



**Australian Government**

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

# **PMBPROD241C Lay up rubber lining or lag pulleys**

**Revision Number: 1**

## PMBPROD241C Lay up rubber lining or lag pulleys

### Modification History

Not applicable.

### Unit Descriptor

#### Unit descriptor

This competency covers the laying-up of rubber and similar materials to line a variety of components or vessels of varying sizes, including the lagging of pulleys.

### Application of the Unit

#### Application of this unit

This competency applies to operators who prepare materials and rubber line or lag a variety of components and larger vessels. The lining of vessels or tanks is to retard abrasion, impact or corrosion. The re-lagging of pulleys for conveyors provides a positive drive. The key factors are the preparation of the surfaces to be lined/lagged and the successful application of the rubber to the surfaces without contaminating the materials. This competency is typically performed by operators working either independently or as part of a work team.

The operator will:

- review hazards and controls
- plan the lining/lagging task
- determine the appropriate materials and lay up sequence
- apply the lining/lagging materials
- identify and take action on routine process problems
- complete logs and reports.

Note that this competency unit covers repairs carried out in a workshop or other off-site facility. If the work involves on site work, then this competency should be considered in conjunction with *MSAPROD363A Organise on site work*.

### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

### Prerequisites

This unit has **no** prerequisites.

Some enterprises may require the achievement of certain other competency units in accordance with workplace safety requirements. Where rubber lining is to be carried out in a confined space, this unit also requires the achievement of *MSAPER205 Enter confined space*.

## 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

<b>ELEMENT</b> ELEMENT	<b>PERFORMANCE CRITERIA</b> 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. Plan rubber lining or lagging work.	1.1 Review specifications and work order documentation. 1.2 Identify hazards and risk controls, including emergency evacuation and adequate ventilation, including breathing apparatus where required. 1.3 Plan work including materials, sequences, times and process stages. 1.4 Plan to minimise downtime, economically use materials and meet repair quality specifications. 1.5 Assemble equipment, tools and materials required, checking them for condition, quality and compliance tags.
2. Prepare surfaces for rubber lining or lagging.	2.1 Lay out materials in an appropriate contamination free area. 2.2 Ensure materials are clean and free of debris and damage. 2.3 Identify non-conforming materials and report as required. 2.4 Examine component, vessel or pulley and ensure the surfaces to be lined or lagged are free of defects and contaminants. 2.5 Plan the sequence for application of the adhesives and materials. 2.6 Prepare lining or lagging surfaces. 2.7 Monitor surface coatings for setting time and manage the staggered supply of adhesives and materials, where appropriate.
3. Lay up rubber lining or lagging.	3.1 Ensure adequate ventilation is provided and monitored during the laying up process. 3.2 Monitor any confined space activity and conform to regulations and procedures. 3.3 Position lining/lagging segments according to the lay-up plan. 3.4 Exclude entrapped air and ensure complete contact between the lining/lagging and surface is obtained. 3.5 Ensure joins are sealed and adhered properly with no

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	<p>gaps or overlaps.</p> <p>3.6 Check for slips, sagging or other separation of the lining/lagging from the surface.</p> <p>3.7 Ensure lining/lagging material is finished off as required at the extremities.</p> <p>3.8 Cure rubber lining/lagging where appropriate.</p>
4. Clean work area.	<p>4.1 Clean, inspect and store tools and equipment used.</p> <p>4.2 Tag unserviceable tools and equipment, identify faults and inform relevant personnel.</p> <p>4.3 Clean work area and return to approved condition.</p> <p>4.4 Dispose of waste or recycle according to procedures.</p> <p>4.5 Complete appropriate workplace documentation.</p>
5. Respond to routine problems to procedures.	<p>5.1 Recognise known faults that occur during the operation.</p> <p>5.2 Identify and take action on causes of routine faults.</p> <p>5.3 Log problems as required.</p> <p>5.4 Identify non-routine process and quality problems and take appropriate action.</p>

## 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 lining 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 lining/lagging operation sufficient for consistent production of quality products including:

- impact of incorrect or faulty materials
- production workflow sequences and materials demand
- focus of operation of work systems and equipment
- correct selection and use of equipment, materials, processes and procedures
- hazards of the materials and process and appropriate hazard control procedures especially the use of ventilation, breathing apparatus and requirements for confined space entry and emergency escape
- requirements of good manual handling practices
- need for scaffolding and safe work practices at heights.

Competence also includes the ability to:

- plan own work including predicting consequences and identifying improvements
- monitor equipment operation
- identify when the operator is able to rectify faults, when assistance is required and who is the appropriate source for assistance
- identify and describe own role and role of others involved directly in the lining/lagging process.

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

- wrong raw materials/additives/catalyst
- incorrect quantity of materials/additives/catalyst
- contaminated materials/additives/catalyst.

### 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 interpret specifications and make and interpret measurements and shapes.

## 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:

- recognise the importance of material properties and qualities
- apply approved procedures
- take appropriate action to resolve faults or report faults to appropriate personnel
- explain and implement emergency evacuation procedures.

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

- rubber layup production standards are met consistently
- communication is timely and effective
- work instructions are read and interpreted correctly
- problems are identified and appropriate action is taken (ie, the problem is fixed or reported)
- all safety procedures are followed.

### **Assessment method and context**

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

Competence in this unit may be assessed:

- by use of an appropriate, industrial lining/lagging situation
- 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 a variety of internal and external work environments served by the rubber industry and includes work done in a production facility and on site.

This competency unit includes the use of manual handling of lining materials, the use of scaffolding and can involve activities within the definition of 'confined space'. (Note that separate competencies, and/or licensing requirements may apply for these activities.)

Lining materials includes rubber compounds which includes green (uncured) sheets, pre-cured rubber sheets and other polymer sheets. Lining or lagging will generally be of metal items, but may include application to composites, concrete and other non-metallic structures, vessels, pulleys or plant items.

### 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 competency includes use of equipment and tools such as:

- hand tools (eg spanners, wrenches and hammers)
- knives and other trimming devices
- hoists/lifting equipment not requiring any special permits or licences
- rollers and other surface compression tools
- ventilation equipment (eg fans)
- relevant personal protective equipment, including 'breathers' as required.

### Hazards

Typical hazards include:

- spills
- dusts/vapours
- hazardous materials (eg adhesives, solvents and other chemicals)
- manual handling hazards
- knife hazards
- noxious, toxic fumes or inflammable fumes
- confined spaces
- working at heights.



**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 materials
- incorrectly cut material shapes
- contamination of materials
- contamination of the surfaces to be lined or lagged
- physical size and complexity of some components
- entrapped air
- gaps between lining segments
- inappropriate laps or joins.

**Variables**

Key variables to be monitored include:

- compatibility of materials, adhesives, solvents and cleaning agents
- cleanliness and condition of lining/lagging materials
- affect of surface condition of the component on the quality of the lining/lagging.
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**Unit Sector(s)**

Not applicable.