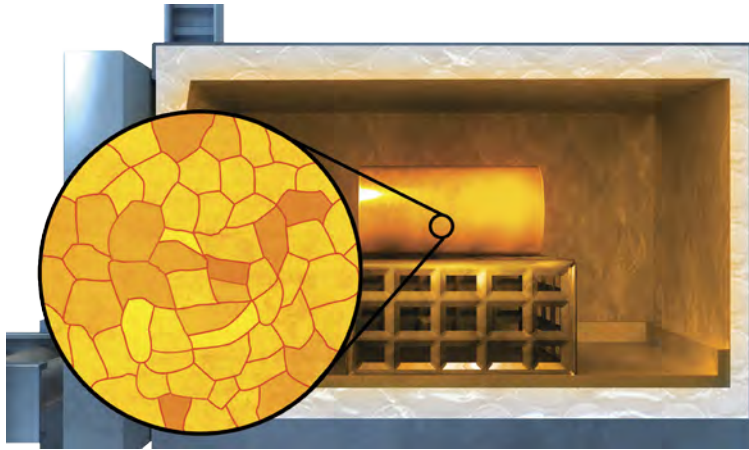


# HEAT TREATING TESTING AND DEFECTS

*eLearning courses designed to increase productivity and profits*



## Learning made Simple, Visual, and Interactive

Heat Treating Testing and Defects builds on the foundational knowledge provided in Heat Treating Processes and Equipment. Presented in THORS' easy-to-navigate, highly visual, and interactive learning style, Heat Treating Testing and Defects provides application-based knowledge for some of the most common heat treating testing and quality control procedures. In addition, this course will help learners identify and understand the root causes of common heat treating defects, as well as methods to reduce or eliminate such quality problems.

Credit Hours **2**

## Learning Objectives

- Recall the basic terminology associated with modern metallurgy.
- Recognize the various testing procedures that are relevant to heat treating.
- Understand “do’s and don’t’s” of heat treating testing procedures.
- Differentiate between the defects common to heat treating procedures.
- Demonstrate an understanding of how eliminate or minimize heat treating defects.

## Table of Contents

### I. Metallurgical Concepts

#### • Mechanical Properties

- o Hardness
- o Strength
- o Ductility
- o Toughness
- o Machinability
- o Weldability
- o Formability
- o Hardenability
- o Wear Resistance

#### • Physical Properties

- o Characteristics of Iron and Carbon
- o Lattice Structures of Iron
- o Microstructure
- o Grain Size

#### • Chemical Composition

- o Common Alloying Elements
- o Other Elements

### II. Testing for Heat Treating

- Hardness Testing
- Microstructure Testing
- Hardenability Testing

- Micro-Hardness Testing
- Tensile Testing
- Toughness Testing

### III. Heat Treating Defects

- Distortion
- Cracking
- Non-Uniform Hardness
- Decarburization
- Oxidation
- Non-Uniform Microstructure

