



<b>Course Code</b> 2-130	<b>CEUs</b> 0.6 CEUs
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### Course Introduction

This course is an introduction to the coldbox coremaking process used within a metalcasting facility. Discussion will include terminology, common sands and binder systems used to make cold box cores, the coremaking process, using and maintaining equipment, and considerations for identifying core defects. This course is a pre-requisite for advanced coremaking courses.

### Benefits to Taking the Course

Participants walk away with a broader knowledge of the coldbox process, gain ideas on how to more effectively utilize their current process, and explore different, perhaps unfamiliar, options for improving their process. Attendees also leave the course knowing the 12 key factors to consider when selecting a binder system.

### Learning Outcomes

After attending this course, participants should be able to:

1. Explain the benefits of using the coldbox process for coremaking.
2. Explain the coldbox coremaking process.
3. Explain the components of the three most common coldbox systems.
4. Identify how sand, binder, and equipment selection can impact the quality of cores.
5. Describe the important safety measures and operating practices to use while making coldbox cores.
6. Identify the key aspects of well-designed tooling.
7. Identify common coldbox-related casting defects.

### Lesson Outline

- Introduction
- Coldbox Overview
- Sand
  - Impact of sand selection on core and mold making
  - Impacts of physical and chemical sand properties on binder systems
  - Impacts of temperature & moisture on sand and binder systems
- Coldbox Binders
  - Binder terminology
  - Binder systems (PUCB\*, AECPB\*, ECPCB\*, Furan/SO<sub>2</sub>, AP/CO<sub>2</sub>, PU Hybrid) *\*discussion focused on the first 3*
    - Description
    - Process
    - Advantages
    - Disadvantages
  - Binder properties and consequences of poor performance
- Equipment used in the Coldbox Process
- Tooling
  - Results of well-designed tooling
- Coldbox Casting Defects Overview
- Wrap Up & Conclusion

**Instructional Methods:**

- Facilitator-led discussion
- Group activities
- Individual problem solving
- Materials comparison

**Assessment:**

No formal assessment will take place in this course; however, attendees will participate in informal activities such as knowledge check and Q&A sessions with the facilitator to verify that learning outcomes are being met. Assessment of successful achievement of learning outcomes must be included throughout the course in order to meet the ANSI/IACET 1-2013 standard for continuing education programs and for CEUs to be awarded.

**Course Prerequisites:**

Recommended: Introduction to Metalcasting

**Attendee Requirements to Earn CEUs:**

1. Present at least 5.5 hours of the total 6 hours of instructional time (90%), which does not include meals or breaks.
2. Active participation (can include asking questions, communicating with other attendees during and taking part in group activities, providing responses during whole class or group discussions).
3. Successful achievement of learning outcomes.

**Who Should Attend?**

The target audience consists of people in the following positions:

- Coldbox core maker
- Foundry foreman or lead persons
- Sand lab technicians
- Maintenance personnel
- General labor/helpers
- New process engineers
- Quality technicians
- Anyone new to the coldbox process