AN AIRCRAFT REQUIRING 100LL IS REFUELED WITH UL94?

Unless the aircraft has been dual certified to run on both fuels, the aircraft has been misfuelled and may require defueling. It is advised to not operate the engine as it may not operate within the same known performance envelope.

This document is produced by the General Aviation Fuel Handling Subcommittee of the National Air Transportation Association. It is important to note that this document represents the facts of Unleaded Avgas as of September 2022.

HOW CAN I ENSURE MY AIRCRAFT REQUIRING 100LL IS NOT MISFUELLED WITH UL94?

Pilots should communicate with FBOs and verify their fuel orders every time fueling takes place. A properly communicated fuel order (verbal or written) includes:

-Aircraft registration (tail) number – the tail number is the ONLY unique piece of information that can positively identify an aircraft.

-Type and grade of fuel – until recently, spark-ignition piston misfuelling concerns were primarily limited to misfuelling with Jet-A. Now, if an aircraft requires 100LL, requesting "Avgas" is no longer sufficient. All fuel orders must specify the grade of fuel requested.

-Volume of fuel to be distributed into each tank.

Once the above has been communicated to FBO staff, verify the information by having the order repeated back to you. Additionally, verify your fuel ticket/credit receipt for proper grade of fuel and quantity before signing.

CAN UL94 BE COMMINGLED WITH 100LL IN AIRPORT STORAGE TANKS AND FUELING VEHICLES?

No. If both 100LL and UL94 are being offered at airports, each requires their own dedicated and segregated storage tanks and refueling equipment.

I AM AN AIRPORT OPERATOR/FBO AND CONSIDERING ADDING A UL94 TANK AS A SELF-SERVE, SHOULD I BE AWARE OF ANY CONCERNS OR SPECIAL REQUIREMENTS?

Yes. Airports, FBOs, and all other fuel providers contemplating adding UL94 should implement comprehensive Management of Change processes and perform Risk Assessments to ensure safe and effective introduction of new fuels to their operations. Minimally, all self-serves dispensing UL94 should have signage and placarding advising that the UL94 being dispensed can only be used by aircraft with certification and placarding approved by the FAA.

HOW IS UL94 LABELED AND IDENTIFIED DIFFERENTLY FROM AVGAS 100LL?

The industry standard for aviation refueling equipment identification markings is the Energy Institute's (EI) 1542, where the familiar Avgas 100LL placard with red background, white lettering, and a blue band is held. EI 1542 does not yet include reference to UL94. However, NATA is working with the Energy Institute to formalize a color-coding scheme. Pilots should ensure they identify the fuel type and grade they intend to use as placarding may vary between airports and FBOs, especially with self-serve operations.

WHEN WILL THERE BE A FLEET AUTHORIZATION, LEAD-FREE ALTERNATIVE AVGAS TO REPLACE 100LL?

The timeline for a fleet authorization, lead-free alternative Avgas is unclear, but the industry is fast-tracking this goal under the EAGLE Initiative – a comprehensive public-private partnership consisting of aviation and petroleum industry and U.S. government stakeholders. The shared goal is to work toward the transition to a lead-free aviation fuel for piston-engine aircraft by the end of 2030, without compromising safety or economic health of the general aviation industry.