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FLUORINE-FREE FOAM (F3) MILITARY SPECIFICATION FAQs

Department of Defense
OFFICE OF PREPUBLICATION AND SECURITY REVIEW

Q1: What is a military specification (MILSPEC)?

A1: MILSPEC is a general term used to describe one of many different types of technical documents used to support defense and federal acquisition, under the Defense Standardization Program (DSP). DSP documents include Defense Specifications, Defense Standards, Data Item Descriptions, and other federal standards and specifications.

MILSPECs are a type of Defense Specification that are developed to ensure that products meet certain requirements. MILSPECs can be further categorized as either a performance specification (MIL-PRF) or a detailed specification (MIL-DTL).

Q2: What is a performance-based specification (MIL-PRF)?

A2: A performance specification states requirements for an item in terms of the required results with criteria for verifying compliance, but without stating the methods for achieving the required results. A performance specification defines the functional requirements for the item, the environment in which it must operate, and interface and interchangeability characteristics.

For example, MIL-PRF-24385, the performance specification for Aqueous Film Forming Foam (AFFF), includes a performance requirement for a product to extinguish a 28-square-foot gasoline-fueled fire within 30 seconds in order for the product to be qualified to the specification.

Additional information on performance specifications can be found on the Defense Standardization Program website:

<https://www.dsp.dla.mil/Policy-Guidance/FAQs/Performance-Specifications/>

Q3: Why does the DoD prepare specifications?

A3: The overall purpose of a specification is to provide a basis for obtaining a product or service that will satisfy a particular need at an economical cost and to invite maximum reasonable competition.

The goal of Defense Standardization Program documents is to provide DoD personnel with equipment that is interoperable, reliable, technologically superior, and affordable. Standardization documents are developed and used for products, materials, and processes that have multiple applications to promote commonality and interoperability among the Military Departments and the Defense Agencies, and between the United States and its allies, to limit the variety of items in the military supply system.

Q4: Where can I learn more about defense specifications?

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A4: Additional information about military specifications, and all other Defense Standardization Program documents can be found on the Defense Logistics Agency, Defense Standardization Program Office website. Answers to Frequently Asked Questions can be found at <https://www.dsp.dla.mil/> under the “Policy & Guidance” menu tab.

Q5: What is product qualification?

A5: Qualification is an approval process completed in advance of, and independent of, a purchase (acquisition) through which a vendor's capabilities, products, and/or processes are examined, tested, and approved to be in conformance with specification requirements.

Products that pass qualification tests and evaluations associated with a specification are subsequently approved for inclusion on a Qualified Products List or Qualified Manufacturers List, which are part of the Qualified Products Database, hosted by the Defense Logistics Agency.

Products must qualify initially, and be re-qualified periodically. Re-qualification may also be required at any time if a product formula, materials, manufacturing process or manufacturing facility changes.

Q6: Why does the DoD qualify products to a specification?

A6: There are many benefits for using a qualification process in conjunction with a specification, including:

- Establishing standardized requirements for evidence of a vendor’s capability;
- Ensuring product performance, quality, and reliability prior to, and independent of, any acquisition or contract;
- Reducing acquisition lead time; and
- Establish long-term relationship with the supplier(s).

Q7: Who qualifies products to a specification?

A7: Each specification that includes a qualification requirement also identifies a “Qualifying Activity” (normally the lead acquisition agency and/or preparer of the specification). The Qualifying Activity guides manufacturers through the application process, then oversees test(s) and evaluation(s) of product(s). The Qualifying Activity determines if a product meets specification requirements and if that product should be qualified and listed in the Qualified Products Database.

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Q8: What is MIL-PRF-32725?

A8: MIL-PRF-32725 is the serial number and short title associated with a new performance specification for a fluorine-free firefighting agent, intended to replace aqueous film forming foam (AFFF). The full title of the specification is, “FIRE EXTINGUISHING AGENT, FLUORINE-FREE FOAM (F3) LIQUID CONCENTRATE, FOR LAND-BASED, FRESH WATER APPLICATIONS.”

Q9: Why was MIL-PRF-32725 developed?

A9: Congress, via the Fiscal Year 2020 National Defense Authorization Act (NDAA), required that the Secretary of the Navy prepare and publish this specification no later than January 31, 2023, to initiate replacement of fluorinated Aqueous Film Forming Foam (AFFF) with fluorine-free firefighting agents. The fluorine-free foams (F3s) will be used to replace AFFF at military installations.

Note: The FY2020 NDAA requirements for use of F3s are specific to land-based use at military installations.

Q10: What type of research did DoD conduct on fluorine-free foams (F3s) during development of the specification?

A10: DoD funded multiple research, demonstration, and validation projects via the Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP). Principal investigators from government, industry, and academia completed projects on a broad range of F3-related topics including impacts to human health and the environment, and the firefighting capabilities of current and emerging F3 products.

SERDP and ESTCP are independent programs that are jointly managed on behalf of the Office of the Assistant Secretary of Defense (Energy, Installations and Environment). Learn more at: <https://www.serdp-estcp.org>.

Q11: Who did DoD coordinate with during the development of MIL-PRF-32725?

A11: The development of MIL-PRF-32725 was led by the Department of the Navy and involved major stakeholders from across the DoD. Experts from the DoD fire and emergency services, facility fire protection engineering, and the Defense Health Agency, all contributed to the specification. Additionally, a broad technical review was completed in July 2022 when the draft specification was made available for public comment. In addition to other federal agencies, reviewers providing comments on the draft specification included a State government,

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representatives of the firefighting foam manufacturing industry, civil aviation stakeholders, research scientists from industry and academia, private consultants, and professional organizations from the firefighting community.

Q12: Does the new fluorine-free foam specification include a qualification requirement?

A12: Yes. Consistent with the law and policies governing qualification requirements in defense specifications, MIL-PRF-32725 includes a qualification requirement. As defined in the governing regulations, MIL-PRF-32725 met several criteria warranting establishment of a qualification requirement. Those included:

- The product being qualified is for survival or emergency life-saving equipment.
- The need to ensure the performance, quality, and reliability of the product to substantially reduce risk of failure that could be catastrophic to mission, equipment, safety, or life.
- The time required to conduct qualification tests identified in the specification exceeds 30 days.
- Qualification tests require special equipment not commonly available.

Q13: Who oversees qualification of new fluorine-free foam (F3) products?

A13: Naval Sea Systems Command (NAVSEA) developed the new F3 specification and will oversee the qualification of new F3 products (serve as the Qualifying Activity).

Q14: How does the new specification for fluorine-free foam (F3) meet the FY2020 NDAA requirement for limiting per- and polyfluoroalkyl substance (PFAS) content?

A14: The new F3 military specification (MILSPEC) includes a limitation on PFAS content, consistent with the FY2020 NDAA, prohibiting F3s from containing in excess of one part per billion of PFAS. The MILSPEC requires laboratory testing of F3s for specific PFAS content as part of product qualification, with a “non-detect” required to pass the test. Additionally, manufacturers will be required to provide written certification that their MILSPEC-compliant product contains “no intentionally added PFAS.”

Q15: What measures have been taken to address potential toxicity concerns with the new fluorine-free foam (F3) products?

A15: The new F3 military specification (MILSPEC) includes tests, screens, and evaluations to understand and prevent potential toxicity concerns. Tests are included for Aquatic Acute Toxicity, Chemical Oxygen Demand, and Biodegradability. Products are also screened against the National Aerospace Standard 411-1, “Hazardous Materials Target List” to ensure “prohibited” materials are not in the F3 formulations. Finally, evaluations of new foams are

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completed by the Navy and Marine Corps Public Health Center and the Army Public Health Center to assess potential impacts to both human health and the environment. All test, screening, and evaluation data will be used to determine if a product should be qualified.

Q16: Are the new fluorine-free foam (F3) products compatible with existing firefighting equipment?

A16: Yes. The physical properties (e.g., viscosity) of new F3 products are similar to those of Aqueous Film Forming Foam (AFFF), and should support minimizing system modifications when substituting agents.

Q17: How effective are the new fluorine-free foam (F3) products at extinguishing fires?

A17: F3 products are designed specifically to prevent or extinguish hydrocarbon based, liquid fuel fires (e.g., jet fuel). When used for this purpose, F3s are good fire extinguishing agents but they do have some limitations compared to Aqueous Film Forming Foam (AFFF). The fire extinguishing times of F3s are longer than AFFF, while burn-back resistance time is shorter than AFFF. MILSPEC F3 is also not currently approved for use with sea water, is not approved for pre-mixing with water, and is not currently compatible with other manufacturer F3s (no cross-agent compatibility).

Q18: When will the new fluorine-free foams (F3s) be available for use?

A18: Once the new F3 military specification (MILSPEC) is released, manufacturers of F3 firefighting agent may apply to NAVSEA to have their product qualified. NAVSEA will review the application and, if approved, will request various inspections, tests, and evaluations to determine if the product meets the specification. This process is expected to take up to 120 days. If the F3 firefighting agent meets the specification and is qualified by NAVSEA, the Defense Logistics Agency will update their Qualified Products Database (QPD)/ Qualified Products List (QPL) with the manufacturer/product data and the manufacturer may advertise and sell "MILSPEC" foam.

Note: More than one F3 product may be qualified at a time.