



Australian Government

PMBTECH302 Modify existing compounds

Release: 1

PMBTECH302 Modify existing compounds

Modification History

Release 1. Supersedes and is equivalent to PMBTECH302A Modify existing compounds

Application

This unit of competency covers the skills and knowledge required to modify the formulae for compounds. A compound is a mixture of materials which is undertaken to a set formula and in specified proportions. Modifications may be minor changes to an existing compound or developing a 'new' compound which is strongly based on an existing compound.

This unit of competency applies to experienced operators who are required to determine the starting formula, develop and trial the changed formula in a laboratory or using pilot equipment, and verify/amend the changes during initial factory trial/s.

This unit of competency applies to an experienced operator demonstrating theoretical and technical knowledge and well developed skills in situations that require some discretion and judgement. The operator may work alone or as a member of a team or group and will work in liaison with other shift team members, team leader and supervisor, as appropriate.

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

Pre-requisite Unit

Nil

Competency Field

Technical

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.

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|----------|---|-----|---|
| 1 | Confirm requirements of modified formula | 1.1 | Check that specifications for new compound are complete and unambiguous |
| | | 1.2 | Clarify items which are unclear or beyond the normal scope of work |

- 1.3 Investigate the type of changes/materials which are likely to meet these requirements
 - 1.4 Clarify any possible issues if different, unusual or exotic materials are likely to be required
 - 1.5 Identify tests required on trial compound
- 2 **Estimate starting formula**
 - 2.1 Identify existing compound(s) with similar specifications
 - 2.2 Estimate required changes to existing compound
 - 2.3 Check practicality of proposed changes
 - 2.4 Check health, safety and environment (HSE) impacts of proposed changes
 - 2.5 Modify proposed starting formulae as appropriate
- 3 **Prepare trial compounds**
 - 3.1 Identify and control all hazards for pilot mixing
 - 3.2 Identify and check all required plant and equipment
 - 3.3 Obtain and prepare all required materials
 - 3.4 Mix trial compound and obtain sample(s)
 - 3.5 Interpret test results
 - 3.6 Modify formula and repeat trials as required
- 4 **Check initial factory trial**
 - 4.1 Check availability of required resources and plant availability
 - 4.2 Ensure all authorities and permissions have been obtained
 - 4.3 Check all hazard controls have been implemented
 - 4.4 Monitor factory trial mixing of compound
 - 4.5 Obtain sample(s) and interpret test results

- 4.6 Modify formula and repeat factory trial as required
- 5 **Complete trial**
- 5.1 Complete all required records and reports
 - 5.2 Check any changes to resources and procedures have been incorporated into standard procedures
 - 5.3 Ensure any additional HSE or skill requirements have been included in future plans

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:

- HSE legislation, regulations and codes of practice relevant to the workplace, manual handling 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:

- 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.

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

- hazardous products and materials
- vapours or other atmospheric hazards
- interaction of polymers, additives and other materials with process variables
- other hazards that might arise in developing/trialling the compound.

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMBTECH302A Modify existing compounds

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 PMBTECH302 Modify existing compounds

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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 procedures, job specifications, instruments/control panels, material labels and safety data sheets (SDS)
- identify specifications for amended formula
- apply a theoretical understanding of polymers to estimate changes that will meet production and safety requirements
- undertake tests and laboratory/pilot trials
- monitor factory trial
- modify the formula based on test data
- make final adjustments for the scaled up formula to work successfully in the factory
- communicate effectively with team/work group and supervisors
- complete workplace records and reports

do basic arithmetical manipulations, including additions, subtractions, divisions, fractions and percentages.

Knowledge Evidence

Must provide evidence that demonstrates knowledge relevant to their job sufficient to operate independently and to solve routine and non-routine problems, including knowledge of:

- existing compounds, their properties and components
- characteristics of compound components and their impact on compound properties
- expected impact of variations in compound components on compound properties
- mixing methods and the impacts of different mixing on compound properties
- requirements for factory trialling and scaling up from laboratory/pilot scale
- tests which might be used and the applicability of the different tests for different compound properties
- 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.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
 - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria
 - multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third-party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project in an operational workplace. Where this is not possible or where personal safety or environmental damage are limiting factors assessment must occur using 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 or through an independent process, such as workbooks, written assessments or interviews.
- 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.

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