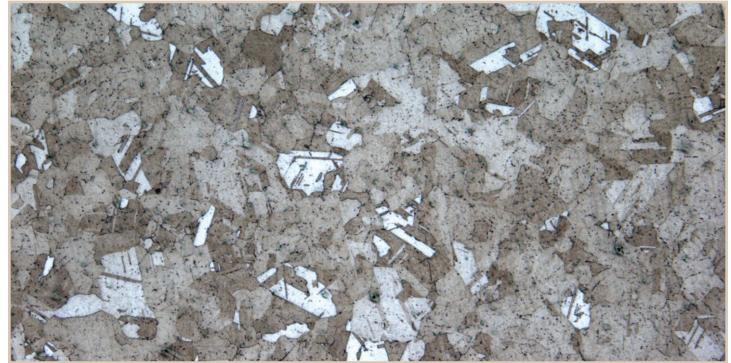


Welding Metallurgy


An EWI Online Micro-credential Course


The **Welding Metallurgy** course provides students with an overview of *physical metallurgy*, an introduction to *welding metallurgy of steel*, and a special unit on the *welding metallurgy of stainless steels*. Each of these three parts can be completed by a student on its own for 7.5 PDH credits, or all three can be taken together to complete the Welding Metallurgy micro-credential course for 22.5 PDH credits.





Course Components


Part I Physical Metallurgy: A Review	Part II Introduction to Welding Metallurgy of Steel	Part III Welding Metallurgy of Stainless Steels
Understanding the heating and cooling effects of welding is critical for welding engineers and professionals. Part I covers the basic metallurgy principles of as background to studying how welding can create unexpected metallurgical phenomena that can impact results.	Heat from welding can affect of both the weld and the metal adjacent it, leading to cracks, variations in toughness, or other negative effects. Steels in particular undergo metallurgical transformations when heated and cooled. Specific procedures can ensure that welds are successful. Part II covers metallurgical principles involved in developing these procedures.	Due to their unique properties, stainless steels can be used in corrosive and extreme-temperature environments. Incorrect welding procedures or the wrong choice of filler metal, however, can cause rapid corrosion, cracking, and failure. Most mistakes, however, can be avoided. Part III focuses on the metallurgy in welding stainless steels.
<ol style="list-style-type: none">1. The making of iron and steel2. The iron-carbon phase diagram3. Differences between crystallography of ferrite and austenite lattice4. The role of carbon and other alloying elements in steel5. The effect of heating and cooling on steel6. Strengthening mechanisms7. Using general steel classifications	<ol style="list-style-type: none">1. The effects of heat flow and cooling rates2. Weld zone identification3. The effects of hydrogen4. Avoiding hydrogen-induced cold cracking5. Metallurgical transformations6. Cracking tests7. The causes of lamellar tearing8. Weld metal reactions9. Conditions that lead to solidification cracking10. Weld properties11. Uses of different steel types	<ol style="list-style-type: none">1. The role of different alloying elements in stainless steels2. Stainless steels groups and their properties3. Major problems in welding stainless steels and how to overcome them4. The unique properties of stainless steels that resist corrosion in certain environments5. Verifying welding procedures based on stainless steel properties6. The unique low and high temperature properties of certain stainless steels


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Summary - Chapter 5 Exam

4 items

2

Discussion

You should take this exam after reviewing the content of Chapter 5.

You must complete all Chapter Exams with a passing grade of 70% to complete the course. You have unlimited attempts to finish this exam.

You have unlimited attempts of 30 minutes to answer 25 questions. Please review the answers before submitting the attempt.

Quiz Details

Course Fee
\$24.99 USD

Course Fee
\$24.99 USD (summarizer: Review Details)

Time Allowed
0:30:00

Attempts
Attempts: Unlimited, Completed: 0

Activity Location Details
Score at least 60% to pass the quiz and complete the activity.

Instructions

Before you submit the quiz, you will have the opportunity to return to questions that you may have missed or have not yet answered. Once the allocated time period that was set for this quiz expires, you are required to submit your quiz responses.

Note: This response expires after the time limit expires will not be submitted.

Click "Start Quiz" to begin Attempt 1.

The timer will not begin until after the set up process is finished.

Preview this online course:



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