



Australian Government

Department of Education, Employment and Workplace Relations

PMBPROD292B Operate pultrusion equipment

Revision Number: 1

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Modification History

Not applicable.

Unit Descriptor

Unit descriptor

This competency covers the operation of pultrusion equipment for composite products and the resolving of routine problems to procedure in the production process.

Application of the Unit

Application of this unit

This competency applies to operators who are required to undertake the routine operation of pultrusion equipment. This competency is typically performed by operators working either independently or as part of a work team. The operator:

- check product/s for quality and conformity to specifications
- deals with non-conforming product/waste/scrap
- notices any problems and takes required action (eg reporting)
- complete 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

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

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 production plan or request. 1.2 Check product, materials and equipment meet requirements for job(s). 1.3 Recognise requirements which may not be in accordance with usual practice. 1.4 Ask questions of appropriate person to confirm unusual practice. 1.5 Ensure housekeeping is to requirements. 1.6 Identify hazards associated with the job and take appropriate action. 1.7 Perform other pre-operational checks in accordance with procedures.
2. Conduct pre-operational checks as required.	2.1 Check safety equipment is in place and working. 2.2 Check moulds, closures and fittings to procedures. 2.3 Check moulds for cracks, chips, marks and cleanliness. 2.4 Check materials including fibres, resins, additives and release agents are correct. 2.5 Undertake other pre-operational checks in accordance with procedures.
3. Operate equipment in accordance with procedures.	3.1 Check process is operating within required limits. 3.2 Check product is in specification and to required quality standard. 3.3 Ensure product is consistently ready for next operation. 3.4 Maintain supply of material(s) as required. 3.5 Complete logs and records as required. 3.6 Collect and segregate scrap, trim and other materials as required. 3.7 Keep equipment and work area clean. 3.8 Pause machine cycle and perform emergency stop, as required.
4. Respond to routine problems in accordance	4.1 Recognise known faults that occur during the operation.

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with procedures.	4.2 Identify and take action on causes of routine. 4.3 Log problems as required. 4.4 Identify non-routine problems and report to designated person.

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, relevant regulatory requirements and 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 pultrusion process. Application of approved hazard control and safety procedures and the use of PPE in relation to handling materials, equipment operation and cleanup.

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

- production workflow sequences and materials demand
- the reasons for checking process control panels and reporting readings that are outside the normal range of process variability
- accurate monitoring of equipment operation and product quality
- potential effects of variations in raw materials and equipment operation in relation to quality of product
- waste management and understanding the importance of reusing non-conforming products wherever possible
- correct selection and use of equipment, materials, processes and procedures
- explain the effect of unauthorised or emergency shutdown in relation to safety and production requirements
- identify factors which may affect product quality or production output and appropriate remedies.

Competence also includes the ability to:

- plan own work, including predicting consequences and identifying improvements.
- 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 process of pultrusion operation process.

Language, literacy and numeracy requirements

This unit requires the ability to read and interpret typical product specifications, job sheets, procedures, basic machine control panels material labels and safety information as provided to operators.

Writing is required to the level of completing workplace forms.

Numeracy is required to the level of reading tables of figures and graphs (and applying the resultant information), determining amount of material feed for the process.

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 the required skills and knowledge to operate pultrusion equipment.
- apply approved procedures.

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

- production standards are met consistently
- 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 an industrial pultrusion machine(s)/equipment and will be undertaken in a work-like environment.

Competence in this unit may be assessed:

- by using an appropriate, industrial pultrusion machine
- in a situation allowing for the generation of evidence of the ability to respond to routine 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 operation of pultrusion equipment used to manufacture formed composite products.

It includes the operation of all relevant additional equipment where that equipment is integral to the 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:

- pultrusion equipment, dies, feed and product handling gear
- controller, such as PLC if fitted
- hand tools used in the this process
- material loading equipment used for loading of raw materials
- relevant personal protective equipment.

Hazards

Typical hazards include:

- spills
- dusts/vapours
- slip and fall (eg from spilled resin)
- temperature (eg hot equipment or product)
- hazardous substances, including resin and catalyst
- moving equipment
- manual handling hazards.

Problems

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

- equipment malfunction
- variations in process conditions, especially temperature variations affecting cure rates
- variations in materials and/or contamination of materials
- die/tooling problems such as damage to die
- variations in feed rates and pressures.

Typical product problems may, include routine pultrusion faults such as:

- marks
- poor surface finish
- damage resulting from removal of product from mould
- flow marks
- poor colour dispersion

- colour contamination.
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Unit Sector(s)

Not applicable.