



Safety Information Bulletin

Airworthiness – Operations

SIB No.: 2015-27

Issued: 16 December 2015

Subject: Potential Adverse Effect of Alkali Organic Salt-based Aircraft De-Icing Fluids on Anti-Icing Holdover Protection and Potential Aircraft Corrosion

Ref. Publications:

- [EASA SIB No.: 2010-26R1](#)
- [EASA SIB No.: 2008-19R2](#)
- [AEA Recommendations for De-icing / Anti-icing Aeroplanes on the Ground](#)

Applicability:

Aeroplane operators during winter ground operation and de-icing service providers.

Description:

The majority of the aircraft de-icing fluids compliant with SAE AMS 1424 (known as Type I) use a glycol (or a glycol/water dilution) as freezing point depressant. In recent years, some fluid manufacturers have developed Type I fluids based on sugars. Most recently, some fluid manufacturers have developed new fluids based on alkali organic salt dilutions.

Although these alkali organic salt-based fluids may fulfil AMS 1424 (current revision is AMS 1424 “L”), they might have two adverse effects on the flight operation and on the aircraft itself:

- Dilutions of alkali organic salts may cause the thickening agents within most aircraft anti-icing fluids to break down, reducing their viscosity and causing them to flow off the airframe more quickly. This would have an impact on the length of time that the anti-icing fluid would provide adequate anti-icing protection (hold-over time) in case the de-icing fluid is not properly washed-off in a two-step process. This effect has been proven by research, being its quantitative impact dependent on the particular anti-icing fluid used and on the salt and its concentration in the de-icing fluid, but only low concentrations are required to decrease the anti-icing fluid thickening properties. This is an immediate effect with consequences potentially affecting safety. The [SIB 2010-26R1](#) describes the same negative effects caused by runway de-icing fluids based on alkali organic salts.
- Dilutions of alkali organic salts applied directly to the aeroplane may cause galvanic corrosion on metallic parts as well as other undesired effects (refer to the [SIB 2008-19R2](#), which describes the effects caused by runway de-icing fluids based on these salts). This is a medium term effect that can result in the requirement for new inspections, maintenance actions and/or premature replacement of parts.

This is information only. Recommendations are not mandatory.



EASA has no knowledge of these Type I fluids being offered at European airports now.

At this time, the safety concern described in this SIB is not considered to be an unsafe condition that would warrant Airworthiness Directive (AD) action under Regulation (EU) [748/2012](#), Part 21.A.3B, nor it does warrant the issuance of a safety measure under Regulation (EU) [965/2012](#), Annex II, ARO.GEN.135(c).

Recommendation(s):

1. De-icing service providers, in agreement with their operator-clients and in consultation with the producers of fluids, should consider this SIB when deciding which fluids to purchase.
2. Aeroplane operators should preferably avoid the use of Type I fluids that could negatively affect the hold-over time provided by the anti-icing fluid in a two-step de-icing operation.

During two-steps de-icing operations, if the use of such Type I fluid cannot be avoided, consider mitigating measures to counteract the potential effect on holdover time reduction described above. These mitigating measures could be: special care when washing-off the Type I fluid in the second step (anti-icing) and performing a pretake-off contamination check as described in [AEA Recommendations](#). The operator's ground de-icing procedures should be amended and flight crews trained accordingly.

3. Aeroplane operators should consult the aircraft type certificate holder for advice on the use of these fluids with regard to the potential galvanic corrosion effect described above and appropriate mitigating actions.

Contact(s):

For further information contact the EASA Safety Information Section, Certification Directorate.

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