

USES WITHIN DON/MILITARY

What are the uses of materials that contain PFC/PFAS within the Department of the Navy (DON)?

Within DON's operations, PFC/PFAS are most commonly associated with aqueous film-forming foam (AFFF), but can also be contained in some other materials (e.g. degreaser vapor suppression) and wastes/mixed wastes. Additional information is provided below regarding release mechanisms.

What are the advantages of AFFF?

Aqueous film-forming foam (AFFF) is used for extinguishing Class B (flammable liquid) fuel fires. A key feature is the formation of an aqueous film with low surface tension between the foam layer and the fuel surface that prevents the escape of flammable vapors. The film and foam layers work in combination to exclude oxygen from the fuel surface, and the water content of the foam provides a cooling effect.

What are the advantages of Military Specification (MILSPEC) AFFF over non-MILSPEC AFFF?

Some of the advantages of MILSPEC AFFF include: quicker fire extinguishment times; a requirement for compatibility with both seawater and freshwater; performance requirements for half and quintuple strength tests (for demonstrated viability when incorrectly proportioning); and the capability to intermix MILSPEC AFFFs from different manufacturers.

Why does the Navy and Marine Corps use Military Specification (MILSPEC) aqueous film forming foam (AFFF)?

MILSPEC qualified AFFF was developed specifically to rapidly extinguish Class B fires where shipboard/aviation fuels and ordnance may be present in critical fire scenarios such as flight decks and where aircraft movement, fueling and weapons loading occur in very close proximity. The allowable times for fire extinguishment are much more stringent for a MILSPEC AFFF than a non-MILSPEC (i.e. UL 162 qualified) AFFF. One example is the 50 square foot pan fire where a MILSPEC AFFF is required to extinguish the fire in 50 seconds, but a UL162 non-MILSPEC AFFF is allowed 180 seconds.

What types/classes of AFFF extinguishing agent(s) are currently specified and available?

Military Specification (MILSPEC) AFFF is currently specified and available in two types (3% and 6%). 3% is intended to be mixed 3 parts concentrate to 97 parts water. 6% is intended to be mixed 6 parts concentrate to 94 parts water.

Does DON still use AFFF that contains PFOS and/or PFOA?

3M ceased manufacturing AFFF with PFOS (this formulation also included about 1-2% PFOA) in 2002. However, legacy 3M AFFF remains in some DON systems and inventory. DON is in the process of identifying these locations and preparing to remove this AFFF for proper disposal/destruction. AFFF produced after 2002 may also contain PFOA and/or precursor PFC/PFAS, which can degrade to PFOA. DON is in the process of testing the newest formulations of AFFF to verify whether there are trace amounts of PFOA and, if so, at what level. Once PFOA free formulations can be identified and certified to meet MILSPEC performance criteria, old stocks will be replaced with these newer, safer formulations.