

NFPA 16: STANDARD FOR THE INSTALLATION OF FOAM-WATER SPRINKLER AND SPRAY SYSTEMS PRACTICE TEST (SAMPLE)

STUDY GUIDE



**SAMPLE STUDY GUIDE
WITH LIMITED QUESTIONS**

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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. Which concentrate is described as being based on hydrocarbon surface active agents and listed as a wetting agent, foaming agent, or both?**
 - A. Other synthetic foam concentrate
 - B. Aqueous film-forming foam concentrate
 - C. Film-forming fluoroprotein foam concentrate
 - D. Protein foam concentrate
- 2. The foam-water dry pipe system releases water to open a valve known as which type of valve?**
 - A. Wet pipe valve
 - B. Dry pipe valve
 - C. Deluge valve
 - D. Check valve
- 3. What are the maximum allowable pull and movement required to secure operation of manual foam-injection controls?**
 - A. Pull not more than 40 lb and movement not more than 14 inches
 - B. Pull not more than 60 lb and movement not more than 8 inches
 - C. Pull not more than 20 lb and movement not more than 2 inches
 - D. No limit specified
- 4. Discharge devices and foam concentrates shall be listed for use together.**
 - A. When Compatible With Water Supply
 - B. For Use Together
 - C. Only With Certain Devices
 - D. Not Required to Be Listed
- 5. What is foam concentrate used for in foam-water systems?**
 - A. It acts as a cooling agent for metal components.
 - B. It is used to increase water pressure in the system.
 - C. It mixes with water to form a foam solution that blankets the fire to suppress the fuel surface.
 - D. It serves as a sealant for joints.

- 6. Which type of storage tanks requires means for gauging the level of foam concentrates?**
- A. Pressure-proportioning tanks
 - B. Atmospheric-type tanks
 - C. Both atmospheric-type and pressure-proportioning tanks
 - D. Neither
- 7. Which of the following is a listed method under the 'other listed methods' category for foam proportioning?**
- A. Around-the-pump proportioners.
 - B. Inline eductors (inductors).
 - C. Balanced positive-pressure injection systems with a variable pump output.
 - D. All of the above.
- 8. Foam-water systems shall be of which types?**
- A. Wet Pipe, Dry Pipe, Deluge, or Preaction Type
 - B. Only Wet Pipe Systems
 - C. Only Deluge Systems
 - D. Foam-Water Systems Are Not Specified
- 9. Which foam-water system uses a piping system containing air under pressure with a supplemental detection system in the same area as the sprinklers?**
- A. Foam-water Deluge System
 - B. Foam-water Spray System
 - C. Foam-water Preaction System
 - D. Foam-water Dry Pipe System
- 10. Foam-water deluge systems are applicable to the protection of which hazards?**
- A. Electrical hazards.
 - B. Two-dimensional flammable liquid hazards.
 - C. Solid combustible hazards.
 - D. Gaseous fuel hazards.

Answers

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

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Explanations

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1. Which concentrate is described as being based on hydrocarbon surface active agents and listed as a wetting agent, foaming agent, or both?

- A. Other synthetic foam concentrate**
- B. Aqueous film-forming foam concentrate
- C. Film-forming fluoroprotein foam concentrate
- D. Protein foam concentrate

The concept being tested is the chemical basis of different foam concentrates and how they are categorized by NFPA. Among foam concentrates, the ones described as being based on hydrocarbon surface-active agents are the nonfluorinated "other synthetic foam concentrates." These rely on hydrocarbon (non-fluorinated) surfactants and can be listed as a wetting agent, a foaming agent, or both, depending on how the concentrate is formulated. This makes them distinct from protein or fluoroprotein concentrates and from film-forming fluorinated foams, which use protein or fluorinated surfactants rather than hydrocarbon surfactants. So, the correct choice identifies the hydrocarbon-surfactant category that NFPA lists as capable of serving as either a wetting or foaming agent.

2. The foam-water dry pipe system releases water to open a valve known as which type of valve?

- A. Wet pipe valve
- B. Dry pipe valve**
- C. Deluge valve
- D. Check valve

In a foam-water dry pipe system, water is kept out of the piping by a dry pipe valve. When a sprinkler head is activated, air in the valve's air chamber escapes and the drop in pressure allows the valve to lift, releasing water into the dry pipe network. Foam concentrate is then introduced into that water downstream to create the foam solution. The other devices don't perform this action: a wet pipe system already has water in the pipes, a deluge valve is used to open all sections in a deluge system, and a check valve only prevents backflow.

3. What are the maximum allowable pull and movement required to secure operation of manual foam-injection controls?

- A. Pull not more than 40 lb and movement not more than 14 inches**
- B. Pull not more than 60 lb and movement not more than 8 inches
- C. Pull not more than 20 lb and movement not more than 2 inches
- D. No limit specified

Operating manual foam-injection controls must be clearly doable under emergency conditions, even with gloves and limited visibility. The standard sets practical limits on how hard you must pull and how far you must move the control to fully operate it. A pull limit of 40 pounds and a travel limit of 14 inches strike that balance: the force is enough to ensure deliberate, intentional action, but not so great that a firefighter in PPE would struggle or fatigue quickly. The travel distance is long enough to guarantee full engagement of the mechanism, yet not so long that it becomes awkward or prone to snagging in a cramped environment. Options that require more force, less travel, or no specified limit would either hinder rapid, reliable operation or fail to provide a realistic ergonomic guardrail for safe actuation.

4. Discharge devices and foam concentrates shall be listed for use together.

A. When Compatible With Water Supply

B. For Use Together

C. Only With Certain Devices

D. Not Required to Be Listed

The key idea is compatibility verified by listing. In foam-water sprinkler systems, the discharge devices (like foam outlets, nozzles, and eductors) must be tested and approved to work with specific foam concentrates. When a combination is listed for use together, it means a recognized testing laboratory has evaluated and approved that exact pairing, so the foam concentrate will mix correctly with water and pass through the discharge devices as intended. This ensures reliable foam quality, proper surge and drainage, and overall system performance. Choosing the option that states they shall be listed for use with each other is the best answer because it explicitly requires that the components be evaluated together, not just generally compatible or used with water supply. Options suggesting compatibility with water alone, restricting to certain devices, or not requiring listing do not guarantee the necessary tested combination and could lead to improper performance or safety concerns.

5. What is foam concentrate used for in foam-water systems?

A. It acts as a cooling agent for metal components.

B. It is used to increase water pressure in the system.

C. It mixes with water to form a foam solution that blankets the fire to suppress the fuel surface.

D. It serves as a sealant for joints.

Foam concentrate in foam-water systems is mixed with water to form a foam solution that blankets the fuel surface. This foam film coats the liquid, helping to suppress vapors, provide radiant heat reduction, and create a barrier between the fuel and the air. The result is slower vapor release and reduced chances of re-ignition, which is essential for hydrocarbon fires. It's not used to cool metal components directly, nor to increase system water pressure, nor to seal joints—those are not the roles of the foam concentrate.

6. Which type of storage tanks requires means for gauging the level of foam concentrates?

A. Pressure-proportioning tanks

B. Atmospheric-type tanks

C. Both atmospheric-type and pressure-proportioning tanks

D. Neither

The concept being tested is why foam concentrate storage tanks need a reliable way to show how much concentrate remains. In a pressure-proportioning system, the concentrate is stored in a closed, pressurized tank. Because the liquid is not visible and the tank is sealed, you can't judge how much concentrate is left just by looking at it. A dedicated means of gauging the level—such as a sight gauge, float gauge, or electronic level sensor—is required so operators know when to add concentrate and to ensure there's enough on hand to maintain the correct proportioning. Without a level indication, the system could run out of concentrate or deliver an incorrect mix, compromising the foam performance. Atmospheric-type tanks are open to atmosphere, so the liquid level is typically observable or easily inferred through standard sighting means, making a separate gauging device less essential for the system to function properly.

7. Which of the following is a listed method under the 'other listed methods' category for foam proportioning?

- A. Around-the-pump proportioners.
- B. Inline eductors (inductors).
- C. Balanced positive-pressure injection systems with a variable pump output.
- D. All of the above.**

In foam-proportioning systems, NFPA 16 designates certain methods as listed for introducing foam concentrate into the water supply, and some fall under the category of "other listed methods." The methods in this category include around-the-pump proportioners, inline eductors (inductors), and balanced positive-pressure injection systems with a variable pump output. Each of these has published listings and is approved to proportion foam concentrate into the water stream, provided they're installed and maintained according to the listing and the system's design requirements. Because all of these approaches are recognized as compliant "other listed methods," the correct choice is that all of the above are acceptable options.

8. Foam-water systems shall be of which types?

- A. Wet Pipe, Dry Pipe, Deluge, or Preaction Type**
- B. Only Wet Pipe Systems
- C. Only Deluge Systems
- D. Foam-Water Systems Are Not Specified

Foam-water systems are designed to deliver a foam solution by injecting foam concentrate into the water stream, and they can be configured in any of the standard sprinkler system types. NFPA 16 recognizes that a foam-water system may be built as a wet-pipe, dry-pipe, deluge, or preaction system, depending on the hazard and water-supply conditions. The foam concentrate is proportioned into the water through a device (like a proportioner or eductor) regardless of which base piping configuration is used, so the system isn't limited to a single type. Therefore, the correct understanding is that foam-water systems may be of these four types.

9. Which foam-water system uses a piping system containing air under pressure with a supplemental detection system in the same area as the sprinklers?

- A. Foam-water Deluge System
- B. Foam-water Spray System
- C. Foam-water Preaction System**
- D. Foam-water Dry Pipe System

This describes a foam-water preaction system. In this setup, the piping is charged with air under pressure and a supplemental detection system is installed in the same area as the sprinklers. Water is held back by a preaction valve and will not enter the pipes until the detection device detects a fire and releases the valve. Once water begins to fill the piping, foam concentrate is introduced to create the foam-water mixture at the sprinklers. This two-stage release helps prevent accidental discharge and ensures foam-water is deployed only when a fire is detected. Other foam-water types don't use this air-filled, detection-triggered release in the same way, which is why they don't match the description.

10. Foam-water deluge systems are applicable to the protection of which hazards?

- A. Electrical hazards.
- B. Two-dimensional flammable liquid hazards.**
- C. Solid combustible hazards.
- D. Gaseous fuel hazards.

Foam-water deluge systems are designed to control fires involving flammable liquids by delivering a foam blanket that blankets and cools the liquid surfaces. The foam film sits on top of the fuel, reducing vapor release and coating the liquid to slow reignition, which is especially effective for liquids that can spread over large areas. This makes them well suited for two-dimensional flammable liquid hazards—fires where the liquid spreads across floors or wide surfaces rather than burning in a single confined location. In those scenarios, the foam helps to rapidly cover the liquid surface and sustain cooling, improving extinguishment and limiting vapor production. They're not typically used for electrical hazards, solid combustible hazards, or gaseous fuel hazards, because those situations require different approaches: electrical areas demand precautions to avoid energized equipment, solid fuels are generally addressed with water or other methods suited to solid combustion, and fires involving gases need suppression methods focused on evacuating fuel and inhibiting flame propagation rather than forming a surface foam blanket.

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.

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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