



Australian Government

Department of Education, Employment and Workplace Relations

CPCCSI3014A Manufacture gas-charged glass-formed illuminated signage

Release: 1

CPCCSI3014A Manufacture gas-charged glass-formed illuminated signage

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to manufacture gas-charged glass-formed illuminated signage.

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

Application of the Unit

Application of the unit This unit of competency supports the achievement of skills and knowledge to manufacture neon-type signs, and includes working with others and as a member of a team.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the construction industry
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Employability Skills Information

Employability skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare work.	<p>1.1. Quality assurance requirements of signage operations are recognised and adhered to.</p> <p>1.2. Safety (OHS) requirements in accordance with application tasks and workplace operations are recognised and adhered to.</p> <p>1.3. Job requirements are identified from drawings and specifications/instructions and/or client brief.</p> <p>1.4. Specifications, drawings and instructions are interpreted and job requirements and sequence determined.</p> <p>1.5. Layout is set out to scale using setting out techniques applicable to sign design.</p> <p>1.6. Product range is assessed and selected in accordance with job requirements and relevant Australian standards.</p> <p>1.7. Tools, equipment and materials are selected to carry out tasks consistent with job requirements.</p> <p>1.8. Routine maintenance requirements of equipment are identified and implemented in accordance with workplace and quality assurance procedures.</p> <p>1.9. Temporary or permanent application of materials is determined from job requirements.</p>
2. Mark out design.	<p>2.1. Direct and indirect layout methods are identified and applied.</p> <p>2.2. Sections are calculated and marked out to design specifications.</p> <p>2.3. Joint locations are determined from layout and marked out on pattern.</p> <p>2.4. Electrodes are marked out to indicate double backed/right angled position.</p>
3. Bend glass.	<p>3.1. Glass is heated with care over a gas flame until pliable.</p> <p>3.2. Glass is bent to form shape consistent with pattern and specifications.</p>
4. Attach electrodes and connect glass to form sections.	<p>4.1. Electrodes are attached in accordance with pattern specification and Australian standards requirements.</p> <p>4.2. Glass tubing is connected using appropriate procedures and techniques.</p>
5. Prepare glass for lighting system.	<p>5.1. Pumping station is activated in accordance with job requirements and section is connected to pumping</p>

ELEMENT**PERFORMANCE CRITERIA**

ELEMENT	PERFORMANCE CRITERIA
	station in accordance with job specifications.
	5.2. Glass is vacuumed in accordance with job requirements and filled with <i>gas</i> pumped 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 in accordance with job requirements.
	5.5. Neon sections are tested to determine transformer loadings in accordance relevant Australian standards.
	5.6. Doubled sections of glass are blackened to form design shape.
6. Install tube supports to board/panel.	6.1. Neon glass sign is securely attached to board/panel using tube supports.
	6.2. Illuminated sign components are fixed to board/panel using appropriate <i>attachments</i> .
7. Clean up finished sign.	7.1. Sign and surrounding surface environment/area are cleaned and waste materials removed in accordance with <i>statutory and regulatory authority requirements</i> .
	7.2. Tools and equipment, including personal protective equipment, are cleaned, maintained and stored.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

Required skills for this unit are:

- ability to recognise procedures, respond to change and contribute to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- communication skills to:
 - determine requirements
 - effectively communicate verbally with others within a team environment

REQUIRED SKILLS AND KNOWLEDGE

- enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
- follow instructions
- read and interpret:
 - job drawings
 - charts and hand drawings
 - manufacturer specifications and instructions
 - organisational work specifications
 - requirements and instructions issued by authorised organisational or external personnel
- report faults
- use and interpret non-verbal communication
- use language and concepts appropriate to cultural differences
- innovation skills to select appropriate tools and equipment, respond to workplace challenges and put ideas into action
- organisational skills, including the ability to plan and set out work
- problem solving skills to recognise, and take action to rectify, minor faults and problems
- teamwork skills to be able to coordinate with others, action tasks and relate to people from a range of social, cultural, ethnic backgrounds and with varying physical and mental abilities
- work, shape and join glass-tubed sections safely.

Required knowledge

Required knowledge for this unit is:

- identification of dimensions, symbols, abbreviations and key features of signage
- interpretation of drawings and specifications
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- measurement and setting out related to layout of signs
- methods of pumping gas into glass
- shaping and forming glass techniques
- statutory and regulatory authority requirements, particularly those relating to:
 - removal of waste products
 - storage of chemicals and materials
- terminology and definitions used in signage
- types and characteristics of gas-charged glass-formed illuminated signs
- types and correct handling of materials and their characteristics relevant to construction of glass illuminated signs
- types and uses of electrodes and transformers

REQUIRED SKILLS AND KNOWLEDGE

- relevant Australian and New Zealand standards:
 - Australian standards, including:
 - AS2508.2.012 Safe storage and handling; information cards for hazardous materials
 - AS3100 Approval and test specification - General requirements for electrical equipment
 - AS3953 Loading guide for dry-power transformers
 - manufacturer specifications
 - OHS requirements
 - other applicable codes or standard operating procedures relevant to the sector.

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment, provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- understanding and applying principles of sign layout
- effective operational use of tools and equipment to handle and form glass to design shapes
- safe techniques to attach electrodes and connect glass tubing
- safe and controlled techniques to prepare glass and pump gas to glass assembly
- safe techniques to bombard, cool and age glass to specifications
- handling and securing procedures to affix sign to board or panel to complete job to requirement
- identification of typical faults in illuminated signage and appropriate remedial action taken to rectify problems.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the

EVIDENCE GUIDE

mandatory task requirements

- relevant specifications and work instructions
- tools and equipment appropriate to manufacturing gas-charged glass-formed illuminated signage
- support materials appropriate to activity
- workplace instructions relating to manufacturing gas-charged glass-formed illuminated signage
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice,

EVIDENCE GUIDE

with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge

- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Quality assurance requirements include:

- attention to work specifications
- Australian and international standards relevant to the sign industry
- control of handling procedures
- internal company quality assurance policy and risk management strategies
- procedures for installing and finishing
- quality of materials
- use and maintenance of equipment
- workplace operations and procedures.
- emergency procedures, including extinguishing fires, organisational first aid

Safety (OHS) is to be in accordance with state and territory

RANGE STATEMENT

legislation and regulations and project safety plan and may include:

- requirements and evacuation
- hazard control
- hazardous materials and substances
- organisational first aid
- PPE prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
 - concealed services (water, power and gas)
 - lighting
 - restricted access barriers
 - traffic control
 - work site visitors and the public
 - working at heights
 - working in confined spaces
 - working in proximity to others
- use of firefighting equipment
- use of machines
- use of tools and equipment
- workplace environmental requirements and safety.

Job requirements include:

- assessment of conditions and hazards
- determination of work requirements
- equipment defect identification
- safety plans and policies
- work site inspection.

Clients include:

- business owners
- printers
- property owners
- sign manufacturers
- statutory bodies.

Relevant Australian standards include:

- AS3100 Approval and test specification - General requirements for electrical equipment
- AS3953 Loading guide for dry-power transformers
- regulatory requirements
- standard drawings and details
- urban design manuals.

Tools and equipment include:

- glass heaters

RANGE STATEMENT

- Gas* includes:
- tongs.
 - neon (plasma).
- Attachments* include:
- custom-made fixtures and brackets
 - fixings and fasteners.
- Statutory and regulatory authority requirements* include:
- federal, state and local authorities administering applicable Acts, regulations and codes of practice and also can pertain to:
 - removal of waste products
 - storage of chemicals.

Unit Sector(s)

Unit sector Construction

Co-requisite units

Co-requisite units Nil

Functional area

Functional area