



EASA Safety Information Bulletin

SIB No.: 2012-20
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- Subject:** Impact of thickened de/anti-icing fluids on aircraft performance
- Ref. Publications:** Final report RL 2011:16e – “Serious incident to aircraft SE-MAP at Helsinki/Vantaa Airport in Finland, on 11 Jan. 2010” (http://www.havkom.se/virtupload/reports/RL2011_16e.pdf);
 EASA SIB 2010-28 (<http://ad.easa.europa.eu/ad/2010-28>).
- Applicability:** All aeroplanes de/anti-iced with thickened fluids.
- Description:** The air operations regulation applicable to commercial transportation by aeroplane in the EU¹ requires the aeroplane to be free of ice and other contaminants at take-off, except as permitted in the Aeroplane Flight Manual (AFM) (see OPS 1.345). This principle is also considered in the frame of certification specifications for aeroplanes CS-25² and CS-23³.
 Under freezing precipitation, in order to provide anti-icing protection to an aeroplane, operators normally apply on it de/anti-icing fluids which typically contain thickening agents to provide for a longer hold-over time. Most of the type certificate holders recommend operators the use of fluids compliant with the globally accepted industry standard SAE AMS 1428 in its latest revision (also used sometimes to de-ice the aircraft). This standard prescribes several tests to demonstrate certain fluid characteristics and performance.
 In most of the cases, compliance with this standard ensures that the fluid (still on the aeroplane surfaces when the take-off starts) affects the aircraft performance in a limited and acceptable degree. However, fluids compliant with standard AMS 1428 may adversely affect, to a certain extent, the performance, controllability or manoeuvrability of certain aircraft in various ways. These potential effects are assessed by the type certification holders under their own initiative and criteria.
 For the serious incident analysed in the report referred above, at take-off, the control column of the affected aeroplane could

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not be pulled back when the rotation speed was reached, and the pilot felt that the elevator movement was restricted. EASA published AD 2010-0263 to prohibit the use of thickened fluids on certain serial numbers of the affected aircraft type.

The investigation report for that incident, recommended EASA to “investigate the possibility of tightening requirements on aircraft design organizations in terms of demonstrating that the aircraft has full manoeuvrability during all phases of the take-off procedure after the application of de- and anti-icing fluids”.

Current European type certification specifications CS-25 and CS-23, same as previous JARs, do not explicitly require compliance with similar criteria.

After considering this recommendation, the Agency has created a rulemaking task (RMT.0118) in its rulemaking programme which would envisage requiring aeroplane type certificate holders to demonstrate that the use of the fluids prescribed by the type certificate holder have no hazardous effect on the operation of the aircraft.

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 EU [748/2012](#), Part 21.A.3B.

Recommendation: For the existing fleet, the Agency recommends aeroplane type certificate holders to assess, in case they are uncertain, any potential effect of the fluids on the aircraft during take-off and report to EASA any known case that may result in an unsafe condition.

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¹ Commission Regulation (EC) No 859/2008 of 20 August 2008 amending Council Regulation (EEC) No 3922/91 as regards common technical requirements and administrative procedures applicable to commercial transportation by aeroplane. This regulation will be progressively replaced by Regulation EU 965/2012, in accordance with its article 10. The contents of OPS 1.345 of EC 3922/91 are covered in paragraph CAT.OP.MPA.250 of the new Regulation.

² EASA ED Decision No 2003/2/RM of 17 October 2003 on certification specifications, including airworthiness codes and acceptable means of compliance, for large aeroplanes (« CS-25 »), as last amended by ED Decision 2012/008/R dated 06 July 2012 (CS-25 Amendment 12).

³ EASA ED Decision No 2003/14/RM of 14 November 2003 on certification specifications, including airworthiness codes and acceptable means of compliance applicable to normal, utility, aerobatic and commuter aeroplanes (« CS-23 »), as last amended by ED Decision 2012/012/R dated 13 July 2012 (CS-23 Amendment 3).

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