

CASTINGS: IRON MELTING FUNDAMENTALS

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Learning made Simple, Visual, and Interactive

Iron Melting Fundamentals is an introduction to iron casting processes, including the raw materials, charge preparation, and melting equipment used in modern foundries. Presented in THORS' highly visual and interactive learning format, this course will help foundry employees become familiar with the important equipment and terminology associated with their profession.

Credit Hours **2**

Learning Objectives

- 💡 Recognize some of the basic equipment used in cast iron foundries.
- 💡 Recall basic terminology and phrases associated with foundry processes.
- 💡 Distinguish between the common furnaces used for melting iron.
- 💡 Recognize the unique traits and properties of prominent cast irons.
- 💡 Understand the primary tests and analyses applied to molten iron.

Table of Contents

I. Cast Irons

- **Properties**
 - o Hardness
 - o Tensile Strength
 - o Elongation
 - o Machinability
 - o Vibration Damping
 - o Corrosion Resistance
 - o Oxidation Resistance
 - o Fatigue Resistance
- **Types of Cast Iron**
 - o Gray Iron
 - o Malleable Iron
 - o Ductile Iron
 - o Compacted Graphite (CG) Iron
 - o White Iron
 - o Austenitic Iron

II. Melting Equipment

- **Charge Materials**
- **Protective Gear**
- **Hand Tools**
 - o Air Hammers
 - o Oxygen Lances
 - o Sampling Spoons
 - o Slag Skimmers
- **Preheaters**
- **Melting Furnaces**
 - o Induction Furnaces
 - o Cupola Furnaces
- **Ladles**
 - o Lip Pouring Ladles
 - o Tea Pot Ladles
 - o Transfer Ladles

I. Molten Metal Testing and Additions

- **Temperature Control**
- **Chemistry Testing**
 - o Spectrometer Analysis
 - o Thermal Analysis of Base Iron
 - o Combustion Analysis
 - o Chill Wedge Analysis
- **Additions**
 - o Alloying Elements
 - o Inoculation

