

PERFORM OXY-ACETYLENE WELDING

UNIT CODE: ENG/OS/WEL/CR/01/3/A

UNIT DESCRIPTION

This unit standard is intended for those who carry out oxy-acetylene gas welding & cutting, and soldering operations. It specifies competencies required in setting up and carrying out welding, cutting and/ or soldering tasks while observing appropriate safety.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
<p>These describe the key outcomes which make up workplace function.</p>	<p>These are assessable statements which specify the required level of performance for each of the elements.</p> <p><i>Bold and italicized terms are elaborated in the Range</i></p>
<p>1. Apply safety to a workplace</p>	<p>1.1 Selected appropriate <i>Personal Protective Equipment (PPE)</i> for the job.</p> <p>1.2 Wore PPE as per task requirements</p> <p>1.3 Confirmed permits and approvals exist prior to starting work</p> <p>1.4 Identified any incidents, hazards and risks as per OSHA</p> <p>1.5 Identified and used firefighting equipment as per workplace procedures</p>
<p>2. Apply housekeeping to welding work area</p>	<p>2.1 Conducted housekeeping before, during and after welding.</p> <p>2.2 Tools, equipment and unused materials and consumables are cleaned and/or returned to safe area.</p> <p>2.3 Completed work piece is stored/ handed over as per work place procedures.</p>
<p>3. Take-in Instructions</p>	<p>3.1 Interpreted welding instructions as per supervisor/mentor's guidelines/drawings</p> <p>3.2 Executed supervisor/mentor's instructions/drawings as per task requirements.</p>
<p>4. Select materials, tool and equipment</p>	<p>4.1 <i>materials, tools and equipment</i> for the specific task are obtained.</p> <p>4.2 <i>Work pieces</i> are measured, marked, cut and prepared according to specifications.</p> <p>4.3 Oxy-acetylene equipment is set up according to manufacturer's specification</p>

5. Weld work pieces in flat and horizontal positions	<p>5.1 Set up weld workpieces as per the supervisor/ mentor's instructions/drawings.</p> <p>5.2 Conducted positional oxy-acetylene welding according to supervisor/ mentor's instructions/drawings.</p> <p>5.3 Adhered to applicable gas welding safety according to OSHA.</p> <p>5.4 Identified accidents and incidents according to workplace procedure.</p>
6. Repair welds	<p>6.1 The weld is completed as per task requirements</p> <p>6.2 Repaired weld as per task requirements</p> <p>6.3 Identified weld defects according to acceptable criteria.</p>
7. Select materials, tools and oxy-acetylene gas cutting equipment	<p>7.1 Identified and used materials, tools and equipment for the specific task as per task requirements</p> <p>7.2 Work pieces are measured, marked, cut and prepared according to specifications.</p> <p>7.3 Oxy-acetylene equipment is set up according to manufacturer's specification</p>
8. oxy-acetylene cutting process	<p>8.1 Set up weld workpieces as per the supervisor/ mentor's instructions/drawings.</p> <p>8.2 Conducted oxy-acetylene cutting according to supervisor/ mentor's instructions/drawings.</p> <p>8.3 Adhered to applicable oxy-acetylene cutting safety according to OSHA 2007.</p> <p>8.4 Identified accidents and incidents according to workplace procedure.</p>
9. Select materials, tool and soldering equipment	<p>9.1 Consumables, materials, tools and equipment for the specific soldering job are obtained.</p> <p>9.2 Work pieces are measured, marked, cut and prepared according to specifications.</p> <p>9.3 Equipment is set up according to manufacturer's specification</p>
10. Solder work pieces	<p>10.1 Set up weld workpiece as per the supervisor/ mentor's instructions/drawings.</p> <p>10.2 Light up the gas welding equipment as per manufacturers requirements</p> <p>10.3 The right flame is selected depending on type, size and thickness of materials</p> <p>10.4 Conducted soldering according to supervisor/ mentor's instructions/drawings.</p>

	<p>10.5 Adhered to applicable soldering safety according to OSHA.</p> <p>10.6 Identified accidents and incidents according to workplace procedure.</p>
11. Repair soldered sections	<p>11.1 Soldering is completed as per task requirements</p> <p>11.2 Repaired soldered sections as per task requirements</p> <p>11.3 Identified soldering defects according to acceptable criteria</p>

RANGE

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variable	Range
1. Personal Protective Equipment (PPE)	<ul style="list-style-type: none"> • Fire retardant overall/leather apron • Welding gloves • Welding goggles with filter lens • Clear goggles • Safety boots • Ear safety devices • Head protection devices • Shoe cover
2. Materials, tools and equipment	<ul style="list-style-type: none"> • Acetylene and oxygen gases and its accessories • Filler rods • Soldering flux • Solder
3. Work pieces	<ul style="list-style-type: none"> • Carbon steels • Aluminum • Stainless Steel • Tin
4. Repaired	<ul style="list-style-type: none"> • Heat treatment • Grinding and re-welding

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Use of PPEs

- Communication
- Team Work
- Planning
- Self-management
- Ability to uniformly solder work pieces
- Ability to light and extinguish gases
- Ability to select the right oxy-acetylene flame

Required Knowledge

The individual needs to demonstrate knowledge of:

- Types of PPE
- Use shop tools, equipment and materials
- Uses of metals in order to be able to select the correct metal
- Uses of fillers rods
- Selection of torch sizes
- Housekeeping procedures
- Safety rules and regulations applicable to the job

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

<p>1. Critical aspects of competency</p>	<p>1.1 Wore PPE as per job requirements 1.2 Performed housekeeping as per workplace procedures. 1.3 Executed supervisor/mentor's instructions/drawings. 1.4 Light up the gas welding equipment as per manufacturers requirements 1.5 The right flame is selected depending on type, size and thickness of materials 1.6 Measured, marked, cut and prepared workpieces according to specifications 1.7 Set up workpieces and equipment as per relevant instructions. 1.8 Repaired weld or soldered sections as per job requirements.</p>
<p>2. Resource implications</p>	<p>The following resources must be provided: 2.1 Equipped soldering area/ welding area 2.2 Tools, equipment and accessories for welding/cutting/soldering works. 2.3 Materials relevant to the tasks 2.4 Manufacturer's specifications and manuals relevant to the task</p>

3. Methods of assessment	Competency may be assessed through: 3.1 Observation 3.2 Practical 3.3 Oral questioning 3.4 Written tests 3.5 Portfolio 3.6 Projects
4. Context for assessment	4.1 On-the-job 4.2 Off-the -job 4.3 During Industrial attachment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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