



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **CPCCPD3033A Apply intumescent coatings**

**Release: 1**

## CPCCPD3033A Apply intumescent coatings

### Modification History

Not Applicable

### Unit Descriptor

**Unit descriptor** This unit of competency specifies the outcomes required to apply intumescent coatings to a range of different material surfaces.

The unit includes planning and preparation for the work, preparation of the application area, application of the specialist coatings and completion of clean-up activities.

### Application of the Unit

**Application of the unit** This unit of competency supports the attainment of the understanding and skills to apply intumescent coatings to building surfaces in a range of construction projects, which may include working with others and as a member of a team.

### Licensing/Regulatory Information

Not Applicable

### 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

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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.	<p>1.1. Work instructions, including plans, specifications, quality requirements and operational details are obtained from relevant <i>information</i>, confirmed and applied for <i>planning and preparation</i> purposes.</p> <p>1.2. <i>Safety (OHS)</i> requirements are followed in accordance with safety plans and policies.</p> <p>1.3. Signage and barricade requirements are identified and implemented.</p> <p>1.4. <i>Tools and equipment</i> are selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.</p> <p>1.5. <i>Materials</i> quantity requirements are calculated in accordance with plans, specifications and <i>quality requirements</i>.</p> <p>1.6. Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.</p> <p>1.7. <i>Environmental requirements</i> are identified for the project in accordance with environmental plans and regulatory obligations and applied.</p>
2. Prepare application area.	<p>2.1. Area is set up for application processes to suit surfaces to be painted.</p> <p>2.2. Adjoining surfaces to application area are protected by masking off or covering prior to application of decorative paint finishing materials.</p> <p>2.3. Ventilation is provided in application area to maintain safety of self and others.</p> <p>2.4. Measures are taken to ensure application area is dust free.</p> <p>2.5. Surface to be coated is checked to ensure sufficient clearance is available for the expansion of the coating in the case of a fire.</p>
3. Apply intumescent coatings to timber.	<p>3.1. Surface is completely stripped of any pre-existing finish to prepare for application of water-based intumescent coating suitable for timber.</p> <p>3.2. Suitable priming coat is applied to ensure coating adhesion.</p> <p>3.3. <i>Intumescent coating</i> is applied by brush, roller or airless spray, ensuring temperature and humidity requirements for application are maintained.</p>

ELEMENT	PERFORMANCE CRITERIA
4. Apply intumescent coatings to structural metal.	<p>3.4. Top/finish coat is applied to protect the finish against abrasion and humidity.</p> <p>4.1. Metal surface is blasted or wire-brushed to prepare for intumescent coating for <i>structural metal</i>.</p> <p>4.2. Galvanised steel is de-greased before application of coating.</p> <p>4.3. Suitable priming coat is applied if metal is not already primed to ensure coating adhesion.</p> <p>4.4. Intumescent coating is applied by brush, roller or airless spray ensuring temperature and humidity requirements for application are maintained.</p> <p>4.5. Required film thickness is measured using appropriate wet film <i>thickness measuring gauges</i>.</p> <p>4.6. Top/finish coat is applied to protect the finish against abrasion and humidity.</p>
5. Clean up and store equipment.	<p>5.1. Painting equipment and spray painting equipment are dismantled, cleaned, maintained and stored.</p> <p>5.2. Waste and unwanted materials are removed and placed into job waste bins or rubbish stockpile in a safe and effective manner in accordance with sound work practices compliant with environmental requirements.</p> <p>5.3. Unused materials are sealed and stored/stacked in accordance with standard material handling practices and techniques and company requirements.</p> <p>5.4. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specification.</p> <p>5.5. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer specifications and/or standard work practices.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

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

#### Required skills

## REQUIRED SKILLS AND KNOWLEDGE

Required skills for this unit are:

- communication skills to:
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - read and interpret:
    - documentation from a variety of sources
    - drawings and specifications
  - report faults
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- evaluating own actions and making judgments about performance and necessary improvements
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- organisational skills, including the ability to plan and set out work
- recognising procedures, following instructions, responding to change and contributing to workplace responsibilities, such as current work site environmental and sustainability frameworks or management systems
- teamwork skills to coordinate own work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technological skills to:
  - use a range of mobile technology, such as two-way radio and mobile phones
  - voice and hand signals to access and understand site-specific instructions.

### Required knowledge

Required knowledge for this unit is:

- chemical properties of the coating carbon supplier; acid source and expanding agent
- coating requirements for structural metal work, including coating performance differences between hollow and concrete filled structures
- coating requirements for timber
- compatibility of coatings to substrates
- fire resistance level (FRL) rating of intumescent coatings for a range of construction materials
- job safety analysis (JSA) and safe work method statements
- material safety data sheets (MSDS)
- materials storage and environmentally friendly waste management

**REQUIRED SKILLS AND KNOWLEDGE**

- painting and decorating terminology
- plans, drawings and specifications
- processes for the calculation of material requirements
- quality requirements
- volume solids behaviour and impact on intumescent coatings performance.

# Evidence Guide

## EVIDENCE GUIDE

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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 the ability to:

- locate, interpret and apply relevant information, standards and specifications
- comply with site safety plan and OHS legislation, regulations and codes of practice applicable to workplace operations
- comply with organisational policies and procedures including quality requirements
- safely and effectively operate and use tools, plant and equipment
- communicate and work effectively and safely with others
- complete to specification, ensuring correct film thickness, surface preparation and finishing techniques, the following intumescent coating applications:
  - a minimum of one application on a timber surface
  - a minimum of one application on a structural steel surface.

### 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.



## EVIDENCE GUIDE

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Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the mandatory task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- 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

## EVIDENCE GUIDE

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must relate to a 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

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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.

**Information** includes:

- diagrams or sketches
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions, where specified
- MSDS
- memos
- organisation work specifications and requirements
- regulatory and legislative requirements

## RANGE STATEMENT

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pertaining to the application of intumescent coatings

- relevant Australian standards
- safe work procedures relating to the application of intumescent coatings
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.
- assessment of conditions and hazards
- determination of work requirements and safety plans and policies
- equipment defect identification
- work site inspection.
- emergency procedures, including extinguishing fires, organisational first aid requirements and evacuation
- handling activities that may require the assistance of others or the use of manual or mechanical lifting devices where size, weight or other issues, such as a disability are a factor
- 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:
  - earth leakage boxes
  - electrical and fire and/or explosion from combustible materials
  - falling objects
  - lighting
  - manual handling
  - power cables, including overhead service trays, cables and conduits
  - restricted access barriers
  - solvents, lead, chemicals, fumes/gases
  - surrounding structures
  - traffic control

*Planning and preparation* include:

*Safety (OHS)* is to be in accordance with state and territory legislation and regulations and project safety plan and may include:

## RANGE STATEMENT

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- trip hazards
- work access platforms
- work site visitors and the public
- working at heights
- working in confined spaces
- working in proximity to others, work site visitors and the public
- use of firefighting equipment
- use of tools and equipment
- workplace environmental requirements and safety.

***Tools and equipment*** include:

- brushes
- compressors
- mobile scaffold
- planks
- rollers
- sanders
- scrapers
- spray equipment
- stepladders
- trestles
- vacuum cleaners.

***Materials:***

- include:
  - primers
  - water-based intumescent coatings
  - solvent-based intumescent coatings
  - suitable clear finishes for protection of the coating
- may include manufacturers' proprietary products.

***Quality requirements*** include:

- internal company quality policy and standards
- manufacturer specifications, where specified
- relevant regulations, including Australian standards
- workplace operations and procedures.

***Environmental requirements*** include:

- clean-up management
- dust and noise
- stormwater protection
- waste management.

## RANGE STATEMENT

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### *Intumescent coatings:*

- include:
  - surface coatings that in a fire situation undergo a chemical reaction with the increase in temperature, so the intumescent coating expands to many times its original thickness; the coating should provide an insulating foam-like coating or 'char' that protects the substrate
  - water or solvent-based, depending on the humidity requirements and job site environment
- may be applied by:
  - brush
  - roller or airless spray equipment
- must meet:
  - fire resistance level (FRL) requirements for the material it is applied to and the structure being coated.

### *Structural metal:*

- includes:
  - beams
  - columns
- may be:
  - concrete filled
  - hollow.

### *Thickness measuring gauges:*

- measure film thicknesses from 0.03mm to 13mm
- can be hand held.

## Unit Sector(s)

Unit sector

Construction

## Functional area

Functional area

