



Australian Government

Department of Education, Employment and Workplace Relations

PMBPROD261B Operate continuous vulcanising equipment

Revision Number: 1

PMBPROD261B Operate continuous vulcanising equipment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor

This unit applies to operators required to apply knowledge of materials, product purpose and processes to the operation of continuous 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 use continuous vulcanising equipment such as might be used in the manufacture of conveyor belts. The key factors are the correct application of heat and pressure for the correct time to ensure a well vulcanised product with no porosity and good bonding to other materials which may be included in the product such as reinforcing belt/wire or cable.

It includes:

- planning the curing job
- reviewing hazards and applying appropriate controls
- starting up and stopping equipment as required
- checking and adjusting temperature/pressure/time against specification
- feeding green product and removing and possibly coiling cured product
- 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
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 Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
1. Check work requirements.	1.1 Identify work requirements from work schedule. 1.2 Identify product, materials and equipment requirements for job(s). 1.3 Recognise hazards and apply appropriate controls. 1.4 Check with supervisor/appropriate person if requirements are not in accordance with usual practice.
2. Conduct pre-start checks to procedures.	2.1 Check safety gates and guards are in position and working. 2.2 Check green products/belt are correct. 2.3 Undertake other pre-start checks.
3. Operate equipment to procedures.	3.1 Start vulcaniser as required. 3.2 Check process is within required limits. 3.3 Remove products/belt and store/coil as required. 3.4 Check product meets requirements. 3.5 Maintain supply of green product as required. 3.6 Complete logs and records when required. 3.7 Collect and reprocess/discard scrap/trim and other materials. 3.8 Clean up equipment and work area. 3.9 Pause equipment, or stop equipment in an emergency, as required.
4. Respond to routine problems to procedures.	4.1 Recognise known faults that occur during the operation. 4.2 Identify and take action on causes of routine faults. 4.3 Log problems as required. 4.4 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 organisation 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 curing process. Application of approved hazard control, safety procedures and the use of PPE in relation to handling materials, equipment operation and clean-up.

Knowledge of and skills in the curing process sufficient for consistent production of quality products including:

- identifying the function of vulcanising equipment, components and the materials used
- the influence of the mechanical, hydraulic, pneumatic, electrical and electronic principles on vulcanising equipment operation and product curing
- the impact that chemical reactions/mechanical processes have on changing the state, form and condition of the vulcanised materials
- the role of retarders, fillers and extenders, processing aids and protective agents appropriate for the rubber compounds and processes used
- explaining the impact of vulcanising machine 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
- the reasons for minimising waste of vulcanised products
- production workflow schedule requirements.

Competence includes the ability to:

- plan own work sequence, including identification of key checkpoints for equipment monitoring, product quality checks and monitoring of supplies and downstream operations
- identify and describe own role and the roles of others involved directly in the vulcanising process
- 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
- decide if they (the operator) are able to rectify the fault or if assistance is required
- explain the effect of unauthorised or emergency shutdown of equipment on the vulcanising process.

Competence includes the ability to distinguish between causes of faults such as:

- materials
- process conditions
- equipment condition.

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 to the level of reading and interpreting numbers.

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:

- apply procedures
- explain the importance of critical material properties and quantities recognise potential situations requiring action and then implement appropriate action.

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 the specification.

Assessment method and context

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

Competence in this unit may be assessed:

- on a processing plant, allowing for operation under all normal and a range of abnormal conditions
- 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 the rubber sector and rubber covered cabling industry. It includes the operation of all relevant additional equipment such as feed and reeling equipment.

Procedures

All operations are performed in accordance with procedures.

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

Tools and equipment

This competency includes use of equipment and tools such as:

- the continuous press/autoclave
- feed and reeling equipment
- monitoring and control equipment
- tools for taking samples
- relevant personal protective equipment.

Hazards

Typical hazards include:

- burns
- vapours
- moving equipment.

Problems

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

- variations in feed material
- scorched materials

- contamination of materials
- temperature variations
- pressure variations
- entrapped particulates or air
- insufficient bond achieved
- uncured rubber
- exposed reinforcing or wire.

Variables

Key variables to be monitored include:

- temperature
- pressure
- time
- feed rate
- clamp/press cycle.
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Unit Sector(s)

Not applicable.