



Australian Government

# **CPCCSG3014 Manufacture gas-charged glass-formed illuminated signs**

Release: 1

# CPCCSG3014 Manufacture gas-charged glass-formed illuminated signs

## Modification History

Release 1.

This version first released with CPC Construction, Plumbing and Services Training Package Version 2.

Revised unit of competency. Replaces superseded equivalent CPCCSI3014A Manufacture gas-charged glass-formed illuminated signage.

## Application

This unit of competency specifies the outcomes required to form glass tubes into specific shapes, fill them with gas, and provide a source of power to the tubes to produce illuminated signs commonly referred to as neon signs. It covers using tools and equipment to shape the glass tubes, and then attaching electrodes and pumping gas through the tubes before sealing and powering up the signs for display. It also covers installing the sign to a backing for display purposes and maximum visual effect.

The unit supports sign manufacturers who produce illuminated signs using neon gas.

No licensing, legislative, regulatory or certification requirements apply to this unit of competency at the time of endorsement.

## Pre-requisite Unit

Nil

## Competency Field

Signs and graphics

## Unit Sector

Construction

## Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions.

- |   |                                      |     |                                                                                                                                                                           |
|---|--------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Plan and prepare work.               | 1.1 | Job requirements are identified from drawings and specifications.                                                                                                         |
|   |                                      | 1.2 | Sequence of tasks required is determined and confirmed with relevant personnel.                                                                                           |
|   |                                      | 1.3 | Tools and equipment are selected to carry out tasks according to job requirements, checked for serviceability, and faults are rectified or reported before starting work. |
|   |                                      | 1.4 | <b>Health and safety requirements</b> are identified and applied to planning.                                                                                             |
| 2 | Mark out design.                     | 2.1 | Design is set out to scale on fire retardant sheeting using layout methods according to job requirements.                                                                 |
|   |                                      | 2.2 | Sections are calculated and marked out to design specifications.                                                                                                          |
|   |                                      | 2.3 | Joint locations are determined from layout and marked out on pattern.                                                                                                     |
|   |                                      | 2.4 | Electrodes are marked out to indicate double backed or right angled position.                                                                                             |
| 3 | Bend glass.                          | 3.1 | Glass is heated over a gas flame until pliable.                                                                                                                           |
|   |                                      | 3.2 | Glass is bent to form shape consistent with pattern and specifications, and any errors in shaping are rectified.                                                          |
| 4 | Attach electrodes and connect glass. | 4.1 | Electrodes are attached to pattern specification and requirements of Australian standards.                                                                                |
|   |                                      | 4.2 | Glass tubing is connected using procedures and techniques according to job requirements.                                                                                  |
| 5 | Prepare glass for lighting system.   | 5.1 | Pumping station is activated and section is connected to pumping station according to job requirements and safety procedures.                                             |
|   |                                      | 5.2 | Glass is vacuumed and pumped with gas using equipment and materials consistent with job                                                                                   |

- requirements.
- 5.3 Glass is sealed and bombarded using equipment consistent with job requirements and industry standards.
  - 5.4 Glass is cooled safely and aged according to job requirements.
  - 5.5 Neon sections are tested to determine transformer loadings according to Australian standards and safety procedures.
  - 5.6 Doubled sections of glass are blackened to form design shape.
- 6 Secure finished sign and clean up.
    - 6.1 Neon glass sign is securely attached to panel using attachments and supports according to job requirements.
    - 6.2 Sign and surrounding surface area are cleaned and waste materials removed according to statutory and regulatory authority requirements.
    - 6.3 Tools and equipment, including personal protective equipment (PPE), are cleaned, maintained and stored according to workplace requirements.

## Foundation Skills

This section describes the language, literacy, numeracy and employment skills essential to performance in this unit but not explicit in the performance criteria.

| Skill                         | Performance feature                                                                                                                                                         |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Learning skills to:           | <ul style="list-style-type: none"> <li>transfer key principles and techniques of heating and forming glass tubes to form and join glass sections to new designs.</li> </ul> |
| Numeracy skills to:           | <ul style="list-style-type: none"> <li>measure and calculate lengths and widths to set out sign design according to scale.</li> </ul>                                       |
| Oral communication skills to: | <ul style="list-style-type: none"> <li>use questioning techniques to identify and confirm client requirements, share information, listen and understand.</li> </ul>         |

This section describes the language, literacy, numeracy and employment skills essential to performance in this unit but not explicit in the performance criteria.

| Skill              | Performance feature                                                                                                                                                                                                                                                                        |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reading skills to: | <ul style="list-style-type: none"><li>• read and interpret a range of information relating to the safe and appropriate use of tools and equipment for heating and shaping glass over a live flame, including safe work method statements (SWMS) and manufacturer specifications.</li></ul> |
| Writing skills to: | <ul style="list-style-type: none"><li>• report faults in tools and equipment to manufacturer and relevant personnel in short, simple reports.</li></ul>                                                                                                                                    |

## Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

|                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b><i>Health and safety requirements</i></b> must include: | <ul style="list-style-type: none"><li>• selection, correct fitting, and use of PPE prescribed under legislation, regulations and workplace policies and practices</li><li>• emergency procedures, including:<ul style="list-style-type: none"><li>• evacuation</li><li>• first aid</li><li>• location and use of fire-fighting equipment</li></ul></li><li>• hazard identification and risk control procedures</li><li>• safe operating procedures, including the conduct of operational risk assessment and treatments associated with:<ul style="list-style-type: none"><li>• concealed services (water, power and gas)</li><li>• lighting</li><li>• restricted access barriers</li><li>• work site visitors and the public</li><li>• working in confined spaces</li><li>• working in proximity to others</li><li>• use of gas and live flame</li><li>• use of high voltage electricity</li><li>• use of machines</li><li>• use of tools and equipment</li></ul></li><li>• workplace environmental requirements.</li></ul> |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Unit Mapping Information

CPCCSI3014A Manufacture gas-charged glass-formed illuminated signage

## Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>