



**Australian Government**

# **PMBPROD338A Repair heavy off-the-road tyres**

**Release 1**

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## **Modification History**

Release 1 - New unit of competency

## **Unit Descriptor**

This unit of competency covers the skills and knowledge needed to repair tyres defined by AS 4457.2-2008 Earth-moving machinery - Off-the-road wheels, rims and tyres - Maintenance and repair – Tyres (or its authorised replacement) or similar tyres.

## **Application of the Unit**

This competency is typically performed by operators applying knowledge of materials, knowledge and basic understanding of the tyre construction, and product purpose and processes to the repair of heavy off-the-road (HOTR) tyres. It also requires the use of some discretion and judgment to recognise and resolve a range of problems.

This unit should be interpreted in line with AS 4457.2-2008 Earth-moving machinery - Off-the-road wheels, rims and tyres - Maintenance and repair – Tyres.

## **Licensing/Regulatory Information**

Not applicable.

## **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. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

- |   |                          |     |   |
|---|--------------------------|-----|---|
| 1 | Prepare for job          | 1.1 | Move tyre into position   |
|   |                          | 1.2 | Secure tyre ready for repair  |
|   |                          | 1.3 | Determine repair stock and cure time required from injury dimensions        |
|   |                          | 1.4 | Select required patches and rubber repair stock                             |
|   |                          | 1.5 | Select, check and prepare tooling   |
|   |                          | 1.6 | Acclimate required repair products according to the supplier recommendation |
|   |                          | 1.7 | Check and wear required personal protective equipment (PPE)                 |
|   |                          |     |   |
| 2 | Prepare substrates       | 2.1 | Prepare surfaces as required  |
|   |                          | 2.2 | Apply adhesive to repair surfaces according to procedures                   |
|   |                          | 2.3 | Allow surfaces to 'prime' according to procedures                           |
|   |                          |     |   |
| 3 | Repair injury            | 3.1 | Choose correct repair material(s)   |
|   |                          | 3.2 | Check compatibility of materials used                                       |
|   |                          | 3.3 | Check maximum pre-heating temperatures                                      |
|   |                          | 3.4 | Repair tyre components as required  |
|   |                          | 3.5 | Fill injury according to procedure  |
|   |                          |     |   |
| 4 | Patch injury as required | 4.1 | Review correct patch size   |
|   |                          | 4.2 | Remove inner liner as required  |
|   |                          | 4.3 | Prepare surfaces as required  |
|   |                          | 4.4 | Prepare patch according to procedure  |

- |   |                 |     |   |
|---|-----------------|-----|---|
|   |                 | 4.5 | Install patch according to procedure            |
|   |                 | 4.6 | Follow pressurisation and/or curing instruction |
| 5 | Complete repair | 5.1 | Prepare injury for curing                       |
|   |                 | 5.2 | Complete any required paperwork                 |
|   |                 | 5.3 | Complete housekeeping according to procedures   |

## Required Skills and Knowledge

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

### Required skills

Required skills include:

- using cutting and stitching tools
- using extrusion and rubber preparation equipment
- communicating effectively
- working safely in accordance with operational requirements and safe systems of work
- reading and interpreting typical product specifications, job sheets and material labels as provided to operators
- writing to the level of completing workplace forms and production reports

### Required knowledge

Required knowledge includes:

- organisation's procedures
- HOTR tyre construction (bias/radial)
- methods of identifying injury position, lug/position identification
- tyre repair methods
- hazards and hazard controls associated with HOTR tyre repair and handling
- reporting 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

Critical aspects for assessment and evidence are:

- tyre injury is identified and appropriate action for repair determined
- consistent application of repair standards
- safety procedures are always followed.

#### Context of and specific resources for assessment

Assessment will occur on an HOTR tyre repair facility. 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.

#### Method of assessment

Competence in this unit may be assessed:

- by observation over a range of tyre repair procedures undertaken in the workplace
- 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 appropriate practical/simulation assessment will be combined with targeted questioning to assess the required knowledge, and theoretical assessment will be combined with appropriate practical/simulation or similar assessment.

#### Guidance information for assessment

Assessment processes and techniques must be appropriate to the language, competency and safety requirements of the site and consistent with workplace systems or procedures.

## 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.

### **Tyre securing methods**

Tyre securing methods may include, but are not limited to:

- mounts and stands
- chocks
- wall or floor mounted frames, manually, electrically or hydraulically operated

### **Required tools**

Required tools may include, but are not limited to:

- knives, scissors and other cutting tools
- rubber preparation equipment, such as extruders
- stitching tools

### **Injuries to tyres**

Injuries to tyres may include, but are not limited to:

- cuts, abrasion, splits, cracks and crazing
- separations within the structure
- deformities both surface and internal
- penetrations into and through the casing/carcass

### **Location of repairs**

Repairs may be undertaken to the:

- tread or crown, including steel components
- shoulder
- sidewall
- bead area
- liner
- body cords

### **Substrate**

A substrate is the solid surface to which another material is bonded

### **Prepare patch**

Prepare patch may include, but is not limited to:

- preparing patch for size and shape
- applying surface preparation compounds
- use of protective films

### **Standards**

Standards may include, but are not limited to:

- AS 4457.2-2008 Earth-moving machinery - Off-the-road wheels, rims and tyres - Maintenance and repair – Tyres
- Rubber Manufacturer's Association of America (RMA)
- Supplier standards, such as technical data sheets

	and manuals
	<ul style="list-style-type: none"><li>• internal organisational standard</li></ul>
<b>Pressurisation and/or curing instruction</b>	<p>Pressurisation and/or curing instruction may include, but are not limited to:</p> <ul style="list-style-type: none"><li>• heat and pressure curing (e.g. using an autoclave or Monarch system)</li><li>• ambient temperature cure patches</li><li>• precured repairs followed by ambient cure patches (also known as ‘Two Way’)</li></ul>
<b>Procedures</b>	<p>Procedures may be written, verbal, computer-based or in some other form. They may include, but are not limited to:</p> <ul style="list-style-type: none"><li>• all work instructions</li><li>• standard operating procedures</li><li>• formulas/recipes</li><li>• batch sheets</li><li>• temporary instructions</li><li>• any similar instructions provided for the smooth running of the plant</li><li>• good operating practice as may be defined by industry codes of practice</li></ul> <p>Procedures would be expected to comply with any relevant government regulations.</p>
<b>Paperwork</b>	<p>Paperwork may be paper or electronic-based</p>
<b>Appropriate action</b>	<p>Appropriate action includes, but is not limited to:</p> <ul style="list-style-type: none"><li>• determining problems needing action</li><li>• accessing and applying relevant technical and plant data</li><li>• applying appropriate problem solving techniques to determine possible fault causes</li><li>• rectifying problem using appropriate solution within area of responsibility</li><li>• following through items initiated until final resolution has occurred</li><li>• reporting problems outside area of responsibility/ability to designated person</li></ul>
<b>Health, safety and environment (HSE)</b>	<p>All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through state or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between Performance Criteria and</p>

HSE requirements, the HSE requirements take precedence.

### **Unit Sector(s)**

Not applicable.

### **Custom Content Section**

Not applicable.