



Australian Government

PMBPROD393E Produce composites using vacuum bagging

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 PMBPROD393 Produce composites using vacuum bagging.

Application

This unit describes the skills and knowledge required to use vacuum bagging 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 practical skills relating to operating vacuum bagging equipment, as well as the application of composites production knowledge using this equipment to control and optimise production processes. It also refers to how, if performed with care, accuracy and good application, the vacuum bagging process underpins the production processes for structural aerospace products.

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 materials required, including additives, 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 and check emergency stops, guards and controls 1.5 Identify checks and testing processes required for equipment,

Elements Elements describe the essential outcomes.	Performance Criteria Performance criteria describe the performance needed to demonstrate achievement of the element.
	materials, quality and production management to meet job specifications 1.6 Identify housekeeping needs to prepare and support production 1.7 Identify waste management strategies to collect excess, discarded or nonconforming materials to be disposed of, recycled or reprocessed according to workplace procedures
2. Perform pre-production tasks	2.1 Verify equipment, raw material and mould requirements against job specifications 2.2 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 vacuum bagging production line settings according to equipment and job specifications 2.4 Verify materials, resins and fibres 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 vacuum bagging process	3.1 Start up and operate composites-forming equipment, and make adjustments to settings to meet job specifications 3.2 Ensure process is operating according to equipment specifications and workplace procedures 3.3 Follow checking and testing process to confirm if output meets job specifications and quality standards, and apply strategies to manage non-conforming 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
4. Shut down machinery	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

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	4.3 Clean equipment efficiently and effectively, using appropriate methods and materials according to equipment instructions 4.4 Put guards, locks and notices in place to prevent inadvertent startup 4.5 Accurately complete relevant documentation 4.6 Clean and clear work area after shutdown in readiness for next startup
5. Anticipate and solve 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 monitor equipment readings and production outputs.
- Reading skills to interpret job and equipment specifications and workplace procedures.
- Writing and oral communication skills to record and report on equipment 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 PMBPROD393 Produce composites using vacuum bagging.

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 PMBPROD393E Produce composites using vacuum bagging

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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 vacuum bagging at least once to meet job specifications.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- the function and principles of the operation of vacuum bagging equipment
- vacuum bagging manufacturing process and phases of the cycle
- characteristics of materials, including raw materials, and their behaviour in relation to process conditions, equipment operation and stages of production
- mechanical, hydraulic, pneumatic, electrical and electronic principles that affect machine operation and product development
- the criteria for overall process/equipment readiness for the process or equipment being used
- typical quality standards required at each stage of production
- key variables that may affect product quality and production output, including:
 - vacuum bag conditions
 - temperature
 - cycle time
 - output rate
 - surface finish and condition
 - 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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