



## BRITISH MICROLIGHT AIRCRAFT ASSOCIATION SERVICE BULLETIN

**Reference:** BMAA Service Bulletin 2695 issue 1  
**Title:** Fuel system damage due to use of MOGAS containing ethanol  
**Applicability:** All BMAA aircraft  
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**Classification:** Advisory Service Bulletin

### 1 Introduction

The use of MOGAS can result in damage to an aircraft's fuel system if the system was not designed for fuel containing ethanol. Although the majority of BMAA aircraft operate successfully on MOGAS, not all do. This Service Bulletin is issued to raise awareness amongst owners and BMAA Inspectors.

MOGAS (MOtor GASoline) is petrol from filling stations, most of which is now 'E5' containing up to 5% ethanol. Ethanol-related problems may get worse as the proportion of ethanol in MOGAS is likely to be increased in future. AVGAS (AViation GASoline) does not contain ethanol.

For operational considerations when using MOGAS, see the Irish Aviation Authority's Aviation Safety Leaflet IGA 9 R2, 'Using Unleaded Petrol (Mogas) in Aircraft'.

### 2 The issue

Materials that were considered 'fuel resistant' before ethanol was added to MOGAS, may no longer be so. In particular, many resins used in the construction of composite (e.g. fibreglass) fuel tanks, are partially dissolved by ethanol. Ethanol can also adversely affect seal and gasket materials.

Although ethanol is not corrosive, when stored (e.g. in an aircraft's fuel tank), fuel containing ethanol can become acidic, which can then cause corrosion of metal components.

### 3 Potential problems

Although the most obvious sign of a problem is a fuel leak - and softening of fuel tank walls may be visible as 'rippling' - much hidden damage can occur before it's obvious from outside. Even relatively minor damage inside a fuel tank can result in loose debris, which is likely to block the fuel system and cause power loss in flight.

For composite aircraft with integral fuel tanks (e.g. 'wet' wings) fuel can potentially attack primary aircraft structure before externally leaking. This is clearly extremely hazardous.

Examples:

- The original Fibrelam fuel tanks fitted to Shadow aircraft break-up internally, leak, and could eventually dismantle themselves in flight when used with MOGAS containing ethanol - see BMAA Service Bulletin SB2336.
- Certain Jabiru aircraft have 'wet' wings which are not resistant to MOGAS containing ethanol - see LAA Airworthiness Alert LAA/AWA/18/01.

**WARNING:** do not use illumination that could ignite fuel vapour when viewing inside fuel tanks; if necessary, use a torch ATEX-certified safe for use in an explosive atmosphere containing fuel vapour (e.g. Energizer 2AA ATEX).

### 4 Reporting and Repair

In case of a problem being discovered, please report to the BMAA Technical Office ([technical.office@bmaa.org](mailto:technical.office@bmaa.org)) so that owners of similar aircraft can be warned. All repairs must be performed in accordance with BMAA procedures.

Note: The technical content of this document is approved by the BMAA, UK CAA organisation approval ref. DAI/8909/84