

API 572 RP – INSPECTION OF PRESSURE VESSELS 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. If major cracking is found in a concrete foundation and vessel settlement is ruled out, what is a likely cause?**
 - A. Improper waterproofing
 - B. Fatigue or poor materials
 - C. Excessive load
 - D. Environmental factors

- 2. What is a common method to check the base metal condition under a deteriorated lining?**
 - A. Visual inspection
 - B. Magnetic testing
 - C. From the external surface, UT scan areas of concern
 - D. Pressure testing

- 3. Prior to inspecting a vessel, what must the inspector understand?**
 - A. The purpose of the vessel
 - B. The design pressure of the vessel
 - C. The operational history of the vessel
 - D. The location of all valves

- 4. In an exchanger, where is accelerated corrosion most likely to occur?**
 - A. Tube inlets
 - B. Bundle exit
 - C. Shell exterior
 - D. Thermal expansion regions

- 5. What are the two primary purposes of refractory linings?**
 - A. Corrosion resistance and insulation
 - B. Thermal insulation and pressure containment
 - C. Strength enhancement and sealing
 - D. Weight reduction and noise suppression

- 6. Which inspection method is indicated for checking details on welded areas in cyclic temperature operation?**
- A. Thickness gauging
 - B. Visual inspection only
 - C. Magnetic particle or liquid penetrant testing
 - D. Electro-chemical analysis
- 7. Which coating failure is often overlooked during visual inspections?**
- A. Film lifting
 - B. Blistering
 - C. Peeling
 - D. Discoloration
- 8. What type of examination should be used for guy wires supporting tall vessels?**
- A. Visual Testing (VT)
 - B. Magnetic Particle Testing
 - C. Ultrasonic Testing
 - D. Radiographic Testing
- 9. What is the primary concern with regards to acidic corrosion products in storage vessels?**
- A. Increased pressure build-up
 - B. Potential for hydrogen blistering
 - C. Leaking and spillage
 - D. Thermal expansion issues
- 10. Under what circumstances is CUI considered an inspection concern for insulated vessels operating at 500°F?**
- A. Continuous operation
 - B. Low ambient temperatures
 - C. Intermittent service
 - D. High humidity

Answers

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

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Explanations

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1. If major cracking is found in a concrete foundation and vessel settlement is ruled out, what is a likely cause?

- A. Improper waterproofing
- B. Fatigue or poor materials**
- C. Excessive load
- D. Environmental factors

Choosing fatigue or poor materials as a likely cause for major cracking in a concrete foundation, when vessel settlement has been ruled out, is well-founded. Fatigue refers to the weakening of a material caused by repeated loading and unloading cycles, which can lead to the formation of cracks. If the materials used in the foundation are of poor quality or not suitable for the specific environmental or loading conditions they are exposed to, they can fail to perform as intended, leading to significant structural issues such as cracking. This situation emphasizes the importance of selecting appropriate materials that can withstand operational stresses and environmental conditions. On top of that, the choice of construction methods and adherence to standards can also influence the durability of the concrete foundation. Understanding the role of material properties and structural design is crucial in maintaining the integrity of pressure vessels and their supporting structures. This insight can help reinforce the need for proper engineering practices to ensure long-term performance and safety.

2. What is a common method to check the base metal condition under a deteriorated lining?

- A. Visual inspection
- B. Magnetic testing
- C. From the external surface, UT scan areas of concern**
- D. Pressure testing

To assess the condition of the base metal under a deteriorated lining, conducting an ultrasonic thickness (UT) scan from the external surface over areas of concern proves to be an effective technique. This method allows inspectors to evaluate the thickness of the base metal without having to remove the lining. By utilizing ultrasonic waves, the inspector can gather data about the metal's condition, identify potential areas of corrosion or degradation, and determine whether the structural integrity of the pressure vessel is compromised. Ultrasonic testing is particularly advantageous because it can effectively penetrate the lining material, providing reliable thickness measurements and offering insights into any hidden defects that may not be visible through visual inspection. This capability is crucial since deteriorated linings can hide significant issues with the base metal underneath. While visual inspections can provide some information on the condition of the lining itself, they may not reveal the underlying base metal issues. Magnetic testing, on the other hand, is generally used for materials that can be magnetized and is not as effective for assessing metal under a non-metallic lining. Pressure testing primarily evaluates the integrity of the entire vessel under pressure conditions but does not directly assess the condition of the base metal beneath a lining. Therefore, utilizing an ultrasonic thickness scan from the outside serves as the most competent method

3. Prior to inspecting a vessel, what must the inspector understand?

- A. The purpose of the vessel**
- B. The design pressure of the vessel
- C. The operational history of the vessel
- D. The location of all valves

Understanding the purpose of the vessel is crucial for an inspector prior to conducting any evaluations. The purpose provides insight into how the vessel is expected to function within its operational context. For example, knowing whether the vessel is designed for storage, heat exchange, or processing helps the inspector to identify the critical areas that may be subject to specific stresses, corrosion, or other forms of degradation relevant to that intended use. Additionally, different purposes may dictate various regulatory requirements or industry standards that the inspector must consider during the assessment. While other factors, such as the design pressure, operational history, and location of valves, are also important and contribute to a comprehensive understanding of the vessel's condition and safety, they are secondary to grasping the fundamental purpose. This foundational knowledge ultimately informs the inspection criteria and methodology that the inspector will apply, guiding them in focusing on the most relevant aspects of the vessel's integrity and performance.

4. In an exchanger, where is accelerated corrosion most likely to occur?

- A. Tube inlets**
- B. Bundle exit
- C. Shell exterior
- D. Thermal expansion regions

Accelerated corrosion in heat exchangers is most likely to occur at the tube inlets. This is primarily due to the differential velocities and turbulence that can create localized wear and erosion at the points where fluids enter the tubes. High flow rates and turbulence can contribute to the formation of corrosion pits, especially in environments with corrosive fluids. The combination of aeration, velocity changes, and potentially stagnant or low flow conditions leads to more aggressive corrosion processes. In contrast, the bundle exit typically does not experience the same level of turbulent flow and potential corrosive damage as the inlets, as the fluid dynamics are less aggressive. The shell exterior is generally more protected from corrosion in many contexts since it is less exposed to high-velocity flow. Thermal expansion regions are critical points in a pressure vessel but contribute more to issues related to thermal stress and fatigue rather than specifically to accelerated corrosion in the same manner that tube inlets do.

5. What are the two primary purposes of refractory linings?

- A. Corrosion resistance and insulation**
- B. Thermal insulation and pressure containment
- C. Strength enhancement and sealing
- D. Weight reduction and noise suppression

Refractory linings are specifically designed to withstand high temperatures and protect the underlying structures from extreme thermal conditions. The two primary purposes of these linings are corrosion resistance and insulation. Corrosion resistance is critical because many applications involving refractory linings occur in aggressive environments, such as furnaces or reactors, where acidic or basic substances may be present. The lining acts as a barrier, preventing direct contact between the corrosive materials and the vessel walls, thereby prolonging the lifespan of the pressure vessel. Insulation is another essential function of refractory linings. These materials have low thermal conductivity, which helps to minimize heat loss during operation and ensures that the temperatures within the equipment remain stable and effective. This thermal insulation is vital for energy efficiency and the overall performance of high-temperature processes. While there may be other considerations with refractories, such as mechanical strength or noise reduction, these do not encompass the primary functions as effectively as corrosion resistance and thermal insulation do.

6. Which inspection method is indicated for checking details on welded areas in cyclic temperature operation?

- A. Thickness gauging
- B. Visual inspection only
- C. Magnetic particle or liquid penetrant testing**
- D. Electro-chemical analysis

The selection of magnetic particle or liquid penetrant testing as the inspection method for checking details on welded areas in cyclic temperature operations is based on the ability of these methods to detect surface and near-surface discontinuities that can occur due to thermal cycling. Welded joints in pressure vessels may experience fatigue and cracking as a result of the expansion and contraction caused by fluctuating temperatures. Magnetic particle testing is highly effective in revealing surface and slightly subsurface defects, such as cracks and inclusions in ferromagnetic materials. Liquid penetrant testing complements this by being suitable for a variety of non-magnetic materials, allowing it to uncover minute surface cracks and defects that could compromise the weld integrity. In contrast, thickness gauging primarily measures wall thickness and does not provide information about surface defects, making it less suitable for this particular purpose. Visual inspection, while important, may not detect small, critical cracks that can cause failure under stress. Electro-chemical analysis focuses on the chemical composition of the material rather than the mechanical integrity of the welds, thus lacking relevance in identifying structural issues in welded areas due to thermal stresses. By choosing magnetic particle or liquid penetrant testing, inspectors can ensure a more thorough assessment of weld integrity in environments subject to cyclic temperature variations.

7. Which coating failure is often overlooked during visual inspections?

- A. Film lifting**
- B. Blistering
- C. Peeling
- D. Discoloration

Film lifting is often overlooked during visual inspections because it may not always be readily apparent to the inspector. This type of coating failure occurs when the film of the coating begins to separate from the substrate, which can be subtle, especially if there is no significant deformation or cracking associated with it. It often manifests as small areas where the film is not fully adhered, which might only become obvious under certain lighting conditions or under closer inspection. In a routine visual inspection, inspectors may focus on more obvious forms of coating failures such as blistering, peeling, or discoloration. Blistering indicates gas or moisture trapped beneath the surface, peeling shows that the coating has entirely lost its adhesion, and discoloration may signal chemical reactions or degradation. These types of issues typically present clear visual cues that draw attention. In contrast, film lifting might be easily missed as it may not present significant visual symptoms right away, leading to potential oversight in terms of assessing the integrity of the coating and the underlying substrate.

8. What type of examination should be used for guy wires supporting tall vessels?

- A. Visual Testing (VT)**
- B. Magnetic Particle Testing
- C. Ultrasonic Testing
- D. Radiographic Testing

The appropriate examination method for guy wires supporting tall vessels is Visual Testing (VT). This method involves a thorough visual inspection of the guy wires to identify any visible signs of deterioration, such as corrosion, wear, or physical damage. Visual Testing is particularly valuable for guy wires because it allows inspectors to observe both the general condition of the wires and their connections, ensuring that they are properly tensioned and securely anchored. This method is effective, as it can quickly highlight any immediate issues that may affect the structural integrity of the guy wires. It's a straightforward and cost-effective approach, typically conducted by trained personnel who can identify any potential safety hazards associated with the supporting cables. Given the risk factors involved in the support of tall vessels, maintaining the integrity of these components through regular visual inspections is crucial. Other testing methods like Magnetic Particle Testing, Ultrasonic Testing, and Radiographic Testing are more suited for assessing the integrity of welds, structural components, or materials where subsurface or internal flaws are a concern. They involve more complex procedures and equipment that are not necessary for the routine examination of guy wires, where visual conditions are usually sufficient to assess their condition effectively.

9. What is the primary concern with regards to acidic corrosion products in storage vessels?

- A. Increased pressure build-up
- B. Potential for hydrogen blistering**
- C. Leaking and spillage
- D. Thermal expansion issues

The primary concern regarding acidic corrosion products in storage vessels is the potential for hydrogen blistering. When acidic conditions are present, particularly in conjunction with certain metals, hydrogen can be generated as a byproduct of corrosion reactions. This hydrogen gas can infiltrate the metal structure, leading to the formation of blisters. These blisters can create localized stress and weaken the material integrity of the vessel, ultimately resulting in catastrophic failures if not monitored and mitigated. Hydrogen blistering is especially critical in pressure vessels because it can compromise their ability to safely contain fluids under pressure. Recognizing and addressing the risks associated with acidic corrosion products is essential for maintaining the longevity and safety of storage vessels, thereby preventing hazardous incidents. While other concerns like increased pressure build-up, leaking and spillage, and thermal expansion issues can also be relevant in certain contexts, they are not as directly tied to the specific impact of acidic corrosion products as hydrogen blistering is. This makes the potential for hydrogen blistering the most critical issue in this scenario.

10. Under what circumstances is CUI considered an inspection concern for insulated vessels operating at 500°F?

- A. Continuous operation
- B. Low ambient temperatures
- C. Intermittent service**
- D. High humidity

Corrosion Under Insulation (CUI) can be a significant concern for insulated vessels, especially when they operate at elevated temperatures like 500°F. Intermittent service creates conditions that are particularly conducive to CUI. This is primarily because such service may lead to fluctuations in temperature that can cause condensation to form between the insulation and the vessel surface. When these vessels heat up, moisture trapped within the insulation can evaporate, but during cool down periods, particularly in environments with varying temperatures, the moisture can condense back, leading to the risk of corrosion. With intermittent service, the insulation may remain wet for extended periods, especially if it is not well-ventilated or waterproofed. As insulation retains moisture in these instances, it heightens the likelihood of corrosion forming on the vessel surface. Therefore, under these specific circumstances, CUI becomes a primary inspection concern, as it may compromise the integrity and reliability of the vessel over time. Continuous operation might help reduce the risk of CUI, as a consistently high temperature can minimize the condensation effect. Low ambient temperatures and high humidity can also contribute to corrosion problems, but they are generally less critical factors for vessels operating at elevated temperatures if the insulation remains intact and dry.

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://api572rp.examzify.com>

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

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