



# RWR Pilot Training



## Malibu - Mirage - Meridian

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### I'm Glad You Asked

## I have Halon 1211/1301 in my aircraft fire extinguisher. What is it?

By Dick Rochfort, ATP, MCFI, CFII, MEI

QUESTION - What is Halon and How Does it Work?

ANSWER - Halon is a "Clean Agent." The National Fire Protection Association defines, a "Clean Agent" as "an electrically non-conducting, volatile, or gaseous fire extinguishant that does not leave a residue upon evaporation."

Currently, there are two common types of Halon in use; Halon 1211 (a liquid streaming agent) and Halon 1301 (a gaseous flooding agent). Both contain low-toxicity, chemically stable, non-conductive compounds that are easily recyclable.

Halon is an extraordinarily effective fire extinguishing agent, even at low concentrations. According to the Halon Alternative Research Corporation, three things must come together at the same time to start a fire. "The first ingredient is fuel (anything that can burn), the second is oxygen (normal breathing air is ample) and the last is an ignition source (high heat can cause a fire even without a spark or open flame). Traditionally, to stop a fire you need to remove one side of the triangle - the ignition, the fuel or the oxygen. Halon adds a fourth dimension to fire fighting - breaking the chain reaction. It stops the fuel, the ignition and the oxygen from dancing together by chemically reacting with them."

A key benefit of Halon, as a clean agent, is its ability to extinguish fire without the production of residues that could damage the assets being protected.

Halon is widely employed in areas such as computer rooms, data storage areas, libraries and museums, where the use of water or solid extinguishing agents could cause secondary damage exceeding that caused by the fire itself. The non-conductive nature of Halon enables it to be used for the protection of electrical and electronic equipment, and its low toxicity allows its use in areas where the egress of personnel may be undesirable or impossible - important in closed areas such as aircraft, boats and armored fighting vehicles. Halon is also used extensively in oil production and electric power generation.

The EPA recognizes that Halon is a very effective extinguishing agent, and the agency continues to allow the use of Halon despite the gas's ozone depleting potential. All Halon now available is recycled.

Halon has been used for fire and explosion protection throughout the twentieth and into the twenty first century. Carbon tetrachloride (Halon 104) was used prior to 1900, even though its combustion by-products were lethal. Due to a number of deaths, a search for something safer began. Several other Halons were tried, but it was not until 1947 that research by the Purdue Research Foundation and the U.S. Army resulted in the discovery of two effective low toxicity Halons: 1211 and 1301. When used properly, these Halons have an excellent fire fighting record with little, if any, risk.

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The Montreal Protocol of 1987 identified Halon as one of many compounds requiring limitations of use and production and an amendment to the original Protocol resulted in the halting of Halon production on January 1, 1994. Careful use and conservation of Halon is, therefore, important so that existing supplies will be sufficient to meet all future needs.

In the United States, there are currently no regulations mandating the decommissioning of Halon systems or portable fire extinguishers. In fact, the FAA continues to recommend Halon fire extinguishers for use on aircraft due to its effectiveness to weight ratio and low toxicity.

However, the U.S. Environmental Protection Agency (US EPA) strongly encourages the use of non-ozone depleting alternatives, and in 1990, the US EPA established its Significant New Alternatives Policy (SNAP) to evaluate new chemicals and technologies for the replacement of ozone depleting substances. On March 5, 1998, the US EPA issued a final rule governing the release of Halon into the atmosphere during maintenance, repair, and disposal of Halon containing equipment. Disposal of Halon containing equipment must be conducted by a Halon manufacturer, a Halon system manufacturer, a fire equipment distributor, or a Halon recycler. And, the company receiving the Halon must operate in accordance with all requirements of NFPA 12A. If the owner is disposing of the Halon permanently, it must be disposed of by sending it for recycling to a recycler operating in accordance with NFPA 12A. In order to recycle Halon, Underwriters Laboratories Inc. approved equipment must be employed.

Although Halon is no longer manufactured, according to an industry white paper by Wickman Associates dated March 16, 2002, there will be a bank of approximately 3,748 tons in 2030. The eventual demise of Halon will probably result not from insufficient supply, but from the development of an equally effective agent, that does not damage the ozone layer and is cost effective. Although progress is being made on Halon alternatives, none yet meets these criteria.

I hope this information is helpful.

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*“I’m Glad You Asked” is a regular column written by Master Flight Instructor Dick Rochfort. Dick answers questions which come up frequently while conducting training in the Malibu, Mirage and Meridian aircraft. If you have a question for Dick, you can send it to him at [mail@rwrpilottraining.com](mailto:mail@rwrpilottraining.com). He’ll be ... “glad you asked”.*

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## Biography

### Richard W Rochfort



A former corporate pilot and primary flight instructor, Dick is a full-time Master Certified Flight Instructor providing insurance approved initial and recurrent pilot training in the Piper PA46 Malibu, Mirage, and Meridian aircraft. He is currently flying over 450 hours per year and trains 60-80 pilots every year exclusively in these aircraft.

He holds multi-engine ATP and Gold Seal Flight Instructor Certificates with CFII, MEI and CE-525S ratings. He has been actively involved in flight training since 1991 and has trained pilots all over the US, Canada and Europe.

Dick is an Aviation Safety Counselor for the FAA Baltimore FSDO, a National Industry Member of the FAA Safety Team (FAAST) and has conducted hundreds of programs for the pilot community. He is an instructor for the M/MOPA Safety and Training Foundation and The National Association of Flight Instructors has designated him Master CFI. Less than 1% of all flight instructors have earned this designation.

Dick served as a Staff Sergeant E6 in the US Army Special Forces from 1970 until 1976 as an A team radio operator, training indigenous personnel in field communications. He worked from 1976 until 1991 as an industrial engineer training manufacturing personnel for the production of communication and navigation equipment for US military.

His education includes undergraduate degrees in Clinical Psychology and Engineering and a Masters Degree in Business Administration. Dick lives in Baltimore, Maryland with his wife and two daughters. He is a PADI Certified Scuba Diving Instructor, First Aid Instructor and an Eagle Scout.

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