



Australian Government

Department of Education, Employment and Workplace Relations

PMBPROD265C Operate portable vulcanising equipment

Revision Number: 1

PMBPROD265C Operate portable vulcanising equipment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor

This competency covers the application of technical expertise, work planning and problem solving to set up and operate portable vulcanising equipment.

This competency is typically performed by operators working either independently or as part of a work team.

Application of the Unit

Application of this unit

This competency applies to operators who set up and operate portable vulcanising equipment either in a production facility or an on-site work environment. The key factors are the establishment of the appropriate safe working environment, obtaining the necessary power and other supplies, conducting vulcanising operations and assessing and taking appropriate action at the end of the operations.

It includes:

- planning the curing job
- identifying hazards and applying appropriate controls
- obtaining all necessary clearances and permissions for site work
- setting up equipment and materials
- conducting vulcanising operations
- assessing the finished work and identifying and taking action on routine process problems
- completing logs and reports.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisites

This unit has **no** prerequisites.

Employability Skills Information

Employability Skills

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

| ELEMENT | PERFORMANCE CRITERIA |
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| Elements describe the essential outcomes of a unit of competency | Performance Criteria describe the required performance needed to demonstrate achievement of the Element. Assessment of performance is to be consistent with the Evidence Guide. |

Elements and Performance Criteria

| ELEMENT ELEMENT | PERFORMANCE CRITERIA |
|---|---|
| 1. Identify work requirements for vulcanising operations. | <p>Performance Criteria describe the required performance needed to demonstrate achievement of the Element. Assessment of performance is to be consistent with the Evidence Guide.</p> <p>1.1 Identify the job and vulcaniser characteristics and product quality outcomes required.</p> <p>1.2 Obtain specifications relevant to the material being vulcanised.</p> <p>1.3 Identify and obtain equipment and materials required for the vulcanising process.</p> <p>1.4 Identify hazards associated with the job and take appropriate action.</p> <p>1.5 Check materials, ancillary supplies, and equipment for quality, access and condition.</p> <p>1.6 Identify and check emergency stops, gauges, guards and controls.</p> |
| 2. Plan vulcanising operations. | <p>2.1 Identify time, pressure and temperature requirements.</p> <p>2.2 Plan the task sequences</p> <p>2.3 Plan for waste management, maintenance and housekeeping requirements.</p> |
| 3. Prepare vulcanising equipment. | <p>3.1 Check vulcaniser, ancillary, equipment and attachments are fit for purpose.</p> <p>3.2 Set up vulcanising press according to procedures.</p> <p>3.3 Set equipment control parameters to specifications.</p> <p>3.4 Obtain appropriate clearances for vulcanising to commence.</p> |
| 4. Conduct and monitor vulcanising operations. | <p>4.1 Start the unit and commence vulcanising.</p> <p>4.2 Monitor the unit operation throughout the entire process</p> <p>4.3 Note and report non-conformity to specifications to procedures.</p> <p>4.4 Make adjustments as required.</p> <p>4.5 Shut down unit when cycle completed.</p> <p>4.6 Follow procedure to disassemble equipment as required.</p> <p>4.7 Assess the outcome of the vulcanising process and take remedial action as necessary and report to the appropriate person.</p> <p>4.8 Brand splice as per company policy</p> |

| ELEMENT ELEMENT | PERFORMANCE CRITERIA Performance Criteria describe the required performance needed to demonstrate achievement of the Element. Assessment of performance is to be consistent with the Evidence Guide. |
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| | 4.9 Clean up, lubricate and adjust equipment as required. 4.10 Complete waste removal or recycling as required. |
| 5. Respond to routine problems to procedure. | 5.1 Recognise known faults that occur during the operation. 5.2 Identify and take action on causes of routine faults. 5.3 Log problems as required. 5.4 Identify non-routine process and quality problems and take appropriate action. |

Required Skills and Knowledge

This describes the essential skills and knowledge and their level required for this unit.

Application of knowledge of the materials, equipment and process sufficient to recognise out of specification products, process problems and materials faults.

Knowledge of organization procedures and relevant regulatory requirements along with the ability to implement them within appropriate time constraints and work standards.

Application of the knowledge of managing risks using the hierarchy of controls applied to the vulcanising process. Application of approved hazard control, safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup.

Knowledge of and skills in the operation of portable vulcanising equipment and main components sufficient for consistent production of quality products including:

- importance of correct selection and use of equipment, materials, processes and procedures
- identifying the function of vulcanising equipment, components and the materials used
- describing changes to materials during the vulcanising process
- explaining the impact of vulcanising speed, pressure, time, temperature and tension on product quality and production output
- describing the role of heat and pressure in relation to providing strength, stiffness, resistance to deformation, fatigue and abrasion
- explaining any differences in vulcanising processes and additives for natural, synthetic and mixed rubber compounds
- deciding if they (the operator) are able to rectify the fault or if assistance is required
- explaining the effect of unauthorised or emergency shutdown of equipment on the vulcanising process
- understand the underlying risks in the process and how best to manage them.

Competence includes the ability to:

- plan own work sequence, including identification of key checkpoints for equipment monitoring and product quality checks
- operate equipment and monitor product quality
- identify factors which may influence product quality and production output and appropriate remedies
- make appropriate authorised alterations to own work plan and equipment to maintain both product quality and required production output
- locate, interpret and apply relevant information and maintain workplace records
- identify and safely handle products and materials, read relevant safety information and apply safety precautions appropriate to the task.

Distinguish between causes of faults such as:

- equipment condition
- materials (eg. contaminated or wrong raw materials/additives/catalyst)
- process conditions (eg incorrect temperatures or pressures and entrapped air in the vulcanised area).

Language, literacy and numeracy requirements

This unit requires the ability to read and interpret typical product specifications, job sheets and material labels as provided to operators.

Writing is required to the level of completing workplace forms.

Basic numeracy is also required, eg to determine that two 25 kg bags are needed to make up a requirement for 50 kg.

Evidence Guide

The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required skills and knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Overview of assessment

A holistic approach should be taken to the assessment.

Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the Elements, Performance Criteria and skills and knowledge.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability to:

- understand the inherent risk associated with using a vulcaniser and the potential consequences of incorrect use
- understand procedures
- understand the importance of critical material properties and quantities
- recognise potential situations requiring action
- implement appropriate action and explain logic.

Consistent performance should be demonstrated. For example, look to see that:

- production standards are met consistently
- wire or reinforcing is not visible in the finished product
- bonding is achieved in accordance with specifications.

Assessment method and context

Assessment will occur on industrial equipment in a work-like environment.

Competence in this unit may be assessed:

- by using an appropriate, portable vulcanising equipment
- in a situation allowing for the generation of evidence of the ability to respond to problems
- by using a suitable simulation and/or a range of case studies/scenarios
- through a combination of these techniques.

In all cases it is expected that practical assessment will be combined with targeted questioning to assess the underpinning knowledge and theoretical assessment will be combined with appropriate practical/simulation or similar assessment. Assessors need to be aware of any cultural issues that may affect responses to questions.

Assessment processes and techniques must be culturally appropriate and appropriate to the oracy, language and literacy capacity of the assessee and the work being performed.

Specific resources for assessment

This section should be read in conjunction with the Range Statement for this unit of competency. Resources required include suitable access to an operating plant or equipment that allows for appropriate and realistic simulation. A bank of case studies/scenarios and questions will also be required to the extent that they form part of the assessment method. Questioning may take place either in the workplace, or in an adjacent, quiet facility such as an office or lunchroom. No other special resources are required. Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.

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. Add any 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. Where reference is made to industry codes of practice, and/or Australian/international standards, the latest version must be used.

Context

This competency applies to all work environments and sectors within the rubber industry. It includes the operation of all relevant additional equipment where that equipment is integral to the vulcanising process.

Procedures

All operations are performed in accordance with procedures.

Procedures include all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.

Tools and equipment

This unit of competency includes use of equipment and tools such as:

- portable vulcanising equipment (including dispersion plates, pressure bags, edge bars, controllers)
- knives and other rubber cutting and shaping equipment
- hoists/lifting equipment not requiring any special permits or licences
- manual handling aids such as handcarts
- relevant personal protective equipment
- powered equipment/aids.

Hazards

Typical hazards include:

- pressure
- heat and hot rubber
- chemical splashes or spills
- dust or vapours/fumes
- manual handling hazards
- knife hazards.

Task sequences

Task sequences include:

- location of vulcaniser
- process monitoring
- quality checks.

Monitoring of vulcanisation

Monitoring of vulcanisation includes noting:

- times,
- vulcanisation quality,
- equipment operating temperatures and times
- additional pressures applied.

Problems

'Respond to routine problems' means 'apply known solutions to a limited range of predictable problems'. Typical process and product problems may include:

- incorrect vulcaniser set-up
- variations in materials
- contamination of materials
- unsuccessful vulcanising processes
- entrapped gasses
- wire or reinforcing exposure
- inappropriate material specification.

Variables

Key variables to be monitored include:

- heat
- pressure
- time
- tension.
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Unit Sector(s)

Not applicable.