

API 650 – WELDED TANKS FOR OIL STORAGE PRACTICE TEST (SAMPLE)

STUDY GUIDE



**SAMPLE STUDY GUIDE
WITH LIMITED QUESTIONS**

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THE FULL VERSION STUDY GUIDE**

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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. What does the term "allowed stress" refer to in API 650?
 - A. The minimal stress for safety
 - B. The average stress materials sustain
 - C. The maximum stress level during service
 - D. The stress limits after construction
2. In the absence of specific instructions from the purchaser, what is the recommended slope for the finished tank grade?
 - A. 1 inch in 5 feet
 - B. 1 inch in 10 feet
 - C. 1 inch in 15 feet
 - D. 1 inch in 20 feet
3. What is the minimum radius required for the rounded corners of insert plates?
 - A. 5" or $5t$ where t is the thickness of the shell
 - B. 4" or $4t$ where t is the thickness of the shell
 - C. 6" or $6t$ where t is the thickness of the shell
 - D. 8" or $8t$ where t is the thickness of the shell
4. Which of the following is considered a limit for the rules of API 650 standard?
 - A. The first sealing surface for proprietary connections
 - B. The first joint in a threaded connection
 - C. The face of the first flange in bolted connections
 - D. All of the above are limits
5. Which aspect is crucial in the design of tanks under API 650?
 - A. Cost-benefit analysis
 - B. Weather resistance
 - C. Structural integrity
 - D. Visual aesthetics

- 6. In relation to tank integrity, why is the nominal thickness significant?**
- A. It determines insulation thickness requirements
 - B. It defines standard installation practices
 - C. It is crucial for calculations for post-weld heat treatment and weld spacing
 - D. It dictates the overall tank design height
- 7. What kind of materials does the letter 'C' refer to in ASTM standards?**
- A. Ferrous metals
 - B. Composite materials
 - C. Cementitious, ceramic, concrete, and masonry materials
 - D. Structural materials
- 8. Why is the understanding of Corrosion Allowance important in tank design?**
- A. It determines the aesthetic aspect of the tank's surface
 - B. It ensures tanks can handle temperature variations
 - C. It compensates for material loss during the tank's operational life
 - D. It simplifies the construction process
- 9. What is the purpose of crowning the finished tank grade?**
- A. To enhance visual appearance
 - B. To allow for better drainage
 - C. To increase the structural integrity
 - D. To improve accessibility for maintenance
- 10. Which factor is critical for selecting the right foundation for a tank?**
- A. Cost of materials
 - B. Load distribution capabilities
 - C. Aesthetic considerations
 - D. Color of the materials

Answers

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

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Explanations

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1. What does the term "allowed stress" refer to in API 650?

- A. The minimal stress for safety
- B. The average stress materials sustain
- C. The maximum stress level during service**
- D. The stress limits after construction

The term "allowed stress" in API 650 refers to the maximum stress level that materials can sustain during service without causing deformation or failure. This concept is essential in ensuring the integrity and safety of welded tanks used for oil storage. Understanding allowed stress helps engineers and designers establish safe operating conditions, ensuring that the tank can withstand the various loads and environmental factors it may encounter throughout its operational life. In the context of API 650, allowed stress is determined based on material properties, design factors, and safety considerations. It provides a clear guideline for ensuring that the tank operates within safe limits, thereby minimizing the risk of structural failure or leaks that could lead to environmental hazards or other serious consequences.

2. In the absence of specific instructions from the purchaser, what is the recommended slope for the finished tank grade?

- A. 1 inch in 5 feet
- B. 1 inch in 10 feet**
- C. 1 inch in 15 feet
- D. 1 inch in 20 feet

The recommended slope for the finished tank grade being 1 inch in 10 feet is based on ensuring proper drainage and minimizing the potential for water accumulation around the tank foundation. A slope of this magnitude allows rainwater and other liquids to run off effectively, reducing the risk of soil erosion and structural issues that could arise from standing water. It is a balanced approach that provides sufficient drainage without being overly steep, which could complicate maintenance and tank access. While other slopes may offer benefits, they either do not provide optimal drainage (such as a steeper slope leading to potential washout) or are too gentle to effectively manage runoff. In the context of tank storage, maintaining a controlled environment around the tank is crucial, and a 1 inch in 10 feet slope achieves that balance effectively.

3. What is the minimum radius required for the rounded corners of insert plates?

- A. 5" or $5t$ where t is the thickness of the shell
- B. 4" or $4t$ where t is the thickness of the shell
- C. 6" or $6t$ where t is the thickness of the shell**
- D. 8" or $8t$ where t is the thickness of the shell

The minimum radius required for the rounded corners of insert plates is critical for ensuring both the structural integrity of the tank and the optimal performance of the welded seams. A radius of 6 inches or 6 times the thickness of the shell, represented as $6t$, effectively provides the necessary support and reduces stress concentration in these areas. This helps to avoid potential points of failure during service, especially when the tank undergoes thermal expansion, pressure variations, and other operational stresses. The 6-inch radius is stipulated in standards to cultivate a balance between manufacturability and mechanical performance, making it a widely accepted practice in the design and construction of welded tanks for oil storage. This standard ensures that the transition from flat surfaces to the rounded corners does not compromise the overall integrity and safety of the storage tank.

4. Which of the following is considered a limit for the rules of API 650 standard?

- A. The first sealing surface for proprietary connections
- B. The first joint in a threaded connection
- C. The face of the first flange in bolted connections
- D. All of the above are limits**

The consideration of limits within the rules of the API 650 standard encompasses various critical points of a welded tank's design and construction, which include the first sealing surface for proprietary connections, the first joint in a threaded connection, and the face of the first flange in bolted connections. These elements represent the key transition points where the integrity and performance of the tank can be significantly affected. The first sealing surface for proprietary connections is vital because it determines the effectiveness of the seal that prevents leaks. Similarly, the first joint in a threaded connection is crucial for maintaining strength and leak prevention, as it represents a potential weak point in the assembly. The face of the first flange in bolted connections is significant because it is essential for maintaining the pressure boundary and ensuring a secure connection between components. By considering all these points together as limits, API 650 sets a comprehensive framework to address possible vulnerabilities in welded tank constructions, thus ensuring safety, reliability, and adherence to standards in oil storage applications. Addressing each of these elements ensures that the tank achieves its operational specifications while minimizing risks of failure.

5. Which aspect is crucial in the design of tanks under API 650?

- A. Cost-benefit analysis
- B. Weather resistance
- C. Structural integrity**
- D. Visual aesthetics

In the design of tanks under API 650, structural integrity is a paramount aspect because it ensures the tank can withstand the various physical forces and stresses it will encounter during operation. This includes the weight of the liquid stored, environmental loads such as wind and seismic activity, and the effects of material fatigue over time. Structural integrity is essential for the tank's overall safety, preventing failures such as leaks or catastrophic collapses, which could lead to environmental hazards or loss of valuable products. The design principles outlined by API 650 focus on creating tanks that are not only capable of holding oil or other liquids securely but also maintain their shape and durability under pressure and external conditions. Therefore, considerations like proper material selection, design calculations for wall thickness, and reinforcement where necessary are fundamental to achieving structural integrity. Without this focus, the tank could face severe operational risks, which is why this aspect is prioritized in the design process.

6. In relation to tank integrity, why is the nominal thickness significant?

- A. It determines insulation thickness requirements
- B. It defines standard installation practices
- C. It is crucial for calculations for post-weld heat treatment and weld spacing**
- D. It dictates the overall tank design height

The significance of nominal thickness in relation to tank integrity is critical for ensuring that the tank can withstand operational stresses while maintaining safety and reliability. Nominal thickness is used in various calculations related to structural integrity, particularly when assessing the tank's ability to handle internal pressures, external loads, and environmental factors. For instance, nominal thickness is a fundamental component in determining the minimum required thickness of the tank walls, which ensures that they are adequate to prevent failure or leakage. This thickness also plays a vital role in calculations for post-weld heat treatment, as it helps in assessing material properties and stress management after welding is performed. The spacing of welds is influenced by the nominal thickness as well, impacting the overall structural stability and performance of the tank. Understanding nominal thickness is essential for engineers during the design phase, as it directly affects the safety margins incorporated into the tank design. This ensures compliance with industry standards and practices to uphold the integrity of the welded storage tanks. Other aspects such as insulation thickness requirements, installation practices, and overall tank design height, while relevant to tank construction and operation, are not as closely linked to the calculations and principles specifically tied to the concept of nominal thickness and its impact on integrity.

7. What kind of materials does the letter 'C' refer to in ASTM standards?

- A. Ferrous metals
- B. Composite materials
- C. Cementitious, ceramic, concrete, and masonry materials**
- D. Structural materials

The letter 'C' in ASTM standards specifically refers to cementitious, ceramic, concrete, and masonry materials. This category encompasses a wide range of materials that are integral to construction and infrastructure projects. Cementitious materials include products such as cement and concrete, which are essential for creating strong and durable structures. Ceramic materials, often utilized in applications requiring heat resistance or electrical insulation, also fit under this classification. Additionally, masonry materials, which include bricks and blocks, are paramount in traditional building practices for creating walls and other load-bearing structures. Understanding this classification is vital for professionals in the field because it informs the selection of appropriate materials for construction projects, ensuring that they meet specific performance standards and durability requirements set forth by ASTM.

8. Why is the understanding of Corrosion Allowance important in tank design?

- A. It determines the aesthetic aspect of the tank's surface
- B. It ensures tanks can handle temperature variations
- C. It compensates for material loss during the tank's operational life**
- D. It simplifies the construction process

Understanding corrosion allowance is crucial in tank design because it compensates for material loss that can occur during the tank's operational life. Tanks used for oil storage are typically subjected to various environmental factors and corrosive substances that can lead to deterioration of the material over time. By incorporating a corrosion allowance, engineers can ensure that the tank's design accounts for this anticipated wear, maintaining the structural integrity and functionality of the tank throughout its intended lifespan. This proactive approach helps to prevent failures or leaks that could occur due to unaccounted corrosion, thereby enhancing safety and reliability in storage operations. It reflects a comprehensive understanding of how materials interact with their environment, leading to more durable designs that can withstand operational conditions.

9. What is the purpose of crowning the finished tank grade?

- A. To enhance visual appearance
- B. To allow for better drainage**
- C. To increase the structural integrity
- D. To improve accessibility for maintenance

Crowning the finished tank grade serves primarily to allow for better drainage. This design feature is important in preventing water from accumulating around the base of the tank, which can lead to issues such as soil erosion or corrosion of the tank structure. By sloping the tank grade toward the perimeter, rainwater and other forms of precipitation can flow away from the tank, enhancing the longevity of both the tank and its foundation. While the other options, such as enhancing visual appearance, increasing structural integrity, and improving accessibility for maintenance, may have some relevance in specific contexts, they do not capture the fundamental engineering objective of crowning the tank grade. Correct drainage is crucial for the overall operational effectiveness and safety of the tank, emphasizing why this option is the most appropriate choice.

10. Which factor is critical for selecting the right foundation for a tank?

- A. Cost of materials
- B. Load distribution capabilities**
- C. Aesthetic considerations
- D. Color of the materials

Choosing the right foundation for a storage tank is fundamentally linked to its load distribution capabilities. This factor ensures that the tank and its contents are adequately supported to prevent structural failure or ground deformation. A well-designed foundation must accommodate the weight of the tank, including the contents, and distribute that load evenly across the underlying soil or substrate. If the foundation fails to adequately support the tank's load, it can lead to significant issues such as tank settlement, leaks, or even catastrophic failure, which can have serious safety and environmental implications. While aspects like cost, aesthetics, and color of materials may play a role in the overall project considerations, they do not directly impact the fundamental purpose of the foundation, which is to provide stability and support under load. Prioritizing the load distribution capabilities helps ensure the long-term integrity and functionality of the tank system.

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://api650.examzify.com>

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

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