Australian Government

Department of Education, Employment and Workplace Relations

CPCCPB3027A Install ceiling insulation

Release: 1

CPCCPB3027A Install ceiling insulation

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to install ceiling insulation to comply with safety requirements as well as environmental requirements for energy efficiency ratings in accordance with sustainable building practices. It includes identifying and complying with applicable legislative requirements, planning and preparing for work, installing ceiling insulation, and completing installation and post-work clean-up activities.

This unit may be an essential requirement for registration to install ceiling insulation. Registration requirements may vary in different states and territories.

At the time of endorsement, this unit meets the regulatory requirements of the Government's *Energy Efficient Homes Package*.

Application of the Unit

Application of the unit

This unit supports those individuals who safely and efficiently install ceiling insulation while working with others as members of a team.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCCOHS2001A	Apply OHS requirements, policies and procedures in the

Prerequisite units

construction industry

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. Identify legislative, regulatory, and organisational requirements.	1.1. ***Safety*** and applicable ***legislative requirements*** are identified and complied with. 1.2. Organisational environmental and safety plans and policies are identified and complied with according to ***organisational requirements***. 1.3. ***Safe work methods and practices*** are identified and applied according to organisational safety plans and policies. 1.4. ***Environmental requirements*** are identified and applied according to organisational environmental plans and regulatory requirements. 1.5. ***Emergency response and evacuation procedures*** are identified and carried out when required.
2. Plan and prepare for installing insulation.	2.1. ***Work instructions*** and relevant ***information*** are obtained and confirmed for ***planning and preparation*** purposes. 2.2. Risk assessment is undertaken to identify existing risks and ***hazards*** in the work area, including ***electrical risks and hazards***. 2.3. Identified risks are documented and ***appropriate response*** is undertaken according to safety requirements. 2.4. ***Ceiling insulating material*** and ***insulation requirements*** are confirmed in accordance with work specifications. 2.5. Appropriate ***personal protective equipment*** (PPE) and clothing are identified, correctly fitted, and used according to organisational policies and procedures. 2.6. ***Tools and equipment*** are selected appropriate to the requirements of the work, confirmed for serviceability, and reported for repair or replacement where not serviceable. 2.7. ***Associated material*** is determined and organised ready for use according to ***quality requirements*** and work plans and specifications.
3. Install ceiling insulation.	3.1. Insulation material is accurately measured to minimise waste. 3.2. Insulation is ***installed*** using approved processes and handling techniques according to manufacturer specifications and relevant ***electrical and building regulations***.

ELEMENT	PERFORMANCE CRITERIA
	3.3. Dust-suppression procedures are used to minimise health risk in work area to self and others.
	3.4. Insulation is installed safely without damage or distortion of the surrounding environment, electrical and other services and in a manner that maximises safety of self and others.
	3.5. Variations and difficulties affecting performance or quality requirements of own work are identified and reported.
4. Complete installation.	4.1. Final inspections are conducted to ensure installed ceiling insulation conforms to job and manufacturer specifications.
	4.2. Notification of work completion is made to designated personnel according to organisational procedures.
	4.3. Work area is cleaned and ***materials*** are disposed of, reused or recycled according to organisational, safety and environmental requirements.
	4.4. Tools and equipment are cleaned, checked, maintained and stored according to manufacturer specifications and organisational procedures.
	4.5. Malfunctions, faults, wear or damage to tools, equipment and site are accurately documented and reported for repair or replacement according to organisational procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- self-management skills to:
  - adjust work activity to maintain quality standards
  - evaluate own actions and make judgments about performance and necessary improvements
- communication skills to:
  - communicate clearly and directly, using questioning to identify and confirm requirements

REQUIRED SKILLS AND KNOWLEDGE

- follow instructions
- listen and understand
- share information
- use and interpret non-verbal communication, such as hand signals
- use language and concepts appropriate to cultural differences

- literacy skills to:
  - read and interpret:
    - company procedures
    - documentation from a variety of sources
    - drawings and specifications
    - material safety data sheets (MSDS), job safety analyses (JSA), safe work method statements, and risk assessments
  - recognise and interpret work-related signs, such as safety logos and warnings
  - report faults, safety risks and hazards
  - record results of checks and tests and relevant work-completion procedures
- numeracy skills to calculate insulation material quantities
- identify and report to designated personnel any faults in tools, equipment or materials
- identify faults in insulation materials
- organisational skills to:
  - identify and document wiring that is likely to be adversely affected by the retrospective installation of thermal insulation
  - identify and document hazards, including electrical
  - plan, prioritise and set out work
- problem-solving skills to:
  - respond to change
  - address safety concerns and seek specialist advice where required
- teamwork skills to:
  - relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
  - work with others to action tasks
- technological skills to:
  - use a range of mobile technology, such as two-way radios and mobile phones
  - voice and hand signals to access and understand site-specific instructions

Required knowledge

- appropriate PPE and its use to reduce injury and electric shock
- ceiling insulation material types and quality requirements
- common health and safety risks associated with handling ceiling insulation
- common workplace safety hazards and risks, and procedures for reporting these to

REQUIRED SKILLS AND KNOWLEDGE

designated personnel

- emergency response and evacuation procedures
- environmental requirements, including waste management and recycling
- hierarchy of hazard control
- legislation, regulation and building codes related to ceiling insulation
- MSDS, JSA and safe work method statements
- methods for calculating insulation material quantities
- organisational requirements and procedures relating to ceiling insulation installation, including requirements for a systematic approach to planning own work
- procedures to safely use equipment, shift and handle products and materials, and work at heights and in enclosed areas
- product and process knowledge to identify problems and predict consequences
- relationships of 'R' rating with Building Code of Australia (BCA) and Australian standards' requirements and energy ratings
- tools and equipment prohibited for use near identified asbestos-containing materials (ACM)
- type and purpose of tags and logs of use for equipment
- types, characteristics, uses and limitations of installation tools and equipment
- types, possible location and risks of ACM, including serpentine and amphibole groups, and their use on common building materials
- reason for the operating temperature limit of electrical cables
- effect on cables partially surrounded by thermal insulation and fully surrounded by thermal insulation
- common wiring systems used in domestic premises indicating the age of the installation
- wiring not likely to be adversely affected by the retrospective installation of thermal insulation; note: the following conditions shall apply:

1. cables are thermoplastic sheathed (white), and
2. cables are in continuous contact with a surface (e.g. laying on ceiling lining, fixed to structural members) or in a position where they cannot be partially or fully surrounded by thermal insulation

- clearance of thermal insulation from recessed downlights and ancillary equipment in accordance with AS/NZS 3000:2007 Clause 4.5.2.3; note:

1. Clause 4.5.2.3 in part states:
    - recessed luminaires and their auxiliary equipment shall be installed in such a manner that necessary cooling air movement through or around the luminaire is not impaired by thermal insulation or other material
    - where thermal insulation is of a type that is not fixed in position (e.g. loose fill), a barrier or guard constructed of fire-resistant material shall be provided and secured in position to maintain the necessary clearance
2. any barriers placed around recessed luminaires shall not be enclosed and allow the

REQUIRED SKILLS AND KNOWLEDGE

heat from the luminaire to dissipate freely

- electrical hazards in roof spaces, including unenclosed connections, unenclosed conductors, damaged cable sheaths and exposed conductors
- risk assessment documentation and actions to take where:
  - wiring is of a type likely to be adversely affected by the installation of thermal insulation, and
  - electrical hazards are present
  - note: this requires the engagement of a licensed electrician through an electrical contractor to evaluate the suitability of the wiring for the retrospective installation of thermal insulation and to rectify electrical hazards
- hazards related to polystyrene, polyurethane and metallic foil; note:

1. polystyrene and polyurethane have a detrimental effect on electrical insulation, reducing the effective safe service life of the cables and should not be used where there is a likelihood of contact with electrical cables
2. metallic foil is electrically conductive, therefore appropriate tools, equipment and fixings must be selected

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

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 the required skills and knowledge specified in this unit.

In particular the person should demonstrate the ability to:

- apply knowledge of industry products to identify:
  - common faults and problems
  - manufacturer specifications in relation to insulation properties of the available product
  - manufacturer components and materials
  - relationships of 'R' rating with BCA and Australian standards' requirements and energy ratings
- apply knowledge for the safe installation of thermal insulation in relation to electrical equipment, including:

EVIDENCE GUIDE

- effects of thermal insulation on cables
- wiring likely to be adversely affected by the retrospective installation of thermal insulation
- clearance of thermal insulation from recessed downlights and ancillary equipment

- complete a risk assessment sheet for each installation which documents:
  - whether the wiring system is compatible with thermal insulation
  - number of recess luminaires in ceiling and how the clearances are to be met
  - electrical hazards, and measures taken to eliminate them
  - relevant work instructions
- communicate and work effectively and safely with others
- comply with organisational policies and procedures, including quality requirements
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- follow work instructions, operating procedures and inspection practices to:
  - maintain workplace records in relation to materials, plant and equipment use
  - modify work activities to cater for variations in workplace procedures, personnel, contexts and environment
  - prevent damage to the environment, equipment, products, or site
  - select and use appropriate PPE
  - work effectively alone or with others and operate with minimal supervision
  - select and use non-conductive and insulated tools and materials to minimise electrical hazards
- locate, interpret and apply relevant information, standards and specifications
- select and install ceiling insulation on at least two occasions within agreed timeframes and standards using safe handling methods for materials and equipment.

Context of and specific resources for

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment,

EVIDENCE GUIDE

assessment

provided that simulated or project-based assessment techniques fully replicate construction workplace conditions, materials, activities, responsibilities and procedures.

This unit 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:

- ceiling spaces
- materials and tools.

Assessment of this unit may be in conjunction with assessment of other units commonly performed at the same time in normal work roles.

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 work 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

EVIDENCE GUIDE

number of performances assessed at different points in time and separated by further learning and practice, 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.

Safety requirements are to be in accordance with commonwealth, state and territory legislation and regulations, organisational safety plans and policies, and include:

- emergency procedures, including evacuation and provision of first aid
- hazard control procedures
- hazardous materials and substances
- electrical hazards
- PPE prescribed under legislation, regulations and workplace policies and practices
- reporting hazards, incidents, injuries, near misses and identified ACM
- safe operating procedures, including the conduct of operational risk assessment and treatments associated with:
  - manual handling

RANGE STATEMENT

- concealed services, including water, power and gas
- lighting
- traffic control
- restricted access barriers
- trip hazards
- power sources and leads
- power tools, including cutting tools
- workplace visitors and the public
- working at heights
- working in enclosed areas
- working in proximity to others
- types of fire and use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements.

Commonwealth, state and territory ***legislative requirements*** include:

- Australian standards, including working at heights requirements:
  - AS 6001:1999 Working platforms for domestic application
  - AS 1576 Scaffolding
  - AS/NZS4576:1995 Guidelines for scaffolding
- conduct on-site operational assessment of electrical risk and implement control measures to prevent it
- construction industry OHS standards and guidelines
- duty of care
- health and safety representatives, committees and supervisors
- licences, tickets and certificates of competency
- National Code of Practice for Induction Training for Construction Work
- national safety standards
- OHS and welfare Acts and regulations
- safety codes of practice, and JSA and safe work method statements.

Organisational requirements relate to:

- access and equity policy, principles and practice
- client service standards
- defined resource parameters
- emergency and evacuation procedures
- employer and employee rights and responsibilities
- OHS policies, procedures and programs
- organisational goals, objectives, plans, systems and

RANGE STATEMENT

	processes • organisational policies and procedures, including personnel practices and guidelines • own role and responsibility • quality and continuous improvement processes and standards.
Safe work methods and practices relate to:	• access to site amenities, such as drinking water and toilets • avoiding unnecessary risks • awareness of existing and potential hazards • day to day observation of OHS policies and procedures • general requirements for safe use of plant, tools and equipment • general requirements for use of PPE and clothing • housekeeping to ensure a clean, tidy and safe work area • no drugs and alcohol at work • preventing bullying and harassment • risk assessment • smoking in designated areas • storage and removal of debris • use of plant and equipment guards.
Environmental requirements include:	• clean-up management • dust and noise • vibration • waste management and recycling.
Emergency response and evacuation procedures include:	• emergencies, such as fire, toxic and/or flammable vapours emission, vehicle/mobile plant accident, structural collapse, chemical spill and injury to personnel, including electric shock • evacuation • extinguishing fires • first aid.
Work instructions may include:	• completion dates • work requirements and tasks • procedures for installing insulation in relation to electrical equipment • electrical isolation and tagging of work area • site access information • risk assessment documentation • safety measures for electrical hazards • specific client and site requirements

RANGE STATEMENT

	• work schedules.
Information includes:	• diagrams or sketches • drawings, plans and specifications • instructions issued by authorised organisational or external personnel • log books • manufacturer specifications and instructions • MSDS • memos • regulatory and legislative requirements pertaining to installing ceiling insulation • relevant Australian standards • safe work procedures relating to installing ceiling insulation • signage • suppliers' information • verbal and written instructions, including diagrams • work bulletins.
Planning and preparation relate to:	• assessing conditions and hazards • determining work requirements and safety plans and policies • identifying equipment defects • inspecting workplaces.
Hazards may include:	• asbestos dust and fibres • asbestos containing materials • enclosed areas (e.g. heat stress) • dust from fibreglass and other insulation materials • electrical hazards • inability of ceiling structure to support additional weight of insulation materials and installers • manual handling hazards (e.g. knee and back injury) • noise, plant and equipment hazards • slips, trips and falls • synthetic mineral fibres • working at heights.
Electrical risks and hazards include:	• unenclosed connections • unenclosed conductors • damaged cable sheaths • exposed conductors • wiring that is likely to be adversely affected by retrospective installation

RANGE STATEMENT

- not following specified clearances/insulation barriers around recessed luminaires
- not observing operating temperature limit of electrical cables
- wiring system age
- using polystyrene, polyurethane and metallic foil-based products.

Appropriate response may include:

- engaging a licensed electrician to evaluate suitability of wiring
- isolating and tagging work area
- seeking changes to work instructions
- deciding not to undertake work
- reporting to designated personnel
- following OHS legislative requirements.

Ceiling insulating material includes:

- batts and blankets:
  - glasswool
  - glasswool/rockwool - foil attached
  - polyester
  - rockwool
  - sheep's wool
- boards:
  - expanded polystyrene
  - expanded polystyrene - foil attached
  - extruded polystyrene (styrofoam)
- loose fills:
  - cellulose fibre
  - granulated rockwool
  - sheep's wool
- reflective:
  - foil batts
  - multi-layer reflective
  - roll-form reflective foil laminate (RFL).

Insulation requirements:

- ***as determined by BCA and Australian standards AS/NZS 4859.1, AS 4200.1, AS 4200.2 (2006)***
- ***include***:
  - approved system radiative transfer (RT) calculations
  - downward R-values
  - upward R-values.

Personal protective

- aprons

RANGE STATEMENT

equipment includes:

- arm guards
- caps
- dust masks and respirators
- ear muffs and plugs
- gloves
- hard hats
- harnesses and ropes
- high visibility retro reflective vests
- jackets
- overalls
- safety glasses and goggles
- steel-capped boots
- UV protective clothing and sunscreen.

Tools and equipment:

- include:
  - broad knives
  - brooms
  - caulking guns
  - electric screw guns
  - hammers
  - hand saws
  - keyhole saws
  - ladders
  - manual levelling devices
  - measuring tapes and rules
  - nail bags
  - power drills
  - power leads
  - power saws
  - spanners
  - spirit levels
  - T squares
  - taping knives
  - tin snips
  - trestles
  - trowels
  - non-conductive and insulated tools
- may include:
  - air compressors and hoses
  - C clamps

RANGE STATEMENT

- docking saw and drop saws
- laser levelling devices
- masonry drills
- nail guns
- pop riveters
- saw stools
- scaffolding and planks.

Associated materials include:

- adhesive
- ceiling products
- downlight covers
- fibrous plaster
- jointing tape
- metal and aluminium type products
- nails
- non-conductive fixing devices
- plasterboard
- screws
- sealants
- staples
- steel safety mesh.

Quality requirements incorporate relevant regulations and include:

- Australian standards
- internal organisational quality policy and standards
- manufacturer specifications
- workplace operations and procedures.

Installation includes:

- employer-approved manual handling techniques
- manufacturer recommended methods and fasteners
- maintaining specified clearances from recessed luminaires
- installing thermal insulation barriers to luminaires and other electrical equipment according to manufacturer's recommendations and applicable standards, including AS/NZS3000:2007
- work sequences and fixing processes that minimise waste and maximise material.

Electrical and building regulations may include:

- BCA
- Australian standards such as:
  - AS 3999:1992 Thermal insulation of dwellings - Bulk insulation - Installation requirements
  - AS/NZS 4859.1:2002 Materials for the thermal insulation of buildings - Testing and labelling of

RANGE STATEMENT

	insulation • AS/NZS 4200 Pliable building membranes and underlays - reflective foils • AS/NZS 4200.1 Part 1: Materials - reflective foils • AS/NZS 4200.2 Part 2: Installation requirements - reflective foils • AS 1366.1 Rigid cellular polyurethane (RC/PUR) - other insulations • AS 1366.2 Rigid cellular polyisocyanurate (RC/PIR) - other insulations • AS 1366.3 Rigid cellular polystyrene moulded (RC/PS-M) - other insulations • AS 1366.4 Rigid cellular polystyrene - extruded (RC/PS) • AS 4073 Urea-formaldehyde foam thermal insulation - In situ set foam BCA insulation levels - Other insulations. • AS/NZS 3000:2007 (with Amd 1) Wiring Rules, in particular Clause 4.5.2.3.
Materials include:	• hazardous materials • non-toxic materials.

Unit Sector(s)

Unit sector Construction

Competency field

Competency field Plasterboard