

CS-23 AMENDMENT 3-CHANGE INFORMATION

The Agency publishes amendments to Certification Specifications as consolidated documents. These documents are used for establishing the certification basis for applications made after the date of entry into force of the amendment.

Consequently, except for a note '[Amdt No: 23/3]' under the amended paragraph, the consolidated text of CS-23 does not allow readers to see the detailed changes introduced by the new amendment. To allow readers to also see these detailed changes this document has been created. The same format as for publication of Notices of Proposed Amendments has been used to show the changes:

1. deleted text is shown with a strike through: ~~deleted~~
2. new or changed text is highlighted with grey shading: **new**
3. ... indicates that remaining text is unchanged in front of or following the reflected amendment.

Book 1

SUBPART D DESIGN AND CONSTRUCTION

CS 23.851 Hand Fire extinguishers

(See AMC 23.851 (c))

(a) There ...

SUBPART E POWERPLANT

CS 23.1197 Fire extinguishing agents

(see AMC 23.1197)

Book 2

AMC SUBPART D DESIGN AND CONSTRUCTION

AMC 23.851(c) Hand Fire extinguishers

~~Acceptance of existing FAA AC 20-42C as AMC to 23.851(c) pending the results of research into halon replacement~~

Based on EU legislation¹, in new installations of hand fire extinguishers for which the certification application is submitted after 31 December 2014, Halon 1211, 1301 and Halon 2402 are unacceptable extinguishing agents.

The guidance regarding hand fire extinguishers in FAA Advisory Circular AC 20-42D is considered acceptable by the Agency. See AMC 23.1197 for more information on Halon alternatives.

AMC SUBPART E POWERPLANT

AMC 23.1197 Fire extinguishing agents

The Montreal Protocol, in existence since 1987, is an international agreement to phase out production and use of ozone-depleting substances, including halogenated hydrocarbons also known as Halon. A European Regulation², governing substances that deplete the ozone layer, was published in 2000 containing initial provisions for Halon phase-out, but also exemptions for critical uses of Halon, including fire extinguishing in aviation.

'Cut-off' (i.e. Halon no longer acceptable in new applications for type certification) and 'end' (i.e. Halon no longer acceptable for use in aircraft) dates have been subsequently

¹ Commission Regulation (EU) No 744/2010 of 18 August 2010 amending Regulation (EC) No 1005/2009 of the European Parliament and of the Council on substances that deplete the ozone layer, with regard to the critical uses of halon (OJ L 218, 19.8.2010, p. 2).

² Regulation (EC) No 2037/2000 of the European Parliament and of the Council of 29 June 2000 on substances that deplete the ozone layer.

established by a new Regulation in 2010³, as presented in Table 4.1 below:

Table 4.1: 'Cut-off' and 'end' dates

Aircraft compartment	Type of extinguisher	Type of Halon	Dates	
			Cut-off	End
Lavatory waste receptacles	Built-in	1301 1211 2402	31 December 2011	31 December 2020
Cabins and crew compartments	Hand (portable)	1211 2402	31 December 2014	31 December 2025
Propulsion systems and Auxiliary Power Units	Built-in	1301 1211 2402	31 December 2014	31 December 2040
Normally unoccupied cargo compartments	Built-in	1301 1211 2402	31 December 2018	31 December 2040

9.2 Lavatory extinguishing systems and agents

Historically, Halon 1301 has been the most widespread agent used in lavatory extinguishing (lavex) systems to be used in the event of a Class A fire (i.e. originating from paper and other common materials). Any alternative acceptable fire extinguishing agent must meet the Minimum Performance Standards (MPS) laid down in Appendix D to Report DOT/FAA/AR-96/122 of February 1997, which include the ability to extinguish a Class A fire and, in case of discharge, does not create an environment that exceeds the chemical agent's 'No Observable Adverse Effect Level' (NOAEL). Research and testing has shown that there are suitable alternatives to Halon for built-in fire extinguishers in aircraft lavatories meeting the MPS for effectiveness, volume, weight and toxicology. Currently HFC-227ea or HFC-236fa are widely used on aeroplanes and are usually considered acceptable by the Agency.

9.3 Hand fire extinguishers and agents

Historically, Halon 1211 has been the most widespread agent in handheld (portable) fire extinguishers to be used in aircraft compartments and cabins. Minimum Performance Standards (MPS) for the agents are laid down in Appendix A to Report DOT/FAA/AR-01/37 of August 2002, while acceptable criteria to select the fire

³ Commission Regulation (EU) No 744/2010 of 18 August 2010 amending Regulation (EC) No 1005/2009 of the European Parliament and of the Council on substances that deplete the ozone layer, with regard to the critical uses of halon (OJ L 218, 19.8.2010, p. 2).

extinguishers containing said agents are laid down in the FAA Advisory Circular AC 20-42D. Three agent alternatives to Halon are presently known meeting the MPS: HFC-227ea, HFC-236fa and HCFC Blend B. However, these agents are heavier and occupy a greater volume than Halon 1211. This may indirectly (i.e. additional weight of the fire extinguisher and additional weight of the structures supporting it) increase CO₂ emissions. Furthermore, some of these agents have also been identified for having a global warming potential that is much higher than Halon. Therefore, further research is underway to develop additional alternatives to Halon 1211 for hand fire extinguishers.

Should an applicant wish to propose, even before the end of 2014, any alternative agent for hand fire extinguishers meeting the mentioned MPS, the Agency will initiate a Certification Review Item addressing the use of such an alternate fire extinguishing agent.

9.4 Fire protection of propulsion systems and APU

Historically, Halon 1301 has been the most widespread agent used in engine nacelles and APU installations to protect against Class B fires (i.e. originating from fuel or other flammable fluids). The MPS for agents to be used in these compartments are particularly demanding, because of the presence of fuel and other volatile fluids in close proximity to high temperature surfaces, not to mention the complex air flows and the extremely low temperatures and pressures surrounding the nacelles. Various alternatives are being developed (e.g. FK-5-1-12), while the FAA is aiming at issuing a report containing the MPS.

Should an applicant wish to propose, even before the end of 2014, any alternative agent for Class B fire extinction in engine or APU compartments, even in the absence of a published MPS, the Agency will initiate a Certification Review Item addressing the use of such an alternate fire extinguishing agent.

9.5 Fire protection of cargo compartments

MPS for cargo compartment fire suppression systems have already been published in the Report DOT/FAA/AR-00/28 of September 2000. However, to date there are no known and sufficiently developed alternatives to Halon 1301.

[Amdt No: 23/3]