

Casting Defect Analysis Modules

CDA1: Introduction to Casting Defect Analysis

This module is divided into three parts:

- Part 1: Meet Metro Metalcasting, Inc.
- Part 2: Casting Defects Categories
- Part 3: Analyzing Casting Defects

In Part 1, we'll meet a fictional company that is suffering from a high percentage of defects. Through the solutions team, we'll be introduced to a systematic approach to analyzing and reducing casting defects, the 10-Step Procedure. In Part 2, we'll learn about the seven categories of casting defects and become familiar with the *International Atlas of Casting Defects*. In Part 3, we'll walk through how to use the 10-Step Procedure to solve a casting defect. You will be introduced to the tools used in each of the 10 steps and how to use them. By the end of this module, you will be able to identify the 10-Step Procedure and use these steps to analyze a casting defect. Estimated module time is 2 hours, 30 minutes. CEU units awarded: 0.3 CEU units.

CDA2: Gas Related Defects

In this module, we will identify the many sources of gas related defects and identify the three types of gas related defects. This module will also identify the causes of these three types of defects and control measures you can make at your workplace. By the end of this module, you will be able to list the three types of gas related defects and two control measures for each gas related defect. Estimated module time is 45 minutes. CEU units awarded: 0.1 CEU units.

CDA3: Oxide Related Defects

In this module, we will define oxides and identify the different types of oxide related defects. This module will also identify the oxide related defect causes and control measures to combat the defects. We will also briefly examine some gating system topics and see how oxides can be affected by the gating system. By the end of this module, you will be able to identify the types of oxide related defects and list two control measures to preventing oxides. Estimated module time is 1 hour. CEU units awarded: 0.1 CEU units.

CDA4: Sand Related Defects

In this module, we'll review the sand molding process and identify the four types of sand casting methods. This module will also explore the three different types of sand related defects. These defects are sand expansion, sand adhering, and sand strength. Along with the indepth explanations of these defects, this module will address possible control measures you can make to your sand system to combat these defects. By the end of this module, you will be able to identify the three different sand related defects and one control measure to implement, per sand related defect. Estimated module time is 1 hour, 30 minutes. CEU units awarded: 0.2 CEU units.

CDA5: Shrink Related Defects

In this module, we will define shrinkage and identify the different types of shrink related defects. This module will also identify the shrink related defect causes. We will also distinguish shrink defects from gas defects. This module will identify shrink control measures. We will also briefly examine some gating system topics and see how shrinkage can be affected by the gating system. By the end of this module, you will be able to identify the types of shrink related defects and list two control measures to preventing shrink defects. Estimated module time is 45 minutes. CEU units awarded: 0.1 CEU units.

CDA6: Casting Defect Analysis Practice and Conclusion

In this module, we'll practice using the 10-Step Procedure on a casting defect. This module is the culmination of the previous five modules. AFS recommends the following modules before taking this module:

- Introduction to Casting Defect Analysis
- Gas Related Defects
- Oxide Related Defects
- Sand Related Defects
- Shrink Related Defects

By the end of this module, you'll be able to identify the 10-Step Procedure and use these steps to analyze a casting defect. Estimated module time is 45 minutes. CEU units awarded: 0.1 CEU units.