

HEAT TREATING ALUMINUM PRODUCTS

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The THORS *Heat Treating Aluminum Products* course provides an overview of how aluminum alloys respond to heat treatment. It covers phase diagrams, alloy designations, temper designations, recommended oven types, and quench media selection. Learners will explore different heat treating processes for aluminum alloys, along with key post-processing steps such as straightening. The course also addresses common defects and basic troubleshooting strategies.

Credit Hours **2.0**

Learning Objectives

- Explain the purposes, key features, and types of phase diagrams.
- Differentiate between wrought and cast aluminum alloys and interpret their alloy and temper designations.
- Identify key heat treating equipment and their functions.
- Describe major heat treating processes for aluminum products, including solution heat treating, quenching, and aging.
- Outline post-processing methods such as straightening.
- Highlight common heat treatment defects and suggest suitable troubleshooting techniques.

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I. Heat Treating Concepts

- Phase Diagrams
 - ▣ Salient Features
 - ▣ Types
- Alloy Designations
 - ▣ Wrought Alloy Designations
 - ▣ Cast Alloy Designations
- Temper Designations
 - ▣ Temper Designation F
 - ▣ Temper Designation O
 - ▣ Temper Designation H
 - ▣ Temper Designation T
 - ▣ Temper Designation W

II. Heat Treatment

- Equipment
 - ▣ Batch Oven
 - ▣ Continuous Oven
 - ▣ Drop-Bottom Oven
 - ▣ Quench Tank
- Processes
 - ▣ Solution Heat Treating
 - ▣ Quenching
 - ▣ Aging

III. Post-Processing Steps

- Straightening
- Defects and Troubleshooting
 - ▣ Distortion
 - ▣ Incipient Melting
 - ▣ Surface Blistering
 - ▣ Low Mechanical Properties

