

Aviation Fire Extinguishers - Frequently Asked Questions

1. What are the legal requirements concerning aviation fire extinguishers?

The FAA does not provide a list of authorized fire extinguishers for aircraft. The FAA does specify the following regulations. According to AC 20-42C, "Hand Fire Extinguishers for Use in Aircraft, which provides methods acceptable to the Administrator for showing compliance with the hand fire extinguisher provisions in Parts 25, 29, 91, 121, 125, 127, and 135 of the FAR."

"The FAA accepts hand fire extinguishers approved by Underwriters Laboratories, Inc."

"For occupied spaces on aircraft, Halon 1211 extinguishers should not be less than 2½ pounds (1.2kg) capacity. These extinguishers should have a minimum 5B:C rating; not less than 8 seconds effective discharge time; not less than a 10 ft. (3 meter) range, and may be equipped with a discharge hose."

"Halon fire extinguishing agents approved for use include ...a combination of the two (Halon 1211 and Halon 1301)."

"Halon 1211 is a multipurpose, Class A, B, C rated agent effective against flammable liquid fires. Halon 1301 offers limited Class A capability when used in portable fire extinguishers."

"In accordance with Section 21.305(d) of the FAR, the FAA accepts handheld extinguishers approved by Underwriters Laboratories..." Also, in accordance with Section 25.851 (601(b1)) "An approved type fire extinguisher includes those approved by the Underwriter's Laboratories, Inc., Factory Mutual, Underwriter's Laboratories of Canada..."

"Non-refillable disposable fire extinguishers (1211-1301) are exempt from the periodic hydrostatic test requirements."

2. Is Halon still legal for aviation use?

As of April 6, 1998, the manufacture of the Halon 1211-1301 blend has been prohibited (Federal Register, 63 FR 11084 dated March 5, 1998) except for aviation fire protection, provided that the owner at the time of disposal, if there is any Halon remaining in the unit, returns the extinguisher to the manufacturer for the recycling of the Halon.

Therefore, effective April 6, 1998, the Halon 1211-1301 blend has been sold exclusively to aviation users.

The rule does not prohibit:

The sale or use of Halon blends produced prior to April 6, 1998.

Halon 1211 propelled by nitrogen.

Halon 1211-1301 blend sold outside of the United States.

3. Can I use a dry chemical fire extinguisher rather than Halon?

The best way to answer this question is to cite NFPA Standards and other published documents:

NFPA 410 Aircraft Maintenance (Addendum) A-7-3.1

All-purpose (ABC) dry chemical-type extinguishers should not be used in situations where aluminum corrosion is a problem.

NFPA Fire Protection Handbook Chapter-Basics of Fire and Science

Extinguishment with Dry Chemical Agents:

One reason that dry chemical agents other than monoammonium phosphate are popular has to do with corrosion. Any chemical powder can produce some degree of corrosion or other damage, but monoammonium phosphate is acidic and corrodes more readily than other dry chemicals, which are neutral or mildly alkaline. Furthermore, corrosion by other dry chemicals is stopped by moderately dry atmosphere, while phosphoric acid has such a strong affinity for water that an exceedingly dry atmosphere would be needed to stop corrosion.

Air Transport Newsletter, by Ronald Horn, Nov./Dec. 1983, "Class A-B-C Extinguishers Damage Aircraft"

"The A-B-C extinguishers have excellent fire-fighting capability, but the mono-ammonium-phosphate chemical agent melts and flows when it comes into contact with heat. This is how it gets its Class A rating. This chemical is highly corrosive to aluminum, and once it contacts hot aluminum and flows down into the structural cracks and crevices it cannot be washed out as the B-C dry chemical agents can.

"Once an A-B-C extinguisher is used on an airplane, it is necessary to disassemble the aircraft piece by piece and rivet by rivet to accomplish cleanup. Failure to do so will result in destruction of the aircraft by corrosion."

4. Why is Halon the best choice?

Fire needs three elements to prosper: fuel, oxygen and heat. The most common extinguishing agents like water, carbon dioxide, dry chemical and foams attack the fire physically to deprive the fire of one or more of the three critical elements needed for propagation. Halon differs in the way it puts out the fire. It offers some of water's cooling effect and some of carbon dioxide's smothering action, but its essential extinguishing technique lies in its capacity to chemically react with the fire's components. It actually interrupts the chain reaction of fire.

Water is very effective on class A fires (common combustibles like wood and paper). Halon is effective on common combustibles (although not as effective as water), but Halon is also effective on class B (flammable liquids), and it does not conduct electricity back to the extinguisher operator (class C).

Halon is similar to CO₂ in that it is suitable for use in cold weather and leaves no residue. Unlike CO₂, however, Halon does not displace the air out of the area where it is dispensed. Even for the toughest fires, less than an 8% concentration of Halon by volume is required, leaving plenty of air to use in the evacuation process. Also, unlike CO₂, there is no danger of "cold shocking" avionics or other sensitive electrical equipment.

Dry chemical fire extinguishers are effective on A, B and C class fires. However, they are highly corrosive, and create billowing clouds of choking dust; dry chemical extinguishers should not be used in an aviation environment.

Foam extinguishers are effective on class A and B fires, and are particularly useful for preventing ignition of flammable liquid spills. However, foams are inferior to Halon in that they do require cleanup and in that they are not for use on electrical fires.

Halon 1211 is a liquefied gas which, when discharged, leaves the nozzle in a stream that is about 85% liquid and 15% gas. This gives the agent a range of 9 to 15 feet and offers significant advantages in fighting fires in large aircraft cabins. Mixtures of Halon 1211 and Halon 1301 have discharge characteristics dependent on the component weight ratio.

5. What is the proper way to use a fire extinguisher?

The following instructions are of a general nature, intended to familiarize the user with the basic operating techniques of H3R Aviation hand portable extinguishers. All operate by removing the safety pin and squeezing the handles together. Since extinguishers differ, the extinguisher nameplate must be consulted for specific procedures and starting distances.

Note: WHENEVER POSSIBLE, PROTECTIVE CLOTHING AND BREATHING EQUIPMENT SHOULD BE USED WHILE FIGHTING A FIRE.



1. HOLD THE EXTINGUISHER UPRIGHT AND PULL THE RING (SAFETY) PIN breaking the plastic seal.



2. STAND BACK FROM THE FIRE (the minimum distance stated on the nameplate) and AIM AT THE BASE OF THE FIRE NEAREST YOU.



3. Keeping the extinguisher UPRIGHT, SQUEEZE THE HANDLES TOGETHER to discharge and SWEEP FROM SIDE TO SIDE. Move closer as the fire is extinguished but not so close as to scatter the burning material or liquid.

4. When the fire is out, back away while watching for possible re-ignition.

5. Evacuate and ventilate the area immediately after use. The fumes and smoke from any fire may be hazardous and can be deadly.

REMEMBER THIS SIMPLE WORD: **PASS**

PULL
AIM
SQUEEZE
SWEEP

Information provided by:
H3R Aviation.com
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