



Australian Government

Department of Education, Employment and Workplace Relations

PRMPFES40A Install passive fire and smoke containment systems

Release: 1

PRMPFES40A Install passive fire and smoke containment systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency covers the installation and adjustment of passive fire and smoke containment systems. This includes both fireproofing and fire stopping installations. The unit covers the knowledge and skills required to install passive fire and smoke containment systems, as well as labelling and certification procedures. Installation of passive fire and smoke containment systems must be completed in accordance with relevant legislative, industry, and organisational requirements, including occupational health and safety (OHS) policies and procedures.

Note: The passive fire service technician is not permitted to undertake any installation, replacement, maintenance and repair functions that are restricted to licensed trades or occupations (subject to relevant state/territory regulations).

Application of the Unit

Not Applicable

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

Employability Skills Information

Not Applicable

Elements and Performance Criteria Pre-Content

Not Applicable

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Interpret and comply with legal and industry requirements relating to the installation of passive fire and smoke containment systems	1.1 Apply knowledge and understanding of <i>legislative and industry requirements</i>, including relevant state/territory building codes, to fire and smoke containment system installations and associated <i>work procedures</i> 1.2 Confirm or clarify knowledge and understanding of <i>legislative and industry requirements</i>, including state/territory building codes, where necessary, with relevant persons using <i>technical terminology</i> 1.3 Identify <i>potential and actual breaches</i> of <i>legislative and industry requirements</i> relating to fire and smoke containment systems and take action according to <i>organisational requirements</i> and <i>OHS policies and procedures</i>
2 Identify work processes and assemble relevant parts for the installation of the passive fire and smoke containment system	2.1 Obtain all necessary work permits prior to entering customer premises 2.2 Discuss <i>customer requirements</i> with customer prior to proceeding to the installation 2.3 Select a complying passive fire and smoke containment system for installation according to <i>organisational</i> and <i>client requirements</i> 2.4 Apply relevant measurement processes to the installation site and passive fire and smoke containment system <i>components</i> 2.5 Identify and assemble <i>components</i>, tools and equipment and materials required for the installation 2.6 Identify and assemble appropriate <i>fireproofing materials</i> and/or <i>fire stopping materials</i> required for the installation of the passive fire and smoke containment system
3 Prepare fireproofing substrate or fire stopping opening for installation of passive fire and smoke containment systems	3.1 Check the steel <i>structure</i> (structural steel members or ducts) and/or <i>wall construction</i> for compliance with the required smoke resistance level or fire resistance level 3.2 Prepare the fireproofing substrate and/or fire stopping opening by cleaning, priming, or other necessary means, and measure and prepare necessary materials for installation of fireproofing and/or fire stopping system

ELEMENT**PERFORMANCE CRITERIA**

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| 4 Install passive fire and smoke containment systems | 4.1 Install the fireproofing material and/or fire stopping system as per the manufacturers' installation instructions |
| | 4.2 Inspect and test the passive fire and smoke containment system for <i>defects</i> and to check that installation is sound and aesthetically pleasing according to standard testing procedures and acceptable workmanship |
| | 4.3 Rectify and report on any impediments according to <i>organisational requirements</i> |
| 5 Label (mark) and certify the passive fire and smoke containment system | 5.1 Assess and then label (<i>mark</i>) the passive fire and smoke containment system installations according to the provisions of the relevant Australian Standard, manufacturer, Building Code of Australia and <i>organisational requirements</i> |
| | 5.2 Complete passive fire and smoke containment systems <i>schedule of evidence of compliance (logbook)</i> according to the relevant Australian Standard and according to <i>organisational and customer requirements</i> |
| 6 Complete installation | 6.1 Ensure customer premises are left in a clean and tidy condition on completion of installation functions |
| | 6.2 Complete <i>documentation</i> and distribute according to <i>organisational and customer requirements</i> |

Required Skills and Knowledge

Refer to Evidence Guide

Evidence Guide

EVIDENCE GUIDE

Knowledge needed to achieve the performance criteria

Knowledge and understanding are essential to apply this unit of competency in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this unit are listed below.

- Key features of legislation, Australian Standards and building code requirements relating to installing passive fire and smoke containment systems.
- Key features of legislation, Australian Standards and building code requirements relating to passive fire and smoke containment.
- Purpose and interpretation of Australian Standards and technical documentation relating to passive fire and smoke containment systems.
- The implications of not applying legislative requirements to job functions.
- The dangers of incorrect installation of passive fire and smoke containment systems.
- Principles of passive fire protection related to overall fire safety and containment systems specific to passive fire and smoke containment systems.
- Action to take when a breach of health, safety and/or other policy occurs.
- Methods of converting imperial units of measurement to metric.
- Technical terms relating to passive fire and smoke containment system installation.
- Fireproofing and fire stopping variables including types, components and fire barrier types.
- Passive fire and smoke containment labelling types.
- Organisational requirements for labelling and certifying passive fire and smoke containment system installations.
- Procedures for determining fire resistance levels and smoke resistance levels.

Specific skills needed to achieve the performance criteria

To achieve the performance criteria, some complementary skills are required. These relate to the ability to:

- identify, select and comply with appropriate Australian Standards and related legislation
- select and use appropriate tools relating to installation procedures
- recognise and identify components of passive fire and smoke containment systems
- interpret manufacturer data sheets to determine installation requirements for a range of passive fire and smoke containment system components installed into or onto elements of construction, including structural elements and/or openings in or through fire compartments
- plan and organise work according to organisational requirements
- follow safe work procedures and identify potential and existing risks or hazards
- select and use personal protective equipment
- work with tools, equipment and products safely
- apply principles of workplace housekeeping
- apply literacy and language skills to:
 - use technical terminology relating to installing passive fire and smoke containment systems and work practices
 - understand and comply with work instructions
 - interpret manufacturers' installation specifications and maintenance instructions
 - access information from technical manuals

- find and use written information including building specifications
- communicate technical information to customers and colleagues
- complete and distribute relevant documentation.

Other units of competency that could be assessed with this unit

This unit could be assessed on its own or in combination with other competencies relevant to the job function, for example PRMPFES39A Inspect and test passive fire and smoke containment products and systems.

Resources required to assess this unit

The following resources should be available:

- actual or simulated work environment
- access to relevant standards and legislation
- access to a variety of installation (hinged fire and smoke door) procedures
- assessment documentation
- training and assessment record book

Gaining evidence to assess this unit

For valid and reliable assessment of this unit, the competency should be demonstrated over a period of time and be observed by the assessor (or assessment team working together to conduct the assessment). The competency is to be demonstrated in a range of situations, which may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace.

Consideration should be given to assessing consistency of outcome over an adequate period of time.

Candidates should also be given the opportunity to practise and undertake self-assessment of performance before requesting formal assessment.

All safety requirements must be adhered to during all practical activities.

Performance and assessment of this unit must be carried out within the relevant requirements of the following legislative and industry framework:

- building Acts/regulations/codes
- Australian Standards identified as relevant to the work procedure
- environmental regulations
- manufacturers' specifications
- organisational requirements, including OHS policies and procedures
- OHS legislation, codes and regulations

Oral questioning or a written assessment may be used to assess underpinning knowledge. (In assessment situations where the candidate is offered a preference between oral questioning and written assessment, questions are to be identical.)

Assessment of evidence should establish the candidate's ability to perform the job to the standard required in the workplace. Supplementary evidence may be obtained from relevant authenticated correspondence or reports from supervisors or team leaders.

Competency in this unit may be gathered from practical demonstrations in each of the following categories:

- Application of spray type, intumescent paint type and board type fireproofing of structural steel and ductwork.
- Application of fire stopping systems.

Key competency levels

There are a number of processes learnt throughout work and daily life that are required in all jobs. They are fundamental processes and generally transferable to other work environments. Some of these work processes are covered by the key competencies listed below. Information provided to each question highlights how these processes are applied in this unit of competency.

The number in brackets indicates the level to which the key competency should be demonstrated.

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|------------------------------|---|---|
| 1 Perform the process | 2 Perform and administer the process | 3 Perform, administer and design the process |
|------------------------------|---|---|

How can information be collected, analysed and organised (2)?	Collect information from a variety of sources during the installation process, such as assignment instructions, and manufacturers' and product specifications, while identifying and applying relevant legislative and industry requirements.
How can communication of ideas and information (1) be applied?	Discuss assignment instructions with internal and external customers ensuring ideas are communicated, and complete formal documentation where required.
How are activities planned and organised (2)?	Plan installation procedures while monitoring assignments for timeliness, time management, safety, legislative and organisational requirements.
How can teamwork (1) be applied?	Cooperatively work with colleagues and customers throughout the installation process.
How can the use of mathematical ideas and techniques (2) be applied?	Apply basic mathematical techniques, including reading mathematical information from manufacturers' instructions and building plans and measuring hardware and other components.
How can problem-solving skills (1) be applied?	Identify during the installation process defects that may be rectified and/or recorded and reported.
How can the use of technology (2) be applied?	Demonstrate understanding and apply technological principles during the installation process.

Range Statement

RANGE STATEMENT

The range statement links the required knowledge and organisational and technical requirements to the workplace context. It describes any contextual variables that will be used or encountered when applying the competency in work situations. It allows for different work practices and work and knowledge requirements as well as for differences between organisations and workplaces. The following variables may be present for this particular unit. **Legislative and industry requirements** may include:

- relevant Commonwealth and state/territory building Acts/regulations/codes
- OHS legislation, codes and regulations
- relevant current Australian Standards
- Building Codes of Australia
- manufacturers' documentation
- dangerous goods regulations
- licensing arrangements
- environmental regulations

- building surveyor requirements
- other relevant legislation relating to passive fire protection.

Work procedures may include:

- instructions from colleagues/supervisor/manager
- specific customer requirements
- assignment instructions
- equipment manufacturers' requirements
- reporting and documentation requirements
- personal protective equipment requirements.

Relevant persons may include:

- building supervisor/manager
- team leaders
- supervisors
- managers
- colleagues
- customers.

Technical terminology - common technical terms used in the installation of passive fire and smoke containment systems are:

- plumb, level, square and perpendicular
- mix ratio, density, wet film thickness, dry film thickness, HP/A, ESM ratio and critical temperature
- fire rated walls, masonry, concrete, plasterboard and shaft wall
- fire rated floors and floor ceiling systems
- penetration dimensions, width, height, depth and orientation
- ambient/cold smoke, medium smoke and elevated/hot smoke
- intumescent products and ablative products
- clearance, field of application, fire resistance levels, incipient spread of fire, spread of flame indices, fire test report, assessments and letters of opinions.

Potential and actual breaches of legislative and industry requirements could be identified by:

- direct observation
- as part of workplace quality assurance teams.

Organisational requirements may be located in quality assurance and/or procedures manuals relating to:

- legal and organisational policy/guidelines
- personnel practices and guidelines outlining work roles, responsibilities and delegations
- cost, reliability, ease of installation and maintenance requirements of the selected passive fire and smoke containment system
- legislation relevant to the service operation
- OHS policies, procedures and programs
- documentation and information systems and processes
- use of electronic job scheduling and communication devices.

OHS policies and procedures may relate to:

- employer/employee rights and responsibilities
- the OHS hierarchy of control
- assessing the worksite for hazards and risks prior to preparing the worksite for the work procedure
- displaying signs and/or utilising barriers in the work area
- hazard and risk identification and reporting
- working safely on ladders and raised platforms
- risk assessment and control measures
- incident/accident investigation
- OHS audits and safety inspections
- safe operating procedures/instructions including:
 - working safely around electrical wiring, cables and overhead powerlines
 - working safely around tools and equipment
 - risk and hazard recognition
 - emergency procedures
 - awareness of electrical hazards
 - following confined spaces procedures
- utilising personal protective equipment including:
 - safety glasses or goggles
 - safety boots or shoes
 - hard hat
 - ear muffs or plugs
 - appropriate gloves and overalls
 - sun hat
 - dust mask
- equipment maintenance and use
- use and storage of hazardous substances
- First Aid.

Customer requirements may include:

- provision of routine services
- cost, reliability and maintenance requirements of the selected passive fire and smoke containment system
- provision of non-routine or urgent services
- confirmation of, or variations to, service instructions
- sighting work permits
- sign-in/out procedures for entry to or exit from premises
- written or verbal confirmation of services provided and/or future maintenance schedule.

Passive fire and smoke containment systems include:

- passive fire and smoke containment products including:
 - fabric and timber protection (impregnated or sprayed)
 - fire rated air transfer grilles
 - mechanical and intumescent fire dampers
 - smoke dampers
 - fire resistant boards (calcium silicate, vermiculite, etc)
 - fire stop collars (cast in, retrofit, wall, etc)

- fire rated sealants, caulks and putties (acrylic, polyurethane, silicone, etc)
- linear gaps seals (impregnated foams, tapes, intumescent gaskets, sealants)
- fire resistant pillows (intumescent, non-intumescent)
- fire resistant mortars and grouts (load bearing, non-load bearing)
- intumescent paints and coatings (other than those used for fireproofing structural steel)
- materials into or onto which passive fire and smoke containment products are installed including:
 - masonry
 - concrete
 - timber
 - steel
 - plasterboard
 - UPVC
 - fire resistant board
- passive fire and smoke containment solutions including:
 - structural steel fireproofing/protection
 - duct fireproofing/protection
 - duct/damper penetration protection
 - ceiling and partition systems
 - penetration solutions
 - fire rated sealants
 - UPVC/plumbing penetrations
 - access panels and hatches
 - intumescent dampers and seals
 - protection against spread of flame
 - industrial fire protection
 - openings in structural elements
- control joints/expansion joints.

Structural element requiring fireproofing may be:

- structural steel element (beam, column, or truss)
- sheet metal smoke exhaust ductwork
- self-supporting duct work or bulkheads (made from calcium silicate or other proprietary board material).

Penetrated element of construction requiring fire stopping may be:

- drywall (plasterboard or lightweight construction)
- masonry wall (brick, blockwork or pre-cast concrete panels)
- concrete floor slab
- drywall ceiling (plasterboard or lightweight construction)
- bulkhead
- fire or smoke door panel.

Defects may include items that do not comply with:

- the requirements of the necessary legislation
- Australian Standards
- manufacturers' instructions.

Marking and labelling requirements are set out in the relevant Australian Standard.

Schedule of evidence of compliance is set out in the relevant Australian Standard.

Documentation may include:

- job card
- customer recommendation form
- service agreements
- equipment recommendation form
- corrective action report
- certificate of inspection
- product documentation/installation instructions
- maintenance record system.

Note: Australian Standards are frequently revised and users must always check for currency.

Unit Sector(s)

Not Applicable