

## WELDING TECHNOLOGIES, 48.0508.00

An Industry Standards Validation Committee developed and approved these standards on February 19, 2016, and the Welding Advisory Committee endorsed them on April 4, 2016. They align with the American Welding Society Specifications for Qualification and Certification of a Level I—Entry Level Welder and the NCCER Program Certification. The Arizona Career and Technical Education Quality Commission, the validating authority for the Arizona Skills Standards Assessment System and the end-of-program assessments, certificates, and transcripts, endorsed these standards on May 12, 2016. The first testing date for the end-of-program assessment for Welding Technologies using the new standards is Fall 2016.

### STANDARD 1.0 MAINTAIN THE SAFETY AND HEALTH OF WELDERS

- 1.1 Use appropriate personal protective equipment (PPE) (e.g., helmets, gloves, safety glasses)
- 1.2 Explain safe operations for work in confined spaces
- 1.3 Identify types and safe use of respiratory equipment
- 1.4 Describe the management of welding and cutting fumes and gases
- 1.5 Explain Hot Work operations
- 1.6 Identify handling methods and storage of compressed gas cylinders
- 1.7 Follow job safety regulations and procedures according to OSHA guidelines
- 1.8 Locate and refer to information found on Safety Data Sheets (SDSs)

### STANDARD 2.0 LAY OUT AND FIT UP A PROJECT FROM A BLUEPRINT

- 2.1 Identify basic elements of a welding drawing
- 2.2 Interpret welding symbols and specifications for welding procedure
- 2.3 Use measuring devices
- 2.4 Fabricate parts from a drawing or sketch

### STANDARD 3.0 SET UP AND USE SHIELDED METAL ARC WELDING (SMAW) EQUIPMENT

- 3.1 Perform safety inspections of SMAW equipment and accessories
- 3.2 Set up and perform SMAW operations
- 3.3 Identify the use, storage, and handling of various types of electrodes
- 3.4 Perform surfacing welds
- 3.5 Perform fillet and groove welds in all positions

### STANDARD 4.0 SET UP AND USE GAS METAL ARC WELDING (GMAW) EQUIPMENT (MIG)

- 4.1 Perform safety inspections of GMAW equipment and accessories
- 4.2 Set up and perform GMAW operations
- 4.3 Identify the use, storage, and handling of various types of filler materials
- 4.4 Select and use proper gases
- 4.5 Perform fillet and groove welds
- 4.6 Perform routine maintenance on GMAW wire feed equipment
- 4.7 Explain the GMAW transfer modes (e.g., short circuit, globular, spray, pulse spray)

### STANDARD 5.0 SET UP AND USE FLUX CORED ARC WELDING (FCAW) EQUIPMENT

- 5.1 Perform safety inspections of FCAW equipment and accessories
- 5.2 Set up and perform FCAW (gas-shielded and self-shielded) operations
- 5.3 Identify the use, storage, and handling of various types of filler material
- 5.4 Perform fillet and groove welds
- 5.5 Explain the difference between FCAW-G and FCAW-S welding processes

Note: In this document i.e. explains or clarifies the content whereas e.g. provides examples of the content that must be taught.

- 5.6 Perform maintenance on FCAW wire feed equipment

**STANDARD 6.0 SET UP AND USE GAS TUNGSTEN ARC WELDING (GTAW) EQUIPMENT (TIG)**

- 6.1 Perform safety inspections of GTAW equipment and accessories
- 6.2 Set up and perform GTAW operations
- 6.3 Identify the use, storage, and handling of various types of filler material
- 6.4 Select and use proper gases
- 6.5 Perform welds on aluminum
- 6.6 Perform welds on stainless steel
- 6.7 Perform welds on carbon steel

**STANDARD 7.0 SET UP AND USE THERMAL CUTTING EQUIPMENT**

- 7.1 Perform safety inspections of OFC/PAC/CAG equipment and accessories
- 7.2 Set up and perform oxyfuel gas/cutting (OFC) operations
- 7.3 Set up and perform plasma arc cutting (PAC) operations
- 7.4 Set up and perform air carbon arc gouging (CAG) operations
- 7.5 Set up and perform semi-automatic cutting (track torch) operations

**STANDARD 8.0 PERFORM WELDMENT TESTING**

- 8.1 Describe nondestructive testing methods
- 8.2 Perform destructive testing methods
- 8.3 Perform a visual inspection on a weld

**STANDARD 9.0 USE AUXILIARY EQUIPMENT AND TOOLS**

- 9.1 Perform safety inspections of equipment and accessories
- 9.2 Use mechanical/abrasive cutting equipment
- 9.3 Use power equipment to wire brush metal
- 9.4 Use multi-purpose shear and punch (ironworker)
- 9.5 Identify and describe the use of metal forming equipment (i.e., metal rollers, metal brakes)
- 9.6 Use drilling equipment
- 9.7 Use welding-related hand tools

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