



**Australian Government**

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

# **PMBPROD349B Produce liquid surface coated products**

**Revision Number: 1**

## **PMBPROD349B Produce liquid surface coated products**

### **Modification History**

Not applicable.

### **Unit Descriptor**

#### **Unit descriptor**

This competency covers the operation of liquid surface coating processes and the solving of problems.

### **Application of the Unit**

#### **Application of this unit**

This competency is typically performed by advanced operators applying knowledge of materials, product purpose and processes to the application of surface coatings by hand, spray gun or immersion. It also requires using a range of well-developed skills requiring some discretion and judgement to recognize and resolve a range of problems.

The operator will:

- start up surface coating equipment
- check materials for conformity to job requirements
- make appropriate adjustments to correct materials, equipment or process variations
- solve surface coating equipment, material, and process problems, seeking guidance where necessary or appropriate
- 

### **Licensing/Regulatory Information**

Not applicable.

## Pre-Requisites

### Prerequisites

This unit has the prerequisite of *PMBPROD249B Apply liquid surface coatings*.

## Employability Skills Information

### Employability Skills

The required outcomes described in this unit contain applicable Employability Skills. The Employability Skills Summary of the qualification(s) in which this unit is packaged will assist in identifying Employability Skill requirements.

## 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> <b>ELEMENT</b>	<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 own work requirements.	1.1 Identify most appropriate equipment or tool/s and processes to be used for production process and upstream and downstream operations from production plan or request. 1.2 Identify and check materials required, including additives. 1.3 Implement measures to control identified hazards and follow appropriate hazard control/ minimisation methods. 1.4 Identify requirements for materials, quality, production and equipment or tool/s checks. 1.5 Establish the sequence of work maximising potential of the applied finish for the production operation.
2. Start up surface coating process to procedures.	2.1 Identify process settings required for the product. 2.2 Set process to specifications as required. 2.3 Check surface coating equipment or tool/s settings and adjustments are as required. 2.4 Check materials are correct. 2.5 Take appropriate action for non-conforming materials. 2.6 Set up date, batch and materials markings to specifications, as required. 2.7 Complete pre-start checks. 2.8 Start up surface coating process.
3. Operate and make adjustments as required to the surface coating process to procedures.	3.1 Operate liquid surface coating process, noting key variables. 3.2 Make trial applications of surface materials to check equipment operation. 3.3 Monitor controls/displays/terminals for production/process data. 3.4 Monitor product/process quality in accordance with procedures. 3.5 Take samples as required and identify product out of specification.

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
ELEMENT	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
	3.6 Make adjustments to remedy faults and nonconformity to standard as required. 3.7 Establish a stable surface coating process. 3.7 Adjust process to minimize scrap and overspray. 3.8 Clean, adjust and lubricate equipment or tool/s as required.
4. Shut down machine to procedures.	4.1 Determine type of shutdown. 4.2 Select appropriate cleaning method. 4.3 Clean efficiently and adequately as required. 4.4 Leave machine in appropriate condition and with appropriate locks, tags or notices. 4.5 Complete relevant documentation. 4.6 Ensure area is clean and clear after the shutdown, in readiness for the next start up.
5. Anticipate and solve problems.	5.1 Recognise a problem or anticipate potential problems. 5.2 Determine problems needing priority action. 5.3 Determine possible fault causes. 5.4 Refer problems outside area of responsibility to appropriate person, with possible causes. 5.5 Seek information and assistance as required to solve problems. 5.6 Solve problems within area of responsibility. 5.7 Follow through items initiated until final resolution has occurred.

## 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 material and equipment conditions which may lead to out of specification production.

Knowledge of organization procedures, quality and safety requirements at each production stage and relevant regulatory requirements; and the ability to implement them within appropriate time constraints and work standards.

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

Knowledge as a basis for problem solving process and material problems, including:

- function and operating principles of liquid surface coating equipment or tool/s
- characteristics of materials and behaviour in relation to temperature, application rate, ventilation rate, thinning liquid, viscosity
- impact of equipment/process variables (eg speed, temperature, pressure) on product quality and production output
- phases of the coating cycle and the effect of key variables on product quality, in order to make appropriate adjustments to machine settings
- impact of variations in raw materials and equipment or tool/s operation in relation to final product
- changes to materials at various stages of production
- waste management and significance of non-conforming materials
- basic pre-blending of materials
- application of coatings
- coating properties and their interactions with process conditions
- relationships between coating properties and process conditions
- changes to coating properties to better suit process requirements.
- product problems related to coating properties
- product problems related to process conditions
- adjustments to process conditions to meet coating and product requirements.

Competence also includes the ability to:

- plan own work, including predicting consequences and identifying improvements
- maintain output and product quality using appropriate instruments, controls, test information and readings
- identify and describe own role and role of others involved directly in the coating process
- identify when assistance is required to solve problems.

### 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, quality assurance records and production reports.

Basic numeracy is required, eg to determine how much diluent needs to be added to reduce a coating to a given concentration, apply viscosity data to coating application and read simple graphs/charts.

## 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.

Where the assessee does not currently possess evidence of competency in *PMBPROD 249B Apply liquid surface coatings*, it may be co-assessed with this unit.

### 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:

- identify critical materials properties and liquid surface coating process characteristics in relation to the process requirements and the end product
- make adjustments to the process, materials, and equipment as required
- identify and take appropriate action on current and potential problems.

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

- the process runs smoothly with the minimum need for intervention
- all safety procedures are always followed.

### Assessment method and context

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

Competence in this unit may be assessed:

- by using appropriate industrial surface coating equipment requiring demonstration of start-up, operation and shutdown procedures
- in a situation allowing for the generation of evidence of the ability to recognise, anticipate and 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 liquid surface coating applications. It includes the operation of all relevant additional equipment integral to the coating 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 competency includes use of equipment and tools such as:

- coating equipment such as brushes, spray guns and/or immersion equipment
- additional equipment such as ventilation and other fume/vapour removal equipment
- manual handling aid such as hand carts and trolleys hoists/lifting equipment not requiring any special permits or licences
- relevant personal protective equipment.

#### **Hazards**

Typical hazards include:

- spills and splashes
- toxic fumes or vapours
- hazardous materials
- manual handling hazards
- flammable vapours.

#### **Problems**

Anticipate and solve problems means resolve a wide range of routine and non-routine problems, using product and process knowledge to develop solutions to problems which do not have known solution/s recorded in procedures.

Typical process and product problems may include:

- incorrect selection of materials
- variations in materials
- contamination of materials or product surface
- inappropriate application of coatings
- drying rates
- uniformity of film thickness
- appropriate film thickness.

Appropriate action for problems outside area of responsibility may be reporting to an appropriate person.

Appropriate action for problems within area of responsibility includes asking questions and seeking assistance from appropriate persons/ sources.

**Variables**

Key variables to be monitored include:

- spray patterns
- materials consistency
- finished colour
- surface finish
- product integrity and general conformance to specification
- coating viscosity
- coating drying rate
- coating application rate.
- 

**Unit Sector(s)**

Not applicable.