

# API 1104 - Welding of Pipelines and Related Facilities 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. What is meant by "root pass" in pipeline welding?**
  - A. The final pass of weld metal**
  - B. The first pass of weld metal in the joint root area**
  - C. The secondary weld pass**
  - D. The pass that reinforces the outer layer**
  
- 2. What is the acceptable condition after a bend test?**
  - A. No cracks exceeding 1/4" in the weld area**
  - B. Bend does not break in several pieces**
  - C. No defect exceeds 1/8" or half the nominal wall thickness, whichever is smaller**
  - D. All of the above**
  
- 3. What does API stand for in API 1104?**
  - A. American Petroleum Institute**
  - B. Automated Process Integration**
  - C. Applied Pipeline Integrity**
  - D. Alternate Pipeline Infrastructure**
  
- 4. How is Incomplete Fusion (IF) due to cold lap defined?**
  - A. Weld metal not melted in the root cap of the joint**
  - B. Weld metal not melted in the cap of the joint**
  - C. A discontinuity between two adjacent weld beads or between the weld metal and base metal that is not open to the surface**
  - D. A discontinuity along the edge of the cap**
  
- 5. When submitting an alternative welding process for committee consideration, which item is NOT required to be included?**
  - A. Repair procedures**
  - B. Welding inspection methods**
  - C. Proposed non-essential variables**
  - D. None of the above**

- 6. When radiographed with the source inside the piping, how many penetrameters must be used across the weld?**
- A. At least 2**
  - B. At least 4**
  - C. At least 6**
  - D. None of these**
- 7. How many total specimens must be tested when a welding procedure is performed on 8" x 0.500" wall?**
- A. 4**
  - B. 8**
  - C. 16**
  - D. 32**
- 8. Nondestructive testing personnel (Level III) must be re-certified at least every how many years?**
- A. 5 years**
  - B. 2 years**
  - C. 3 years**
  - D. 4 years**
- 9. What happens if the tensile strength tests are omitted during welder qualification?**
- A. The welder is disqualified**
  - B. The weld requires redoing**
  - C. Nick break testing is required instead**
  - D. No action is required**
- 10. Can butt weld specimens for a welder qualification test include the longitudinal weld?**
- A. True**
  - B. False**
  - C. The welder may select any location**
  - D. None of the above**

## Answers

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

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## **Explanations**

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**1. What is meant by "root pass" in pipeline welding?**

- A. The final pass of weld metal
- B. The first pass of weld metal in the joint root area**
- C. The secondary weld pass
- D. The pass that reinforces the outer layer

The term "root pass" in pipeline welding refers specifically to the first pass of weld metal that is applied at the joint root area, where the two pieces of material meet. This initial weld is crucial because it establishes the foundation for subsequent layers of weld metal. The root pass is fundamental for ensuring that there is good penetration into the base material, which is critical to achieving the desired weld strength and integrity. Proper execution of the root pass can help prevent defects such as lack of fusion or insufficient penetration, which could compromise the overall quality of the weld. This initial pass often forms the underlying structure that later passes build upon, ensuring that the weld joint remains strong and watertight. The root pass may be completed with careful attention to technique and parameters (like heat input and travel speed) to ensure optimal quality. This is why it is important in the context of API 1104, where the standards focus on the quality and reliability of welded joints in pipelines.

**2. What is the acceptable condition after a bend test?**

- A. No cracks exceeding 1/4" in the weld area
- B. Bend does not break in several pieces
- C. No defect exceeds 1/8" or half the nominal wall thickness, whichever is smaller**
- D. All of the above

The condition that is considered acceptable after a bend test in the context of welding inspections is that no defect may exceed 1/8" or half the nominal wall thickness, whichever is smaller. This criterion ensures that the integrity of the welded joint is maintained and that the weld has sufficient ductility and strength in its intended application. A defect exceeding this measurement could indicate weaknesses that compromise the overall performance of the weld under operational conditions. Therefore, adhering to this standard is crucial for safety and reliability in pipeline construction and maintenance. The other conditions mentioned may seem relevant, but they do not encompass the comprehensive standard of acceptability as specified in industry guidelines. The specific measurement limits for defects provide a clear and quantifiable parameter for evaluating the weld's quality.

### 3. What does API stand for in API 1104?

- A. American Petroleum Institute**
- B. Automated Process Integration**
- C. Applied Pipeline Integrity**
- D. Alternate Pipeline Infrastructure**

API stands for American Petroleum Institute in the context of API 1104. This organization is a prominent trade association that represents the interests of the oil and natural gas industry in the United States. It plays a crucial role in developing industry standards, promoting safety, and ensuring environmental protection. API 1104 specifically addresses the welding of pipelines and related facilities, outlining standards to ensure the integrity and safety of these structures. The significance of API as a governing body adds credibility and authority to the standards outlined in API 1104, impacting how welding practices are implemented across the industry. Understanding this term is essential for anyone engaged in pipeline welding and maintenance, as it provides insight into the regulatory framework and industry benchmarks that guide safe and effective practices.

### 4. How is Incomplete Fusion (IF) due to cold lap defined?

- A. Weld metal not melted in the root cap of the joint**
- B. Weld metal not melted in the cap of the joint**
- C. A discontinuity between two adjacent weld beads or between the weld metal and base metal that is not open to the surface**
- D. A discontinuity along the edge of the cap**

Incomplete fusion (IF) specifically refers to a condition where the weld metal does not fully fuse with the adjoining weld or base metal surfaces. This condition occurs when there is insufficient heat, improper technique, or cleanliness issues during the welding process. The correct choice defines this condition as a discontinuity that exists between two adjacent weld beads or between the weld metal and the base metal that is not open to the surface. This emphasizes that the incomplete fusion results in a weak bond without any visible external cracks or gaps, creating a potential failure point that can affect the integrity of the welded joint. Understanding this definition is crucial for welders and inspectors to properly identify and address issues related to incomplete fusion, ensuring that welds meet the required strength and quality standards outlined in the API 1104 guidelines.

**5. When submitting an alternative welding process for committee consideration, which item is NOT required to be included?**

- A. Repair procedures**
- B. Welding inspection methods**
- C. Proposed non-essential variables**
- D. None of the above**

When submitting an alternative welding process for committee consideration, the correct reason for excluding proposed non-essential variables is that the primary focus is typically on the essential variables that directly impact the integrity and performance of the weld. Essential variables are critical parameters that, if changed, could significantly affect the welding process and the quality of the completed weld. In contrast, non-essential variables might not have a direct bearing on the weld quality or strength, and therefore, their inclusion in the submission is not necessary. The committee is primarily concerned with evaluating the risk factors and ensuring the proposed welding process adheres to safety and quality standards. Hence, while repair procedures and welding inspection methods are crucial for ensuring that the weld meets the appropriate standards and can be properly evaluated, non-essential variables are less critical in this context. This rationale explains why including proposed non-essential variables is not a requirement for consideration by the committee.

**6. When radiographed with the source inside the piping, how many penetrameters must be used across the weld?**

- A. At least 2**
- B. At least 4**
- C. At least 6**
- D. None of these**

The requirement for using at least four penetrameters when radiographing a weld with the source inside the piping is based on ensuring comprehensive assessment of the weld quality. Penetrameters are used to measure the sensitivity of the radiographic film or digital detection method, assessing how well the radiograph can reveal defects within the weld. When conducting an internal radiographic examination, using four penetrameters across the weld helps establish a more detailed evaluation of the weld's integrity, ensuring that any possible discontinuities are detectable. They provide a means of calibrating the radiographic exposure and ensure that the entire thickness of the weld is adequately represented and analyzed. Utilizing a minimum of four penetrameters also aligns with industry best practices and standards stipulated in API 1104, which prioritizes the quality and reliability of the weld inspection process. The presence of multiple penetrameters ensures that variations in exposure and sensitivity are accounted for, leading to a more reliable overall assessment of the weld's condition. In this context, employing fewer than four penetrameters could compromise the thoroughness of the inspection process, potentially overlooking critical defects that might be present. Thus, the requirement for at least four penetrameters is integral to maintaining high safety

**7. How many total specimens must be tested when a welding procedure is performed on 8" x 0.500" wall?**

- A. 4
- B. 8**
- C. 16
- D. 32

In the context of API 1104, the number of total specimens required for testing a welding procedure is based on specific criteria outlined in the standard. For a pipe of 8" in diameter and 0.500" wall thickness, the standard typically dictates that for the qualification of a welding procedure, a minimum of eight specimens must be tested. This requirement ensures that the welding procedure has been sufficiently evaluated across a range of conditions and potential defects. Testing multiple specimens helps to guarantee the structural integrity and performance of the welds under the specified conditions. Each specimen contributes to a comprehensive assessment of the welding technique, material compatibility, and the overall reliability of the weld. The choice of eight specimens aligns with the goals of achieving statistical significance in the results, allowing for a more robust understanding of the welding procedure's effectiveness.

**8. Nondestructive testing personnel (Level III) must be re-certified at least every how many years?**

- A. 5 years**
- B. 2 years
- C. 3 years
- D. 4 years

Nondestructive testing personnel at Level III must be re-certified at least every 5 years to ensure they remain current with the latest standards, techniques, and practices in the field. This time frame is established to maintain a high level of skill and competency, ensuring that personnel are up-to-date with evolving technologies and industry requirements. Re-certification helps to verify that technicians continue to meet the qualifications necessary to conduct testing effectively and accurately, which is crucial for maintaining the integrity and safety of welds in pipelines and related facilities. Regular re-evaluation enhances quality assurance and fosters ongoing professional development in this critical area of welding inspection.

**9. What happens if the tensile strength tests are omitted during welder qualification?**

- A. The welder is disqualified**
- B. The weld requires redoing**
- C. Nick break testing is required instead**
- D. No action is required**

When tensile strength tests are omitted during the welder qualification process, it is important to understand the role of alternative testing methods. Specifically, when tensile strength tests are not conducted, nick break testing may be mandated as a substitute to ensure that the weld integrity and strength can still be validated. Nick break testing involves assessing the weld joint's ability to withstand stress and is a standard practice to evaluate weld quality. It can reveal information about the weld's ductility and strength, which are critical to determining a welder's capability. This type of testing is especially pertinent when standard tensile tests cannot be performed, as it still provides a means to verify that the weld meets necessary specifications and standards outlined in the API 1104. Thus, selecting nick break testing in lieu of tensile strength tests is a reasonable and established practice within the welding qualification process to maintain quality assurance.

**10. Can butt weld specimens for a welder qualification test include the longitudinal weld?**

- A. True**
- B. False**
- C. The welder may select any location**
- D. None of the above**

Butt weld specimens for a welder qualification test can indeed include the longitudinal weld. This is because the purpose of the qualification test is to assess the welder's ability to produce sound welds in various configurations, which include both the longitudinal and circumferential seams. When qualifying a welder, the testing should encompass the types of welds the welder will actually perform in the field, and a longitudinal weld is a common type that may be encountered in pipeline construction and repair. The inclusion of longitudinal welds allows for a comprehensive evaluation of the welder's skills, ensuring that they can handle different welding positions and joint types effectively. The focus is on the welder's capability to make quality welds that meet the requirements specified in the API 1104 standard and other applicable codes and practices. This understanding underlines the significance of practical testing in welding qualification, making the option true.

## 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://api1104.examzify.com>**

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

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