



Australian Government

Department of Education, Employment and Workplace Relations

RIIMSM307A Install and maintain ventilation systems and equipment

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the installation and maintenance of ventilation systems and equipment in the metalliferous mining industry. It includes establishing mine ventilation systems, installing/constructing ventilation systems, and monitoring and maintaining mine ventilation systems. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Establish mine ventilation system	1.1. Access, interpret and apply compliance documentation relevant to the work activity 1.2. Inspect and evaluate mine configuration, or obtain advice from appropriate source, to identify the most effective mine ventilation method 1.3. Determine ventilation system configuration and location of ventilation equipment and devices for effective mine ventilation 1.4. Identify and obtain ventilation equipment and devices necessary to establish the selected ventilation method
2. Install/construct ventilation system	2.1. Coordinate activities with others at the site prior to commencement of, and during, the work activity 2.2. Prepare work site in accordance with mine requirements to ensure a safe working environment 2.3. Install ventilation equipment in designated location in accordance with manufacturer's /supplier instructions and site safe operating procedures 2.4. Construct ventilation device in designated location in accordance with manufacturer's and/or site specific requirements 2.5. Recognise and respond to hazardous and emergency situations in accordance with manufacturer's instructions and/or site procedures
3. Monitor and maintain mine ventilation system	3.1. Carry out inspections of ventilation equipment, devices and system to ensure safe efficient operation 3.2. Detect and measure airflow and adjust ventilation system to maintain adequate flow of air through the mine 3.3. Monitor and maintain mine air quality to identify impurities and contaminants to ensure respirability of mine air 3.4. Obtain and prepare necessary replacement materials/equipment required for the work in accordance with work practices

	3.5. Carry out maintenance work 3.6. Maintain records/reports
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Required Skills and Knowledge

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

Required skills

Specific skills are required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to install and maintain ventilation systems and equipment:

- apply legislative, organisation and site requirements and procedures for installing and maintaining ventilation systems and equipment
- apply operational safety requirements
- access, interpret, apply and communicate technical information
- use hand and power tools
- apply construction techniques
- inspect and maintain equipment, devices and materials
- comply with environmental requirements

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to install and maintain ventilation systems and equipment:

- operational safety systems related to ventilation systems, equipment and devices
- statutory and site ventilation requirements
- mine operational procedures
- basic mine geology and survey information related to ventilation systems
- types and applications of ventilation systems
- ventilation equipment and device construction, processes and operating characteristics
- ventilation device equipment and material characteristics
- site environmental requirements and constraints related to ventilation systems
- gas monitoring and testing
- air flow measurement
- changing environmental conditions
- risk management procedures

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	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for installing and maintaining ventilation systems and equipment • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of installing and maintaining ventilation systems and equipment • working with others to undertake and complete the installation and maintenance of ventilation systems and equipment that meets all of the required outcomes • consistent timely completion of ventilation systems and equipment installation and maintenance that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of

	assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete the installation and maintenance of ventilation systems and equipment
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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.

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Mine ventilation methods may include:	• natural ventilation • mechanical ventilation • auxiliary ventilation
Ventilation equipment and devices may include:	• fans • pipes • compressed air injectors • ventilation tubing • barriers
Materials for devices may include:	• plastic sheeting • timber • conveyor belt
Hazards may include:	• irrespirable atmospheres • noxious atmospheres • flammable • explosive mixtures
Materials/equipment may include:	• grout pumps • cement mixer • compressed air drill • borer • hoses • hand tools • scaffolding • level • water traps • sampling lines • pressure gauges

	• gas drainage line • shut off valves • oxygen breathing apparatus • gas detection equipment
Coordination may include:	• planning activities • setting priorities for activities • establishing liaison channels with other personnel, neighbouring mines, and regulatory bodies • ensuring work and safety requirements are passed to and reinforced with safety, and operational personnel and contractors
Impurities may include:	• carbon monoxide • sulphur dioxide • oxides of nitrogen • radon • methane • hydrogen sulphide • diesel exhaust fumes
Contaminants may include:	• pulmonary dusts • toxic dusts • explosive dusts • silica

Unit Sector(s)

Metalliferous Mining (Small Mines)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.