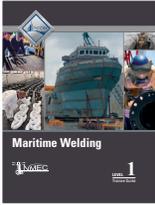


Maritime Aluminum Welding

LEVEL 1 MARITIME ALUMINUM WELDING

LEVEL 1



Curriculum Notes

- 345 Hours
 - Includes 97.5 hours of *Maritime Industry Fundamentals*, which is a prerequisite for Level One completion and must be purchased separately.
 - Hardcover: ISBN 978-0-13-456850-1
- Published: 2019
- Downloadable instructor resources that include module tests, PowerPoints®, and performance profile sheets are available at www.nccer.org/irc.

PAPERBACK

Trainee Guide: \$134.99

ISBN

978-0-13-560384-0

MODULES

The modules listed below are included in the Trainee Guide. The following ISBNs are for ordering individual modules only.

Welding Safety (5 hours)

ISBN 978-0-13-416580-6

(Module ID 29101) Covers safety equipment, protective clothing, and procedures applicable to the cutting and welding of metals.

Plasma Arc Cutting (7.5 hours)

ISBN 978-0-13-418269-8

(Module ID 29103) Introduces plasma arc cutting equipment and safe work area preparation. Identifies correct amperage, gas pressures, and flow rates. Covers plasma arc cutting methods for piercing, slotting, squaring, and beveling metals. Explains how to store equipment and clean the work area.

Base Metal Preparation (12.5 hours)

ISBN 978-0-13-414043-8

(Module ID 29105) Describes how to clean and prepare all types of base metals for cutting or welding. Identifies and explains joint design and base metal preparation for all welding tasks.

Weld Quality (10 hours)

ISBN 978-0-13-414044-5

(Module ID 29106) Identifies the codes that govern welding, including marine welds. Identifies and explains weld imperfections and causes. Describes non-destructive testing, visual inspection criteria, welder qualification tests, and the importance of quality workmanship.

Joint Fit-up and Alignment (5 hours)

ISBN 978-0-13-418024-3

(Module ID 29110) Describes job code specifications. Explains how to use fit-up gauges and measuring devices to check fit-up and alignment and use plate and pipe fit-up and alignment tools to properly prepare joints. Explains how to check for joint misalignment and poor fit.

Welding Symbols (5 hours)

ISBN 978-0-13-417950-6

(Module ID 29201) Identifies and explains the different types of fillet weld, groove weld, and non-destructive examination symbols. Explains how to read welding symbols on drawings, specifications and Welding Procedure Specifications (WPS).

Reading Welding Detail Drawings (10 hours)

ISBN 978-0-13-417953-7

(Module ID 29202) Identifies and explains welding detail drawings. Describes lines, fills, object views, and dimensioning on drawings. Explains how to use notes on drawings and the bill of materials. Explains how to sketch and draw basic welding drawings.

Physical Characteristics/Mechanical Properties of Metal (7.5 hours)

ISBN 978-0-13-417954-4

(Module ID 29203) Explains physical characteristics, mechanical properties, composition, and classification of common ferrous and nonferrous metals. Identifies the various standard metal forms and structural shapes. Shows how to extract metal information from Welding Procedure Specification (WPS) sheets and Procedure Qualification Records (PQRs). Covers visual inspection, magnetic testing, and X-ray fluorescent spectrometry methods used to identify metals.

Preheating and Postheating of Metals (5 hours)

ISBN 978-0-13-418019-9

(Module ID 29204) Explains preheating, interpass temperature control, and postheating procedures that sometimes need to be done to preserve weldment strength, ductility, and weld quality. Covers the equipment used for heat treating metals.

GMAW & FCAW - Equipment and Filler Metals (10 hours)

ISBN 978-0-13-418018-2

(Module ID 29205) Describes general safety procedures for GMAW and FCAW. Identifies GMAW and FCAW equipment and explains the filler metals and shielding gases used to perform GMAW and FCAW. Explains how to set up and use GMAW and FCAW equipment and how to clean GMAW and FCAW welds.

GTAW - Equipment and Filler Metals (10 hours)

ISBN 978-0-13-417969-8

(Module ID 29207) Explains GTAW safety. Identifies and explains the use of GTAW equipment, filler metals, and shielding gases. Covers the setup of GTAW equipment.

GMAW - Aluminum Plate (30 hours)

ISBN 978-0-13-467767-5

(Module ID 29401) Covers the setup of GMAW equipment for welding aluminum plate. Explains aluminum metallurgy and the characteristics of aluminum welding; how to clean and prepare aluminum plate coupons for welding; and problems often encountered in aluminum welds. Explains GMAW techniques used in aluminum welding. Provides GMAW procedures on how to build weld pads on aluminum plate; how to make fillet welds on aluminum plate in the 1F, 2F, 3F, and 4F positions; and how to make V-groove welds on aluminum plate with backing in the 1G, 2G, 3G, and 4G positions.

GTAW - Aluminum Plate (30 hours)

ISBN 978-0-13-467765-1

(Module ID 29402) Covers the setup of GTAW equipment for welding aluminum plate. Explains how to clean and prepare aluminum plate coupons for welding, and how to select the aluminum filler metals and shielding gases used in the GTAW process. Explains GTAW techniques used in aluminum welding. Provides GTAW procedures on how to build weld pads on aluminum plate; how to make fillet welds on aluminum plate in the 1F, 2F, 3F, and 4F positions; and how to make V-groove welds on aluminum plate with backing in the 1G, 2G, 3G, and 4G positions.

GTAW - Aluminum Pipe (50 hours)

ISBN 978-0-13-467763-7

(Module ID 29403) Covers the setup of GTAW equipment for welding aluminum pipe. Explains how to clean and prepare aluminum pipe coupons for welding. Addresses GTAW techniques used to make V-groove and modified U-groove welds on aluminum pipe with and without backing. Provides GTAW procedures on how to make V-groove or modified U-groove welds on aluminum pipe in the 2G, 5G, and 6G positions.

GMAW - Aluminum Pipe (50 hours)

ISBN 978-0-13-467760-6

(Module ID 29404) Covers the setup of GMAW equipment for welding aluminum pipe. Addresses GMAW techniques used to make V-groove welds on aluminum pipe with and without backing. Explains how to clean and prepare aluminum pipe coupons for welding. Provides GMAW procedures on how to make V-groove welds on aluminum pipe in the 2G, 5G, and 6G positions.