



Australian Government

PMBPROD390E Produce composites using filament winding

Release: 1

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Modification History

Release 1. Unit code changed. Application changed. Elements and Performance Criteria changed. Range of Conditions removed. Assessment Requirements changed. Supersedes and is equivalent to PMBPROD390 Produce composites using filament winding.

Application

This unit describes the skills and knowledge required to operate, control and optimise filament winding processes to produce composites products.

This unit applies to an experienced technician working alone or as part of a team.

The unit principally refers to the filament winding operation mainly producing hollow pipes of internal diameter up to 2.5 metres, but also special hollow shapes for automotive or aerospace that are made using the same technology.

No licensing or certification requirements exist at the time of publication. Relevant legislation, industry standards and codes of practice within Australia must be applied.

Pre-requisite Unit

Nil.

Competency Field

Production – Composites

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Plan work requirements	1.1 Identify and check materials required, including additives and their amounts and percentages, from job specifications 1.2 Identify equipment and processes required for production and upstream and downstream operations from job specifications 1.3 Perform pre-operational checks including checking for and controlling hazards 1.4 Identify checks and testing processes required for equipment, materials, quality and production management to meet job specifications 1.5 Identify waste management strategies to collect excess, discarded

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	or nonconforming materials to be disposed of, recycled or reprocessed according to workplace procedures
2. Start up filament winding process	2.1 Verify equipment requirements against job specifications 2.2 Identify and set production process according to equipment and workplace specifications, and adjust process to optimise output based on selected materials 2.3 Set up and adjust equipment settings according to equipment and job specifications 2.4 Verify materials are correct against job specifications 2.5 Set up date, batch and materials markings according to workplace procedures 2.6 Undertake other pre-startup checks according to equipment specifications and workplace procedures
3. Operate filament winding process	3.1 Start up and operate filament winding moulding process, and make adjustments to reach required settings for job specifications 3.2 Ensure process is operating according to equipment specifications and workplace procedures 3.3 Follow checking and testing processes to confirm if output meets job specifications and quality standards, and apply strategies to manage nonconforming outputs 3.4 Maintain continuity of process to support production 3.5 Work efficiently to minimise scrap and trim according to workplace procedures 3.6 Clean, adjust and lubricate equipment according to equipment instructions and workplace procedures
4. Shut down machine	4.1 Determine type of shutdown and process to be followed from equipment instructions and workplace procedures 4.2 Shut down equipment according to equipment instructions and workplace procedures 4.3 Strip mandrel efficiently and adequately using appropriate methods according to equipment instructions 4.4 Put guards, locks and notices in place to prevent inadvertent startup 4.5 Accurately complete workplace shutdown documentation 4.6 Clean and clear work area after shutdown in readiness for next

Elements	Performance Criteria
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	startup
5. Respond to process control variances	5.1 Recognise existing or potential process control variances and their causes 5.2 Determine, prioritise and implement remedial and preventative actions based on identified issues and causes 5.3 Monitor process control variances and corrective actions taken until resolved 5.4 Accurately maintain records and logbooks

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Numeracy skills to interpret equipment readings and measure/monitor output variables.
- Reading skills to interpret job and equipment specifications and workplace procedures.
- Writing and oral communication skills to record and report on the operation, shutdown and process control variances.

Other foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to PMBPROD390 Produce composites using filament winding.

Links

Companion Volume implementation guides are found in VETNet –

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=932aacef-7947-4c80-acc6-593719fe4090>

Assessment Requirements for PMBPROD390E Produce composites using filament winding

Modification History

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Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and demonstrated the ability to:

- produce composites using filament winding at least once to meet job specifications.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- the functions of filament winding equipment
- the principles of operation of filament winding equipment
- filament winding manufacturing process and materials demand
- characteristics of materials and their behaviour
- the criteria for overall process/equipment readiness for the process or equipment being used
- typical quality standards required at each stage of production, including mechanical, hydraulic, pneumatic, electrical and electronic principles that affect machine operation
- key variables that may affect product quality and production output, including:
 - operating temperatures
 - speeds, including the rotating speed of the mandrel
 - spool tension
 - colour
 - cycle time
 - output rate
 - product weight
 - product integrity and general conformance to specification
- typical and atypical process and product problems, including early warning signs, possible causes and corrective actions
- the distinguishing characteristics of causes of problems as being either based on the properties of materials or caused by process variables
- organisational procedures relevant to the work environment or job role
- hazards that may arise in the job or work environment, and:
 - their possible causes

- potential consequences
- appropriate risk controls.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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