

Halon Replacements in Hand Fire Extinguishers - ICAO Resolution to Mandate Replacements

The Sixth Triennial International Fire & Cabin Safety Research Conference

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John Petrakis

FAA Aircraft Certification Service
Washington, DC



**Federal Aviation
Administration**

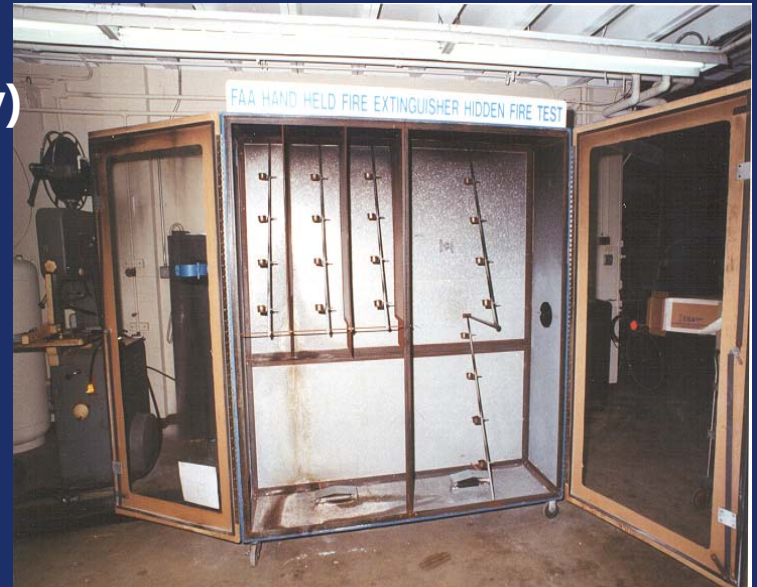


Topics

- **Review of Halon Replacements in Hand Fire Extinguishers**
- **Hand Fire Extinguisher AC20-42D Revision**
- **Review Public Comments to AC**
- **Review Final Draft AC**
- **Mandatory Halon Replacement Proposed for Civil Aviation**

Review of Halon Replacements

- **Hand-Held MPS Developed 2002 (DOT/FAA/AR-01/37)**
 - Hidden Fire Test (Effectiveness)
 - U.S. - U.L. Offers Test Approval
 - Seat Fire Extinguishing Test (Toxicity)
 - Full-Scale Tests FAATC
 - Measures Agent Decomposition Products



- **Three Approved Halon 1211 Replacement Agents U.L. Listed**

Review of Halon Replacements

<u>Agent</u>	<u>Weight Equivalent Ratio</u>	<u>ODP</u>	<u>GWP</u>
Halon 1211	1.0	5.1	1300
HFC-227ea (FM200)	2.2	0	3800
HFC-236fa (FE36)	1.9	0	9400
HCFC Blend B (Halotron 1)	2.2	.02	120

- Replacement Agents/Extinguishers Approved but Not Installed because of Increased Weight/Volume/GWP
- New Agents are being Evaluated

Review of Halon Replacements

- **FAATC Testing Other Promising Halon Replacement Agent Extinguishers.**
 - **Powders**
 - Powder May Be Drop-in Replacement for Cabin.
 - ODP - 0 GWP - 0
 - Clean Up Needed After Discharge.
 - Reduced Visibility
 - **FK-5-1-12 (Novec 1230)**
 - ODP - 0 GWP - 1
 - **2-BTP**
 - Low ODP & GWP
 - **Water Mist**

AC20-42D Revision

- **Cancel AC 20-42C, March 1984**
- **Provide Updated Guidance for New Installations of Required Extinguishers**
- **Establish Procedure for FAA Certification of Halon Replacement Extinguishers.**
- **FAA Approval of HCFC Blend B, HFC-227ea, and HFC-236fa as Halon 1211 Replacement**
- **Provide Guidance on:**
 - **Fire-Fighting Effectiveness**
 - **Relative Toxicity of Agents, but Stresses Need to Extinguish In-Flight Fires**
 - **Selection and Safe-Use for Approved Agents**
 - **Location, Mounting and Marking Provisions**



AC20-42D Revision

- **Draft Guidance Developed by IASFPWG**
- **Draft AC Released for Public Comment 10/09**
 - 12 Commenters/188 Comments
- **Significant Comments:**
 - Concern Over Use of Conservative Modeling Analysis of Agent Toxicity in Aircraft Compartments.
 - No Consideration for Agent Stratification.
 - Question Logic of Recommending Replacement Agents that are Green House Gases.
- **Public Meeting Held 5/19-20/10**
- **Scheduled Issue of Final AC by 12/30/10**

Mandatory Halon Replacement Proposed for Civil Aviation

- ICAO (A36-12 & A37-xx) Proposal
- EC DG Environment Proposal

	<u>New A/C Prod</u>	<u>New A/C TC</u>	<u>Existing A/C</u>
	ICAO/EC	ICAO/EC	ICAO/EC
Lavatory	2012/2020	2012/2012	None/2020
Portable	2017/2025	2012/2012	None/2025
Engines/APU	None/2035	2012/2012	None/2035
Cargo	None/2035	None/2016	None/2035