



Australian Government

Department of Education, Employment and Workplace Relations

PMBTECH302A Modify existing compounds

Revision Number: 1

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Modification History

Not applicable.

Unit Descriptor

Unit descriptor

This competency covers the development of trial compounds in a laboratory or using pilot equipment and then monitoring initial factory trials. This competency would typically be done by a operator either working alone for a minor modification or with other relevant person(s) for a major modification.

This competency covers minor modifications to existing compounds/formulae to develop an updated version of an existing compound or a 'new' compound which is strongly based on an existing compound.

Application of the Unit

Application of this unit

This competency applies to operators who are required to modify the formulae for compounds and demonstrate that an appropriate formula has been developed.

It includes:

- determining the starting formula
- mixing the compound
- interpreting the test results
- modifying the formula
- verifying/modifying the compound during initial factory trials.

PMLTEST307B Prepare trial batches for evaluation may be used where the competency simply requires mixing in the laboratory and *PMLTEST300B Perform basic tests* (or other suitable test unit) may be used for the testing competency.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisites

This unit has **no** prerequisites.

Employability Skills Information

Employability Skills

This unit contains employability skills.

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. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. 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. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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 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.

Required Skills and Knowledge

This describes the essential skills and knowledge and their level required for this unit. Competence in this unit requires knowledge of:

- the components of relevant compounds and their impact on compound properties
- tests which might be used and the applicability of the different tests for different compound properties
- mixing methods and the impacts of different mixing on compound properties
- existing compounds and their properties
- requirements for factory trialling and scaling up from laboratory/pilot scale
- suppliers of materials
- sources of information about materials.

Language, literacy and numeracy requirements

This unit requires the ability to read and interpret technical specifications and literature and to communicate with all relevant stakeholders.

Writing formulae/mixing instructions and similar documents.

Numeracy is required to interpret technical specifications and test results and to calculate quantities and proportions required for the formula, make adjustments and then to scale up to factory trials.

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

It is essential that competence is demonstrated in the knowledge and skills defined in this unit. These may include the ability to:

- clarify the requirements of the modified compound
- make an initial estimated formula and justify that initial formula
- modify the formula based on test data and justify the modifications
- make final adjustments for the scaled up formula to work successfully in the factory.

Consistent performance should be demonstrated through the evidence from several formula modifications requiring different types of changes.

Context of assessment

This unit may be best assessed either through a portfolio of compounds developed/ modified, or the use of projects to develop/modify a range of existing compounds.

Competence in this unit may be assessed:

- on the plant

- using questions to assess knowledge
- in a laboratory/pilot plant
- by using a suitable simulation and/or a range of case studies/scenarios
- through a combination of these techniques.

Method of assessment

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 advanced operators who modify formulae for compounds used in the factory. They will typically be based in a laboratory or similar pilot/product/ material development area but will also have responsibility in the factory for monitoring new batches and ensuring that modified compounds are suitable when released for standard production. A operator working at this level would typically be responsible to a more senior operator and would work closely with them on new compounds and major modifications of existing compounds.

The operator would not be expected to develop a new compound or make a major modification to an existing compound unless under the direction of a more senior operator.

Procedures

All operations are performed in accordance with procedures.

Procedures means all relevant workplace procedures, work instructions, temporary instructions and relevant industry and government codes and standards.

Health, Safety and Environment

All operations are subject to stringent health, safety and environment requirements, which may be imposed through State or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and HSE requirements, the operator needs to ensure the HSE requirements take precedence.

Compound

Compound is used to mean any mixture of materials which is undertaken to a set formula and in specified proportions.

Tests

Tests includes the normal range of physical, chemical and environmental (weathering) tests which might be applied to the product

Unit Sector(s)

Not applicable.