

Department of Defense Continues Search for PFAS-Free Firefighting Foam

Airports are now one step closer to a new, PFAS-free firefighting foam with the Department of Defense's announcement of a draft specification for an AFFF replacement.

Civil airports use aqueous film-forming foam, or AFFF, to extinguish fires fueled by flammable liquids. The Federal Aviation Administration (FAA) establishes standards for the type and quantity of AFFF airports must have on hand to respond to emergencies and has required the testing of AFFF stocks by dispersal onto airport surfaces. In the decades since the development of AFFF, airports around the country were required to release substantial quantities of the firefighting foam during both training and emergency response events.

Unfortunately, AFFF contains per- and polyfluoroalkyl substances, groups of manufactured chemicals referred to as PFAS. Research into the [health effects](#) of exposure to AFFF is ongoing, but current peer-reviewed studies indicate that certain levels of PFAS exposure may lead to an increased risk of several types of cancer, reproductive effects such as decreased fertility, and developmental delays in children. Centers for Disease Control (CDC) surveys indicate that most people in the U.S. have been exposed to PFAS at low levels, but individuals in occupations that routinely use AFFF are exposed to higher levels of concentrated PFAS over time. Nevertheless, the FAA shares the DoD's firefighting foam specifications and has continued to mandate the use of AFFF at airports while working with the DoD to develop a suitable PFAS-free replacement.

This goal came a step closer to reality on May 31st, when the DoD published a draft Military Specification (MILSPEC) for new, fluorine-free firefighting foam. Titled "MIL-PRF-XX727, Fire Extinguishing Agent, Fluorine-Free Foam (F3) Liquid Concentrate, for Land-Based, Fresh Water Applications," the draft MILSPEC lays out the desired performance standards and chemical properties for fluorine-free AFFF replacements, as well as F3 formulation performance testing procedures and acceptance criteria. F3 formulations that fail to meet the criteria established in the MILSPEC will be disapproved for use and individual F3 batches that fail to conform with the requirements will be rejected.

Notably, the MILSPEC requirements apply only to land-based F3 formulations that will be mixed with freshwater for use in firefighting vehicles or sprinkler systems. The MILSPEC thus does not provide for the total replacement of AFFF, which is capable of being mixed with salt water as well as being used in premixed solutions in portable fire extinguishers. The MILSPEC acknowledges that there are currently no F3s with performance equivalent to AFFF, but encourages manufacturers to continue to improve their F3 formulations in key areas, including extinguishment capability against low flashpoint fuels, vapor suppression, compatibility with other F3 formulations, use in premixed solutions, and use with salt water. The MILSPEC's ultimate objective is to spur the development of new F3 concentrate formulations with firefighting performance that meets or exceeds that of AFFF, but with a PFAS content of less than 1 part per billion.

Once finalized, the MILSPEC is expected to be [adopted by the FAA](#) as the standard for commercial service airports under 14 C.F.R. § 139. As fluorine-free foam ("F3") formulations are developed under the new MILSPEC requirements, airports will finally be able to replace their AFFF stocks with an effective, PFAS-free substitute.

Copies of the draft MILSPEC are available by request through the [SAM.gov website](#). The review period for the draft specification ends on Thursday, June 30, 2022, and the final document will be available on [ASSIST Online](#).



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