

Domain

Title:

Level: 1

SOLAR INSTALLATION
Demonstrate knowledge of plumbing principles

Unit ID: 1645

Credits: 5

Purpose

This unit standard specifies the competencies required to demonstrate knowledge of plumbing principles. It includes the following elements: Describe basic plumbing techniques; Describe the uses of plumbing tools, components and materials; Apply basic pipe sizing to plumbing applications or operations; Perform soft soldering operation. This unit standard is intended for those who work in a solar energy installation environment.

Special Notes

1. Entry information:

Prerequisite:

- *1641: Apply safety rules and regulations in a solar energy installation environment* or demonstrated equivalent knowledge and skills.

2. Tools and equipment may include but are not limited to soldering irons, files, blue torch, blue lamp, scribe, steel rule, spirit level, tin snips, hammers, steel brush, vice grip, pliers, LP (Low Pressure) gas bottles.

3. Materials may include but are not limited to galvanised sheet metal, soldering sticks, Sal ammoniac stones, cloth, fluxes, hydrochloric acid, hand cleaner, copper pipes, capillary fittings, LP gas.

4. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' specifications and workplace specific requirements.

5. Performance of all elements in this unit standard must comply with workplace specific requirements and manufacturers' instructions and/or recommendations.

6. Regulations and legislation relevant to this unit standard include the following:

- Labour Amendment Act, 2012 (Act No. 2 of 2012)
 - Occupational Health and Safety Regulations No. 18, 1997
- and all subsequent amendments to any of the above.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions, which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment

arrangements are available from the Namibia Qualifications Authority on www.namqa.org and the Namibia Training Authority on www.nta.com.na.

Elements and Performance Criteria

Element 1: Describe basic plumbing techniques

Range:

Understanding of and the ability to describe basic plumbing techniques includes but is not limited to the fundamental principles of hydraulics, water quality principle, plumbing materials and water pollution.

Performance Criteria

- 1.1 Basic water flow principles are described.
- 1.2 Basic pressure principles are described.
- 1.3 Water quality principles are described.
- 1.4 Basic corrosion of plumbing materials is explained.
- 1.5 Basic pollution prevention principles are described.

Element 2: Describe the uses of plumbing tools, components and materials

Range:

Identification and description of the uses for plumbing tools, components and materials include knowledge about the appearance and functionality of main components.

Performance Criteria

- 2.1 Plumbing tools and equipment are identified and their uses are described.
- 2.2 Plumbing pipe work and related fittings are identified and their uses are explained.
- 2.3 Plumbing sanitary ware fixtures and fittings are identified and their uses are explained.

Element 3: Apply basic pipe sizing to plumbing applications or operations

Range:

The application of basic pipe sizing to plumbing applications or operations includes the knowledge of component properties and sizing.

Performance Criteria

- 3.1 Various types and sizes of pipes and fittings are identified and described in terms of their various uses.
- 3.2 The pipe sizes are determined to ensure correct flow rate, velocity and pressure.

Element 4: Perform soft soldering operation

Range:

Performing soft soldering includes the proper handling of tools and materials for this joining technology.

Performance Criteria

- 4.1 Soft soldering tools, equipment and materials are assembled and set up according to specifications and workplace procedures.
- 4.2 Safety precautions are observed during the soft soldering process in line with safety and workplace procedures.
- 4.3 Equipment is tested before commencement of soft soldering in line with workplace procedures.
- 4.4 Soft soldering procedures are conducted to specifications.
- 4.5 Joints are cleaned using appropriate tools and techniques in line with workplace procedures.
- 4.6 Safety requirements on use and handling of soldering tools, equipment and materials including the use of PPE (Personal Protective Equipment) are observed.

Registration Data

Subfield:	Electrical Engineering
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