

High-quality filler metals and specially designed equipment are key factors in achieving the results you need when welding aluminum.

Producing high-quality aluminum welds also requires knowledge of proper welding techniques and preparation, the development of suitable welding procedures to prevent discontinuities, and the ability to quickly resolve issues before they impact process quality and productivity.

Together, **Hobart Brothers and Miller Electric** offer the training you need through hands-on welding exercises and classroom instruction focused on aluminum welding technology.

2026 Dates

Note: Registration ends 3 weeks prior to class start date

- February 24-26 (Appleton, WI)
- April 21-23 (Phoenixville, PA)
- August 18-20 (Traverse City, MI)
- October 6-8 (Traverse City, MI)

Seminar Hours

- 8:00 AM - 5:00 PM each day

Course Enrollment Fee

- \$450 per student

What is Included (per Student)

- (23) Professional Development Hours that can be used for AWS recertification.
- (1) Guide for Aluminum Welding
- (1) Miller Digital Elite™ welding helmet
- (1) Pair of Miller TIG/multi-task gloves
- (1) Pair of Miller Slag™ safety glasses
- (1) Miller Classic Cloth Jacket

A light breakfast and lunch will be offered each lecture day!

Register here



Advanced Aluminum Seminar Sign-up

Accommodations

Reserved by participants in a common location.

Hotel and Travel Guide

Transportation

Participants should make arrangements for transportation to and from the hotel. Shuttle service may or may not be provided by the hotel.

Cancellations

Cancellations will be accepted and refunds issued up to 14 days before the seminar date. Make non-refundable airline reservations at your own risk.



Advanced Aluminum Welding Seminar

Course Objective

To provide aluminum fabrication professionals with educational support in the areas of welding technology needed to successfully design and weld high-quality and cost-effective aluminum weldments

This course will include a detailed evaluation of the many aluminum alloys—characteristics, applications and metallurgical considerations— as well as welding processes, weld design, welding procedure development, weld discontinuities, process troubleshooting, and quality control.

Take away every usable **FACT** about welding aluminum

Experience the practical **FEEL** of a successful aluminum weld

Course Outline - Theory

Introduction

- Industry Trends
- Characteristics of Aluminum
- Typical Applications

Codes and Standards

- Aluminum Association Publication Overview
- AWS Publication Overview
- Alloy and Temper Designation System

Metallurgy

- History of Aluminum Production
- Characteristics of Alloying Element
- Effects of Alloying Elements on Structure
- Weld Bead, Fusion Zone, and Heat affected zone

Weld Preparation

- Base Metal & Filler Metal Storage
- Dew Point Calculations
- Thermal and Mechanical Cutting
- Cleaning Techniques

Process & Procedures: GMAW (MIG)

- Feedability
- Polarity & Arc cleaning
- Metal transfer modes
- Power sources

Process & Procedures: GTAW (TIG)

- Polarity
- Square Wave AC
- Inverter Technology
- Tungsten Electrode Selection

Design & Performance

- Corrosion Types and Alloy Performance
- Elevated Temperature Performance
- Tensile and Shear Strength
- Weld Joint Design
- Toughness/Elasticity/Ductility
- Fatigue Performance
- Post-Anodize Color Matching

Filler Metal Selection

- Weld Metal Properties
- The Hobart Filler Metal Selection Chart
- Case Studies

Weld Discontinuities

- Cracking
- Porosity
- Inadequate Fusion & Penetration

D1.2 Structural Welding Code

- Structural Design
- Procedure Qualification
- Performance Qualification
- Fabrication and Inspection

Course Outline - Practical

Welding Procedures

- Safety
- WPS Preparation
- Sample Preparation
- Pre-Weld Inspection
- Welding Power Source Set Up

Fillet Welds & Groove Welds:

- Selecting Base Metal & Filler Metal
- Preparing & Cleaning Base Metal
- Parameter & Power Source Configuration

Welding, Testing & Inspection:

- Create Weldments
- Record Settings
- Visually Inspect Weldments
- Perform a Fillet Weld Fracture Test & Inspection
- Perform Fillet Weld Macroetch Inspection
- Perform a Groove Weld Guided Bend Test
- Evaluation of Radiographs (X-Ray Inspection)

For Any and All Questions:

MillerTraining@MillerWelds.com