

Gas Tungsten Arc Welding (GTAW) Practice Exam (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

- 1. What is backhand welding in GTAW?**
 - A. Welding with a horizontal torch angle**
 - B. A technique where the torch is angled towards the direction of travel**
 - C. A method with the torch angled away from the direction of travel for better control**
 - D. A process of welding without filler material**
- 2. What is the amperage range for 3/32" EWTh-2 tungsten electrodes?**
 - A. 70-150 amps**
 - B. 150-250 amps**
 - C. 250-400 amps**
 - D. 100-160 amps**
- 3. Which type of filler metal is commonly used in GTAW for stainless steel?**
 - A. ER4047**
 - B. ER308L**
 - C. ER70S-6**
 - D. ER5356**
- 4. What describes forehand welding in GTAW?**
 - A. Welding with the torch angled away from the weld**
 - B. A method that helps improve control in thin materials**
 - C. Welding with the torch angled towards the direction of travel**
 - D. A process where the electrode is held vertically**
- 5. What troubleshooting step should be taken if the arc goes out during GTAW?**
 - A. Adjust the filler material immediately**
 - B. Check the arc length and gas flow**
 - C. Change the tungsten electrode right away**
 - D. Wait and restart the machine**

- 6. Why is it essential to use the correct filler rod in GTAW?**
- A. It reduces welding time**
 - B. It ensures compatibility with the base metals**
 - C. It eliminates the need for a gas shield**
 - D. It improves the visibility of the weld**
- 7. What is the typical amperage range for a 1/16" tungsten electrode?**
- A. 50-100 amps**
 - B. 100-160 amps**
 - C. 160-210 amps**
 - D. 70-150 amps**
- 8. What is the function of the filler rod in the GTAW process?**
- A. To act as a grounding electrode**
 - B. To provide additional material to the weld pool**
 - C. To stabilize the arc**
 - D. To shield the welding area**
- 9. Which tungsten electrode alloy is commonly used in GTAW?**
- A. 1% tungsten-zirconium**
 - B. 2% thoriated tungsten**
 - C. 5% lanthanated tungsten**
 - D. 3% cerium tungsten**
- 10. What is the melting point of tungsten?**
- A. Approximately 2500 F**
 - B. Approximately 3200 F**
 - C. Approximately 4500 F**
 - D. Approximately 6200 F**

Answers

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

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Explanations

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1. What is backhand welding in GTAW?

- A. Welding with a horizontal torch angle
- B. A technique where the torch is angled towards the direction of travel
- C. A method with the torch angled away from the direction of travel for better control**
- D. A process of welding without filler material

Backhand welding in Gas Tungsten Arc Welding (GTAW) refers to the technique where the welder holds the torch at an angle away from the direction of travel. This approach is beneficial for creating a more controlled and stable arc, as it allows the welder to have better visibility of the weld pool and the base metal. By angling the torch backward, the operator can also more effectively manage heat distribution, reducing the risk of overheating the base material, which is particularly important when welding thin sections or materials prone to warping. In this technique, the weld pool is easily manipulated, and the welder can better manage the amount of filler material that is introduced, making it an ideal method for ensuring high-quality welds with a clean finish.

2. What is the amperage range for 3/32" EWTh-2 tungsten electrodes?

- A. 70-150 amps
- B. 150-250 amps**
- C. 250-400 amps
- D. 100-160 amps

The appropriate amperage range for 3/32" EWTh-2 tungsten electrodes is 150-250 amps. This range ensures optimal performance while welding with this electrode size. The EWTh-2 tungsten, which contains 2% thorium, is designed for use in high-temperature applications and is capable of handling higher amounts of amperage. When using 3/32" tungsten electrodes, it's essential to consider the type of material being welded and the welding process parameters. At this amperage range, the tungsten remains stable, allowing for a clean and precise arc. Operating outside of this range could lead to issues such as electrode burn-off or failure to generate a sufficient arc, compromising the quality of the weld. Therefore, understanding the correct amperage range is vital for achieving high-quality welds and ensuring the longevity of the tungsten electrode during the GTAW process.

3. Which type of filler metal is commonly used in GTAW for stainless steel?

- A. ER4047**
- B. ER308L**
- C. ER70S-6**
- D. ER5356**

The type of filler metal commonly used in Gas Tungsten Arc Welding (GTAW) for stainless steel is ER308L. This filler metal is specifically formulated for welding austenitic stainless steels, which are known for their excellent corrosion resistance and high-temperature strength. ER308L is ideal as it offers good mechanical properties and corrosion resistance in the weld area, ensuring that the welded joint maintains compatibility with the base stainless steel material. In GTAW, using the appropriate filler metal is crucial for achieving optimal results, including adequate strength, ductility, and resistance to corrosion. ER308L is widely accepted for its versatility and effectiveness in various applications involving stainless steel. The other filler metals listed serve different purposes; for example, ER4047 is typically used for welding aluminum-silicon alloys, ER70S-6 is intended for carbon steel applications, and ER5356 is used primarily for welding magnesium alloy. Thus, ER308L stands out as the best choice specifically for stainless steel welding in GTAW processes.

4. What describes forehand welding in GTAW?

- A. Welding with the torch angled away from the weld**
- B. A method that helps improve control in thin materials**
- C. Welding with the torch angled towards the direction of travel**
- D. A process where the electrode is held vertically**

Forehand welding in Gas Tungsten Arc Welding (GTAW) is characterized by the technique of angling the torch towards the direction of travel. This approach allows the welder to maintain better control over the weld pool and provides a steady heat application to the joint being welded. It is particularly beneficial when working with materials that require a keen focus on the heat input, such as thin plates, as it encourages smooth bead formation and reduces the risk of burn-through. This method ensures that the welder effectively directs the shielding gas and heat to the area in front of the torch, promoting optimal fusion and penetration. By having the torch angled towards the journey of the weld, the operator can manipulate the puddle more precisely, which is essential for achieving high-quality welds in sensitive applications or with challenging materials. The increased visibility of the weld pool also aids in better decision-making during the welding process.

5. What troubleshooting step should be taken if the arc goes out during GTAW?

- A. Adjust the filler material immediately**
- B. Check the arc length and gas flow**
- C. Change the tungsten electrode right away**
- D. Wait and restart the machine**

When troubleshooting an issue where the arc goes out during Gas Tungsten Arc Welding (GTAW), checking the arc length and gas flow is essential. The arc length refers to the distance between the tungsten electrode and the workpiece; if this distance is too great, the arc may extinguish. Additionally, the shielding gas flow is critical in protecting the weld pool from contamination. Insufficient gas flow can lead to an unstable arc, which can also cause the arc to go out. By ensuring that both the arc length is appropriate and that the shielding gas is flowing correctly, the welder can stabilize the arc and prevent further interruptions. This step is foundational in maintaining the quality and integrity of the weld. Adjusting the filler material or changing the tungsten electrode might not directly address the immediate reason for the arc extinguishing and could lead to unnecessary delays in troubleshooting. Restarting the machine may not resolve the underlying issue, as improper settings or conditions might still persist. Hence, focusing on the arc length and gas flow provides a more effective first response to this problem.

6. Why is it essential to use the correct filler rod in GTAW?

- A. It reduces welding time**
- B. It ensures compatibility with the base metals**
- C. It eliminates the need for a gas shield**
- D. It improves the visibility of the weld**

Using the correct filler rod in Gas Tungsten Arc Welding (GTAW) is crucial for ensuring compatibility with the base metals being joined. Different materials have varying chemical compositions, melting points, and thermal properties. The filler rod must match or closely resemble the base metals to achieve a good weld quality, mechanical strength, and overall integrity of the weld joint. When the filler rod is compatible with the base metals, it allows for better fusion, minimizing issues such as cracking, porosity, and weak joints. This compatibility is essential for avoiding contamination and providing the desired mechanical properties after welding. In essence, using the correct filler rod contributes significantly to the performance and durability of the final welded assembly. While factors such as welding time, visibility, and gas shielding are important in the welding process, they do not directly address the fundamental requirement of achieving metallurgical compatibility between the filler rod and the base metals, which is a key determinant of the overall success of the weld.

7. What is the typical amperage range for a 1/16" tungsten electrode?

- A. 50-100 amps**
- B. 100-160 amps**
- C. 160-210 amps**
- D. 70-150 amps**

The typical amperage range for a 1/16" tungsten electrode is generally around 50-100 amps. This range is ideal for achieving a stable arc while maintaining proper heat input for various materials. When using a tungsten electrode of this diameter, the amperage needs to be carefully chosen to avoid overheating the electrode, which can lead to burn-off or contamination. In GTAW, the correct amperage is crucial for effective welding, as it impacts the quality of the weld, penetration, and overall control of the arc. While electrodes of different sizes require different amperage ranges, the 1/16" is designed for thinner materials and applications that necessitate lower amperage settings to prevent distortion or excessive heat build-up. Thus, understanding the correlation between tungsten electrode size and appropriate amperage is vital for effective welding practices.

8. What is the function of the filler rod in the GTAW process?

- A. To act as a grounding electrode**
- B. To provide additional material to the weld pool**
- C. To stabilize the arc**
- D. To shield the welding area**

The filler rod serves the essential purpose of providing additional material to the weld pool during the Gas Tungsten Arc Welding (GTAW) process. As the tungsten electrode creates an arc that melts the base metals being joined, adding a filler rod ensures that there is sufficient material to form a strong and uniform weld joint. This is particularly important when welding thicker materials or when the joint design requires additional material to fill gaps or achieve the desired strength and integrity in the weld. While grounding, arc stabilization, and shielding are important aspects of the GTAW process, they are managed by other components and mechanisms. The grounding electrode relates to the electrical circuit and does not contribute material to the weld. Arc stabilization is primarily achieved through the properties of the tungsten electrode and the gas shield. Similarly, shielding of the welding area is performed by inert gas, which protects the molten weld pool from contamination but does not add material necessary for the weld itself. Thus, the role of the filler rod as the source of additional material is what makes it a critical component in achieving successful welds in GTAW applications.

9. Which tungsten electrode alloy is commonly used in GTAW?

- A. 1% tungsten-zirconium**
- B. 2% thoriated tungsten**
- C. 5% lanthanated tungsten**
- D. 3% cerium tungsten**

The use of 2% thoriated tungsten electrodes in Gas Tungsten Arc Welding (GTAW) is prominent due to their excellent performance characteristics. Thoriated tungsten is well-regarded for its ability to provide a stable arc and good electron emission properties, which are essential when working with a variety of metals, including stainless steel, aluminum, and others. The addition of thorium oxide enhances the electrode's efficiency in generating a smooth and consistent arc, which facilitates better control during the welding process. Thoriated tungsten electrodes can withstand high temperatures, making them effective for demanding welding applications and allowing them to maintain their shape while sustaining frequent use. These properties make them a go-to choice among welders, particularly in critical applications requiring precision and reliability. The other alloy options, while they also possess unique advantages, may not compare directly to the overall balance of arc stability and durability offered by thoriated tungsten in a wide range of welding scenarios.

10. What is the melting point of tungsten?

- A. Approximately 2500 F**
- B. Approximately 3200 F**
- C. Approximately 4500 F**
- D. Approximately 6200 F**

The melting point of tungsten is approximately 6200 F. This information is crucial in the context of Gas Tungsten Arc Welding (GTAW) because tungsten is used as the electrode material, and its ability to withstand high temperatures without melting is essential for effective welding. Tungsten has the highest melting point of all metals, which allows it to maintain its integrity and not oxidize quickly in the presence of the electric arc during the welding process. This high melting point ensures that the tungsten electrode can be re-used for extended periods without significant wear or degradation. Understanding the properties of the tungsten electrode, including its melting point, helps welders select the appropriate type of tungsten for various applications in GTAW, ensuring better results in terms of arc stability and weld quality.

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://gastungstedarcwelding.examzify.com>

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