

Unit of Competency CPCCSV5009

Assess the impact of fire on building materials

Application

This unit of competency specifies the outcomes required to assess the impact of fire on building materials.

It includes the research, analysis and reporting of testing conducted on a range of building materials and structures in differing circumstances to determine combustion, flammability, heat transfer, burning conditions, building material behaviour, fire loads of buildings and fire resistance.

The unit of competency supports the attainment of the understanding and skills to assess the impact of fire on building materials within the context of relevant legislation, the National Construction Code of Australia (NCC) and Australian standards.

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

Prerequisite Unit

CPCCWHS2001 Apply WHS requirements, policies and procedures in the construction industry.

Elements and Performance Criteria

1. Research combustion process as it relates to different materials.	1.1 Identify and record processes and flame characteristics of combustion of solids, liquids and gases from a research and analysis process. 1.2 Identify and record factors contributing to combustion. 1.3 Research and record endothermic and exothermic processes. 1.4 Calculate heat of combustion fuels without error. 1.5 Analyse and record factors contributing to propagating flame front.
2. Analyse flammability of matter in different states.	2.1 Analyse and record flammability in terms of fire triangle and fire tetrahedron theories. 2.2 Examine and record flammability of matter in physical states. 2.3 Identify and record flammability in terms of upper and lower flammability limits. 2.4 Identify and record factors contributing to the explosiveness of dusts.
3. Identify conditions of burning at the fire point.	3.1 Interpret limiting adiabatic flame temperature (LAFT) values accurately. 3.2 Analyse and record process of extinguishment related to the combustion process.
4. Record mechanisms of heat transfer during fire growth, development and spread.	4.1 Identify and record heat transfer factors in fire situations. 4.2 Analyse and record processes of self-induced heating. 4.3 Observe and record behaviour of fires in partially and fully enclosed compartments. 4.4 Calculate amount of smoke produced from a fire.
5. Record the behaviour of	5.1 Evaluate building materials for fire safety and fire resistance levels and record findings.

building materials subjected to extreme levels of heat.	5.2	Identify and record effect of fire on structural and non-structural elements.
	5.3	Identify and record effect of fire on plastic and textile materials.
6. Devise the fire load of a building and describe the effect on the BCA classification and compartmentation.	6.1	Calculate effect of building occupancy on potential fire load.
	6.2	Research and record factors that may increase the severity of a fire.
	6.3	Research and record fire load, fire severity and general burning behaviour of materials.
7. Report the requirements of fire resistance of building elements and forms of construction.	7.1	Research and record fire resistance levels of building elements and forms of construction.
	7.2	Apply early fire hazard indices to the BCA requirements.
	7.3	Research and record Australian standards relating to fire testing of building materials and forms of construction.

Foundation skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPCCSV5009A Assess the impact of fire on building materials.

Links

Companion Volume Implementation Guide:

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

Assessment Requirements for CPCCSV5009

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Performance Evidence

To demonstrate competency, a candidate must meet the performance criteria of this unit by:

- performing fire research, analysis, identification and reporting of findings for at least one fire assessment or equivalent, including at least three different materials
- assessing applicable fire safe suitable building materials for at least one building project
- providing reports to appropriate body/individual as determined by the project brief.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- characteristics of endothermic and exothermic processes
- effects of fire on structural and non-structural elements:
 - behaviour of building materials subject to extreme heat
 - combustion of materials
 - fire loads of buildings
 - fire resistance of materials
 - flammability circumstances
 - heat transfer characteristics
 - point of fire burning conditions
- extinguishment principles
- limiting adiabatic flame temperature (LAFT) values
- materials:
 - timber
 - plastic
 - fabric
 - other types of fire load forming building materials
- principles of combustion and flammability
- processes for the preparation of documentation
- relevant federal, state or territory legislation and local government policy and procedures
- research methods:
 - definitions and test outcomes
 - material safety data sheets (MSDS)
 - reports
 - written records and historical data.

Assessment Conditions

Assessors must meet the requirements for assessors contained in the Standards for Registered Training Organisations.

This unit must be assessed in the workplace or a close simulation using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations.

Links

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