EASA Safety Information Bulletin

SIB No.: **2011-01R1**
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Subject: **Unleaded Aviation Gasoline (Avgas) UL 91**

Ref. Publication(s): **Standards and Specifications**:
ASTM D7547-09 “Standard Specification for Unleaded Aviation Gasoline”.
ASTM D910-07 “Standard Specification for Aviation Gasoline”.
Defence Standard 91-90 Issue 3.

Related Service Information of Engine Type Certificate Holders:
Rotax Service Instruction SI-912-016/SI-914-019 Revision 3.

Later revisions of these standards and service publications are acceptable.

Applicability: Aeroplanes powered by spark-ignited piston engines using Avgas or Motor Gasoline (Mogas).

Description: This SIB was initially published to inform all owners and operators of aeroplanes powered by spark-ignited piston engines about the use of unleaded Avgas UL 91.

Unleaded Avgas UL 91 meets the requirements of ASTM D7547-09. Unleaded Avgas UL 91 differs in parameters controlled by respective fuel standards from unleaded Hjelmco Avgas 91/96 UL, unleaded Hjelmco Avgas 91/98 UL and Avgas 100LL on certain properties, listed in Table 1.

Unleaded Avgas UL 91 may be used, if approved for the particular engine types. **No additional approval is required for the aeroplane, provided the aeroplane is already approved for operation with Avgas** (according to ASTM D910, Def Stan 91-90, Mil-G-5572, GOST1012-72 or equivalent) **or Mogas and the engine is already approved to use unleaded Avgas UL 91**.

This SIB is revised to mainly clarify that, if approved for the particular engine types, unleaded Avgas UL 91 may be used as well when the aeroplane is already approved for operation with Mogas as indicated above. It clarifies as well that additional differences in Property exist between the various gasoline as specified in Table 1 of this SIB.

Further additional changes have been incorporated in order to improve the quality of the document.

IMPORTANT:
Use of unleaded Avgas UL 91 in engines that have not been approved for the use of these fuels may cause extensive damage or lead to in flight failure, due to the lower Motor Octane Number (MON) of the fuel, compared to Avgas 100LL.

Note 1: The service information listed in "Ref. Publications" of this SIB identifies engines which, on the date of issue of this SIB, are known to be approved for use of unleaded Avgas UL 91. Approval of other engines is under review by the engine type certificate holders but has not yet been granted. This SIB might be revised again as soon as further information becomes available.

Note 2: Specifications Defence Standard 91-90 and ASTM D910 remain in force for traditional leaded Avgas Grades such as Avgas 100LL.

Table 1

Property**	Avgas 100LL	Unleaded Avgas UL 91	Hjelmco® 91/96 UL	Hjelmco® 91/98 UL
Knock value, lean mixture Motor Octane Number	min. 99.6	min. 91.0	min. 90.8	min. 90.8
Knock value, Research Octane Number		min. 96.0*		
Knock value, rich mixture Octane Number			min. 96,0	min. 98.0
Performance Number	min. 130.0			
Lead Content	max. 0.56 g/l	max 0.013 g/l*	max 0.013 g/l	max 0.013 g/l
Colour	blue	orange*	none	none

* Currently in ASTM approval process for implementation in next revision of D7547.
** Additional differences exist but these are currently not controlled in respective fuel standards. Fuel producers may choose to exceed stated minimum properties.

Recommendations: Before using unleaded Avgas UL91, it is recommended to take the following actions:

(1) Check the latest instructions of the engine type certificate holders to verify if the engine installed on their aeroplane is approved for use of unleaded Avgas UL 91.
(2) Verify that the engine has not been modified or altered and meets the specifications of the original engine type certificate.
(3) Install on each fuel cap a label from the fuel supplier or make your own placard identifying that unleaded Avgas UL 91 is acceptable fuel for the aeroplane.

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