

# NFPA 16: Standard for the Installation of Foam-Water Sprinkler and Spray Systems Practice Test (Sample)

## Study Guide



**Everything you need from our exam experts!**

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# Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

**Remember:** successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

# How to Use This Guide

**This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:**

## **1. Start with a Diagnostic Review**

**Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.**

## **2. Study in Short, Focused Sessions**

**Break your study time into manageable blocks (e.g. 30 - 45 minutes). Review a handful of questions, reflect on the explanations.**

## **3. Learn from the Explanations**

**After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.**

## **4. Track Your Progress**

**Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.**

## **5. Simulate the Real Exam**

**Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.**

## **6. Repeat and Review**

**Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.**

**There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!**

## Questions

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- 1. Following a discharge test, what should be documented?**
  - A. Document test results.**
  - B. Record only pump model.**
  - C. Ignore prior test results.**
  - D. Only document the date of test.**
  
- 2. During testing, which standard applies to foam-water sprinkler systems?**
  - A. NFPA 13**
  - B. NFPA 70**
  - C. NFPA 25**
  - D. NFPA 20**
  
- 3. Which foam concentrate is usually derived from hydrocarbon surfactants and used in specially designed equipment to produce foams with foam-to-solution volume ratios of 20:1 to approximately 1000:1?**
  - A. Alcohol-resistant foam concentrate**
  - B. Medium and High-expansion foam concentrate**
  - C. Protein foam concentrate**
  - D. Synthetic foam concentrate**
  
- 4. Which concentrate is based on foaming agents other than hydrolyzed proteins and includes aqueous film-forming foam concentrates, medium- and high-expansion foam concentrates, and other synthetic foam concentrates?**
  - A. Synthetic foam concentrate**
  - B. Aqueous film-forming foam concentrate**
  - C. Alcohol-resistant foam concentrate**
  - D. Film-forming fluoroprotein foam concentrate**
  
- 5. What actions are typically required after a system discharge test?**
  - A. Inspect for leaks, verify discharge patterns, and document test results.**
  - B. Repaint discharge outlets.**
  - C. Replace all pumps after testing.**
  - D. Shut down the system and wait for maintenance.**

- 6. Which component is an example of a foam-water spray system component?**
- A. Foam spray nozzles or spray manifolds designed for foam solution distribution.**
  - B. Quick-disconnect couplings.**
  - C. Filter cartridges.**
  - D. Heat exchangers.**
- 7. Why must foam concentrates be compatible with system materials?**
- A. To improve scent or color of concentrate.**
  - B. To prevent chemical reactions, deposits, corrosion, and degradation of system components.**
  - C. To increase the viscosity of the foam.**
  - D. To reduce the need for storage containment.**
- 8. What is a common reason for foam system component failure?**
- A. Insufficient water supply to the system.**
  - B. Incorrect lighting in storage area.**
  - C. Incompatible foam concentrate or improper maintenance.**
  - D. Excessive filtration of foam concentrate.**
- 9. Which foam concentrate uses fluorinated surfactants to produce a fluid aqueous film for suppressing hydrocarbon fuel vapors?**
- A. Film-forming fluoroprotein foam concentrate**
  - B. Aqueous film-forming foam concentrate**
  - C. Alcohol-resistant foam concentrate**
  - D. Synthetic foam concentrate**
- 10. Foam concentrates shall be listed for use with which components?**
- A. Only the Water Supply**
  - B. Foam Concentrate Proportioning Equipment and With the Discharge Devices**
  - C. Only the Proportioning Equipment**
  - D. No Listing Required**

## Answers

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1. A
2. C
3. B
4. A
5. A
6. A
7. B
8. C
9. A
10. B

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## **Explanations**

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**1. Following a discharge test, what should be documented?**

- A. Document test results.**
- B. Record only pump model.**
- C. Ignore prior test results.**
- D. Only document the date of test.**

Documenting the discharge test results is essential. It creates a permanent record of how the pump performed during the test, capturing key data such as discharge flow, pressures, test duration, and any anomalies, along with equipment status and test conditions. This record supports compliance with NFPA 16, allows performance verification, enables trend analysis for maintenance, and provides evidence for future inspections. Recording only the pump model or only the date omits critical performance details, and ignoring prior test results eliminates history that helps identify changes in system reliability over time.

**2. During testing, which standard applies to foam-water sprinkler systems?**

- A. NFPA 13**
- B. NFPA 70**
- C. NFPA 25**
- D. NFPA 20**

Testing foam-water sprinkler systems is governed by the standard that covers inspection, testing, and maintenance of water-based fire protection systems. Foam-water systems fall under this category, so the procedures, test requirements, and maintenance intervals come from that standard. The foam-water installation standard handles design and installation aspects, but the actual testing activities—such as verifying system operation, conducting hydrostatic tests, and checking foam proportioning—are specified in the testing and maintenance standard. The other standards serve different roles: one is focused on general sprinkler system installation, another on electrical installations, and another on fire pump equipment.

**3. Which foam concentrate is usually derived from hydrocarbon surfactants and used in specially designed equipment to produce foams with foam-to-solution volume ratios of 20:1 to approximately 1000:1?**

**A. Alcohol-resistant foam concentrate**

**B. Medium and High-expansion foam concentrate**

**C. Protein foam concentrate**

**D. Synthetic foam concentrate**

High- and medium-expansion foams are designed to create very large volumes of foam by using hydrocarbon-surfactant concentrates and specialized foam-generation equipment that introduces a lot of air into the mix. The resulting foam-to-solution ratios are typically in the range of about 20:1 up to around 1000:1, which is the hallmark of expansion foams used in large-area fires or spaces where pumping a lot of water is undesirable. The emphasis here is on the extreme expansion achieved with dedicated equipment, not on conventional low-expansion foams. Other foam types—such as protein foams or standard synthetic foams—provide much lower expansion and do not rely on the same air-rich generation methods, so they wouldn't match the 20:1 to 1000:1 expansion described. Alcohol-resistant foams are designed for alcohol-containing fuels and also don't typically achieve these very high expansion ratios.

**4. Which concentrate is based on foaming agents other than hydrolyzed proteins and includes aqueous film-forming foam concentrates, medium- and high-expansion foam concentrates, and other synthetic foam concentrates?**

**A. Synthetic foam concentrate**

**B. Aqueous film-forming foam concentrate**

**C. Alcohol-resistant foam concentrate**

**D. Film-forming fluoroprotein foam concentrate**

Synthetic foam concentrates are formulated with foaming agents other than hydrolyzed proteins, and this category includes aqueous film-forming foam concentrates, medium- and high-expansion foam concentrates, and other synthetic formulations. AFFF relies on fluorinated surfactants to spread quickly over fuels and form a stabilizing film, while expansion foams are designed to blanket large areas with foam, capabilities that come from these synthetic foaming agents. A concentrate that is film-forming fluoroprotein is rooted in a protein base with a fluorochemical film-former, so it doesn't belong to this broad synthetic category. An aqueous film-forming concentrate is itself a type of synthetic concentrate, but the question asks for the general category that encompasses AFFF and expansion foams, which is synthetic foam concentrate.

**5. What actions are typically required after a system discharge test?**

- A. Inspect for leaks, verify discharge patterns, and document test results.**
- B. Repaint discharge outlets.**
- C. Replace all pumps after testing.**
- D. Shut down the system and wait for maintenance.**

After a discharge test, the focus is on confirming the system's function and recording what was observed. Inspecting for leaks ensures there are no hidden pathways or weak seals that could undermine performance during a real discharge. Verifying discharge patterns checks that each outlet is delivering the intended flow and coverage, so the foam-water mix will reach the required areas. Documenting the test results creates a traceable record for compliance, future maintenance, and any needed adjustments. Repainting outlets, replacing pumps just after a test, or shutting the system down awaiting maintenance don't address performance or safety concerns and aren't standard actions from a discharge test.

**6. Which component is an example of a foam-water spray system component?**

- A. Foam spray nozzles or spray manifolds designed for foam solution distribution.**
- B. Quick-disconnect couplings.**
- C. Filter cartridges.**
- D. Heat exchangers.**

In a foam-water spray system, the device that actually distributes the foam solution over the protected area is the foam spray nozzle or spray manifold designed for foam solution distribution. These components are built to mix the foam concentrate with water at the correct proportions and to spray or atomize the mixture so it blankets the space, providing effective foam coverage to suppress the fire. Other items listed aren't specific to distributing foam: quick-disconnect couplings are general fittings for hoses, not foam distribution devices; filter cartridges focus on removing particulates from water and aren't about delivering foam; and heat exchangers transfer heat between fluids, not foam solution distribution. So the foam spray nozzle or spray manifold designed for foam solution distribution best represents a foam-water spray system component.

**7. Why must foam concentrates be compatible with system materials?**

- A. To improve scent or color of concentrate.**
- B. To prevent chemical reactions, deposits, corrosion, and degradation of system components.**
- C. To increase the viscosity of the foam.**
- D. To reduce the need for storage containment.**

Foam concentrates and the materials that touch the system must be chemically compatible so they do not react, deposit, or degrade the components that carry and apply the foam. If the concentrate is not compatible, it can cause chemical reactions that produce corrosive byproducts or soften/swelling of seals and gaskets, leading to leaks or seal failures. It can also leave deposits inside pipes, strainers, proportioners, and nozzles, which restricts flow and disrupts accurate foam proportioning and foam quality. Over time, these issues compromise the performance of the entire foam-water system and can require costly maintenance or replacement of components. This is why the choice of concentrate considers the materials in contact with it—elastomers, metals, coatings, and plastics—so there's no harmful interaction. Scent, color, or viscosity changes aren't the primary concerns for system integrity, and storage containment needs are managed separately from this compatibility, though they're also important. The goal is reliable operation and effective foam discharge by keeping all system parts within the concentrate's approved compatibility range.

**8. What is a common reason for foam system component failure?**

- A. Insufficient water supply to the system.**
- B. Incorrect lighting in storage area.**
- C. Incompatible foam concentrate or improper maintenance.**
- D. Excessive filtration of foam concentrate.**

Foam system reliability hinges on compatibility and upkeep. When the foam concentrate isn't compatible with the system's elastomers, seals, or other materials, it can cause seals to swell, crack, or degrade and leave deposits that foul eductors, proportioners, and strainers. This disrupts proper foam mixing and delivery. Improper maintenance compounds the problem: missed inspections, dirty filters, worn components, and out-of-calibration proportioning devices allow contaminants to build up and the foam-to-water ratio to drift, resulting in ineffective foam solution or no discharge at all. Incompatibility and poor maintenance are the most common reasons components fail because they directly affect how the foam is prepared and routed through the system. Other options describe issues not directly tied to component failure: an insufficient water supply is a system-wide limitation rather than a failure of the foam components themselves, storage lighting doesn't impact mechanical performance, and excessive filtration isn't a typical primary cause of component failure.

**9. Which foam concentrate uses fluorinated surfactants to produce a fluid aqueous film for suppressing hydrocarbon fuel vapors?**

**A. Film-forming fluoroprotein foam concentrate**

**B. Aqueous film-forming foam concentrate**

**C. Alcohol-resistant foam concentrate**

**D. Synthetic foam concentrate**

The idea being tested is which foam concentrate uses fluorinated surfactants to form a fluid aqueous film that suppresses hydrocarbon vapors. Film-forming fluoroprotein concentrates combine a protein base with fluorinated surface-active agents. The fluorinated components lower surface tension and enable rapid spreading, while the protein portion adds film stability and burnback resistance. This combination creates a thin, fluid aqueous film that blankets the hydrocarbon surface, effectively suppressing vapors and helping prevent reflash. While aqueous film-forming concentrates also rely on fluorinated surfactants to make a film, the explicit inclusion of a fluoroprotein base emphasizes the synergistic effect of the film-forming action with protein stability, which is why this option best matches the description. Alcohol-resistant and synthetic concentrates may be fluorinated or not, but they do not inherently highlight the formation of a durable film on hydrocarbon fuels through a fluorinated-protein blend.

**10. Foam concentrates shall be listed for use with which components?**

**A. Only the Water Supply**

**B. Foam Concentrate Proportioning Equipment and With the Discharge Devices**

**C. Only the Proportioning Equipment**

**D. No Listing Required**

Foam concentrates must be listed for use with both the foam-proportioning equipment and the discharge devices. This ensures the concentrate has been tested for compatibility with how it's fed into the water stream and with the devices that release the foam solution to the protected area. When a concentrate is listed for both components, the foam solution will mix correctly, maintain stability, and perform as intended through the discharge devices, giving reliable foam generation and drainage. Using a concentrate not listed for both parts can lead to poor foam formation, instability, or clogging, compromising system performance.

## Next Steps

**Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.**

**As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.**

**If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at [hello@examzify.com](mailto:hello@examzify.com).**

**Or visit your dedicated course page for more study tools and resources:**

**<https://nfpa16.examzify.com>**

**We wish you the very best on your exam journey. You've got this!**

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