



Australian Government

PMC552002 Operate equipment to blend/mix materials

Release: 1

PMC552002 Operate equipment to blend/mix materials

Modification History

Release 1. Supersedes and is equivalent to PMC552002C Operate equipment to blend/mix materials.

Application

This unit of competency covers the skills and knowledge required to select and blend/mix materials using blending/mixing and ancillary equipment.

This unit of competency applies to operators who are required to select the correct type and quantity of materials, set up and operate equipment, monitor the process, rectify routine problems and conduct routine maintenance.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members, team leader and supervisor, as appropriate.

Where manual handling forms part of the work the operator will also require competency in PMBHAN103 Shift materials safely by hand.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine blend/mix requirements	1.1	Check work schedule/job specification/job card
		1.2	Identify customer requirements and set parameters in accordance with standard procedures
		1.3	Select correct type and quantity of materials

- 1.4 Meet all special requirements and specifications
 - 1.5 Identify any material handling problems and take action in accordance with standard procedures
 - 1.6 Update material records as appropriate
- 2 **Control hazards**
 - 2.1 Identify hazards from the materials
 - 2.2 Identify other hazards in blending/mixing work area
 - 2.3 Assess the risks arising from those hazards
 - 2.4 Implement measures to control those risks in line with procedures
- 3 **Blend/mix materials**
 - 3.1 Set up, start and operate blending/mixing equipment as required by specifications and standard procedures
 - 3.2 Prepare and add materials to blender/mixer as required by specification and standard procedures
 - 3.3 Check that materials prepared match requirements
 - 3.4 Use ancillary equipment, as required, according to standard procedures
 - 3.5 Ensure equipment is operated in accordance with established enterprise procedures
 - 3.6 Blend/mix materials to obtain required results
- 4 **Monitor and record operation**
 - 4.1 Monitor equipment performance in accordance with work instructions and manufacturer specifications
 - 4.2 Monitor non-conforming product against customer specifications
 - 4.3 Adjust and control equipment to ensure correct product quality
 - 4.4 Complete final inspection checks
 - 4.5 Complete appropriate records and logs

- | | | | |
|---|--|-----|--|
| 5 | Rectify routine problems | 5.1 | Recognise any faults that occur during the operation |
| | | 5.2 | Determine and rectify fault causes in accordance with procedures/work instructions |
| | | 5.3 | Identify and rectify equipment failure causes in accordance with procedures/work instructions |
| | | 5.4 | Ensure appropriate records and log books of equipment operations are maintained to meet procedures/work instructions |
| | | 5.5 | Identify non-routine problems and report to designated person |
| 6 | Maintain blending/mixing plant and area | 6.1 | Keep area and equipment clean and in good order |
| | | 6.2 | Unload and shut down equipment as required |
| | | 6.3 | Respond to routine faults according to enterprise procedures |
| | | 6.4 | Report non-routine faults according to enterprise procedures |

Foundation Skills

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

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

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Regulatory framework	The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used.
-----------------------------	--

Applicable legislation, regulations, standards and codes of practice include:

- health, safety and environmental (HSE) legislation, regulations and codes of practice relevant to the workplace, equipment and production processes and hazardous materials
- Australian/international standards relevant to the materials being used and products being made
- any relevant licence and certification requirements.

All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through state/territory or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and such requirements the legislative requirements take precedence.

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, and include one or any combination of:

- job cards
- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Equipment and unit operations This unit of competency includes all such items of equipment and unit operations which form part of the blending/mixing system. A unit comprises two or more components of plant/equipment that are operated together to produce product, including as appropriate to the site:

- pumps (lubrication and cooling pumps)
- utilities and services
- heat exchangers (intercoolers)
- vibration monitoring
- other equipment integral to the operation of the system.

Problems Routine problems must be resolved by applying known solutions.

Routine problems are predictable and include one or more of:

- equipment malfunction
- material handling, such as equipment failure and blockages
- material property variation
- blend/mix tolerance
- uniform dispersion of minor ingredients/additives
- blending/mixing to special requirements/colour
- mixing sequence
- matching mixes produced with production requirements
- monitoring and adjusting process conditions
- recognising and acting on potential and actual problems
- quality problems including customer requirements.

Known solutions are drawn from one or more of:

- procedures
- training
- remembered experience.

Non-routine problems must be reported according to according to relevant procedures.

Hazards Hazards must be identified and controlled. Identifying hazards requires consideration of:

- heat, smoke, dust, vapours or other atmospheric hazards
- weight, shape, volume of materials to be handled
- hazardous products and materials
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- electricity
- gas
- gases and liquids under pressure
- noise
- rotational equipment or vibration
- plant services (steam, condensate, cooling water, etc)
- structural hazards
- equipment failures
- machinery, equipment and product mass
- limited head spaces or overhangs

- working at heights
- working in restricted or confined spaces
- other hazards that might arise.

Records and reports Records include one or more of:

- log books/sheets
- electronic records
- job/work sheets
- other records used for the smooth running of the plant.

Reports include one or more of:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action.

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMC552002C Operate equipment to blend/mix materials.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=45a7f1d5-61a5-447a-9688-7abbd7e1a5c7>

Assessment Requirements for PMC552002 Operate equipment to blend/mix materials

Modification History

Release 1. Supersedes and is equivalent to PMC552002C Operate equipment to blend/mix materials.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and demonstrate the ability to:

- read and interpret instruments/controls, job sheets, procedures, material labels and safety information
- set up and operate the equipment according to procedures
- select and prepare materials to meet job specifications
- monitor key variables, including:
 - process conditions/parameters
 - duration of blend/mix
 - mixing sequence
 - blend/mix tolerance
 - product integrity and conformance to specification
- adjust the equipment to meet product quality and production output specifications
- pause or shut down equipment in normal and abnormal circumstances
- identify hazards and apply relevant hazard controls
- apply safety procedures
- recognise out-of-specification products, process problems and materials faults
- recognise routine and non-routine problems
- identify when the operator is able to rectify problems, when assistance is required and who is the appropriate source for assistance
- take action to resolve problems or report them to appropriate personnel
- distinguish between possible causes of routine problems, including:
 - raw material variations
 - process problems
 - mechanical abnormalities
 - electrical/instrument reading variations
 - equipment faults/damage/failure
- communicate effectively with team/work group and supervisors
- complete workplace records
- do basic arithmetical manipulations, including addition, subtraction, division, multiplication, fractions and percentages.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job sufficient to operate under routine only supervision and to solve routine problems, including knowledge of:

- principles of blending/mixing products
- principles of operation of the blending/mixing equipment and ancillary equipment that is integral to the process
- basic physics and chemistry relevant to the equipment/process/materials
- impact of blending/mixing on final product
- the potential effects of variations in raw materials and equipment operation/processes in relation to quality of product
- impact of variations in product specification on the blending/mixing process
- factors which may affect product quality or production output and appropriate remedies
- equipment limitations and impact on blending/mixing efficiency and effectiveness
- basis of the process used to transform the feed materials into the product
- product specifications and tolerances
- routine problems, their probable causes and relevant corrective actions
- start-up and shutdown processes
- enterprise production schedules
- organisation procedures relevant to the work environment/job role
- hierarchy of control
- hazards that may arise in the job/work environment and:
 - their possible causes
 - potential consequences
 - appropriate risk controls.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence shall be based on a holistic assessment of the evidence.
- It may be appropriate to assess this unit in conjunction with:
 - *MEM11011B Undertake manual handling.*
- The collection of performance evidence:
 - should occur over a range of situations which include typical disruptions to normal, smooth operation of an operating plant
 - will typically include a supervisor/third-party report or other evidence, focusing on consistent performance and problem recognition and solving. A supervisor/third-party report must be prepared by someone who has a direct, relevant, current relationship with the person being assessed and who is in a position to form a judgement on workplace performance relevant to the unit of competency
 - must include the use of an appropriate industrial item of equipment requiring demonstration of operation, start and stop procedures and responding to problems
 - may use industry-based simulation for all or part of the unit particularly where safety, lack of opportunity or significant cost is an issue.

- Assessment should occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Assessment in a simulated environment should use evidence collected from demonstration of skills and one or more of:
 - walk-throughs
 - pilot plant operation
 - industry-based case studies/scenarios
 - 'what ifs'.
- Knowledge evidence may be collected concurrently with performance evidence (provided a record is kept) or through an independent process such as workbooks, written assessments or interviews (provided a record is kept).
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications associated with this unit.
- The regulatory framework will be reflected in workplace policies and procedures and is not required to be independently assessed.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- In addition the assessor or anyone acting in subject matter expert role in assessment shall demonstrate both technical competency and currency. If the assessor cannot demonstrate technical competency and currency they shall assess with a subject matter expert who does meet these requirements.
- Technical competence can be demonstrated through one or more of:
 - relevant VET or other qualification/Statement of Attainment
 - appropriate workplace experience undertaking the type of work being assessed under routine and non-routine conditions
 - appropriate workplace experience supervising/evaluating the type of work being assessed under routine and non-routine conditions.
- Currency can be demonstrated through one or more of:
 - being currently employed undertaking the type of work being assessed
 - being employed by the organisation undertaking the type of work being assessed and having maintained currency in accordance with that organisation's policies and procedures
 - having consulted/had contact with an organisation undertaking the type of work being assessed within the last twelve months, the consultation/contact being related to assessment

- conducting on the job training/assessments of the type of work being assessed
- being an active member of a relevant professional body and participating in activities relevant to the assessment of this type of work.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=45a7f1d5-61a5-447a-9688-7abbd7e1a5c7>