Arkansas CTE

Shielded Metal Arc Welding: Grades 9, 10, 11, 12

Adopted 2014

Demonstrate welding safety techniques

1.1 Determine the hazards of welding and develop the proper attitude toward safety.

1. Identify some common hazards in welding and proper PPE used in welding. 1.1.1
2. Demonstrate how to avoid welding fumes and electric shock when welding. 1.1.2

1.2 Demonstrate safe materials handling procedures.

1. Explain uses for material safety data sheets. 1.2.1
2. Demonstrate safety techniques for storing and handling cylinders. 1.2.2
3. Demonstrate proper material handling methods. 1.2.3

Demonstrate an understanding of shielded metal arc welding equipment and connections

2.1 Demonstrate an understanding of SMAW equipment and how to properly connect the equipment for welding.

1. Explain shielded metal arc welding (SMAW) safety and explain welding electrical current. 2.1.1
2. Compare welding power supplies and their characteristics. 2.1.2
3. Demonstrate how to set up welding power supplies and a machine for welding. 2.1.3
4. Identify tools used for weld cleaning. 2.1.4

2.2 Demonstrate electrode selection and storage procedures in compliance with the welding codes.

1. Explain factors that affect electrode selection. 2.2.1
2. Explain the importance and roles of the American Welding Society (AWS) and the American Society of Mechanical Engineers standards. 2.2.2
3. Select appropriate types of filler metals and explain the storage and control of filler metals. 2.2.3
4. Select the proper electrode for an identified welding task. 2.2.4

2.3 Strike an arc, run beads, and make fillet welds in a number of positions using SMAW electrodes.

1. Set up shielded metal arc welding (SMAW) equipment, strike an arc describing the methods and extinguish the arc. 2.3.1
2. Strike and extinguish an arc explaining the methods used. 2.3.2
3. Describe causes of arc blow and wander. 2.3.3
4. Make stringer, weave, and overlapping beads. 2.3.4
5. Make fillet welds in the:
Horizontal (2F) position
Vertical (3F) position
Overhead (4F) position 2.3.5

2.4 Research and explain applicable welding codes.

1. Locate and apply codes governing welding. 2.4.1
2. Locate and apply codes governing weld imperfections and their causes. 2.4.2

2.5 Research and explain various weld imperfections and their causes.

1. Locate and apply nondestructive examination practices 2.5.1
2. Perform a visual inspection of fillet welds. 2.5.2

2.6 Research and explain types of weldment testing and welder qualification test requirements.

1. Explain welder qualification tests and the importance of quality workmanship. 2.6.1
2. Identify common destructive testing methods. 2.6.2