



Australian Government

Department of Education, Employment and Workplace Relations

SUGPOEP2A Operate an evaporation process

Revision Number: 1

SUGPOEP2A Operate an evaporation process

Modification History

Not applicable.

Unit Descriptor

Unit descriptor

This is a Specialist unit. It covers the skills and knowledge required to prepare and operate an evaporation process.

Application of the Unit

Not applicable.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Not applicable.

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

Element	Performance criteria
1. Prepare the evaporation process for operation	<ul style="list-style-type: none">1.1 Materials are confirmed and available to meet production requirements1.2 Services are confirmed as available and ready for operation1.3 Equipment is checked to confirm readiness for use1.4 The evaporation process is set to meet production requirements
2. Operate and monitor the evaporation process	<ul style="list-style-type: none">2.1 The evaporation process is started up and operated according to company procedures2.2 Control points are monitored to confirm performance is maintained within specification2.3 Evaporated product meets specifications2.4 Equipment is monitored to confirm operating condition2.5 Out-of-specification product, process and equipment performance is identified, rectified and/or reported according to workplace reporting procedure2.6 The workplace meets housekeeping standards
3. Handover the evaporation process	<ul style="list-style-type: none">3.1 Workplace records are maintained in accordance with workplace procedures3.2 Handover is carried out according to workplace procedure3.3 Evaporator operators are aware of system and related equipment status at completion of handover
4. Shut down the evaporation process	<ul style="list-style-type: none">4.1 The appropriate shut down procedure is identified4.2 The evaporator is shut down according to workplace procedures4.3 The evaporator is prepared for storage in shut down mode4.4 Maintenance requirements are identified and reported according to workplace reporting procedure

Required Skills and Knowledge

Not applicable.

Evidence Guide

Evidence guide

The assessment process must address all of the following items of evidence.

Ability to:

1. Access workplace information to identify production requirements
2. Select, fit and use personal protective clothing and/or equipment
3. Confirm supply of necessary materials and services
4. Confirm equipment status and condition
5. Set up and start up the process
6. Start up and operate in both automatic and manual modes
7. Monitor the process and equipment operation to maintain the process within the required parameters. This can involve monitoring:
 - temperatures
 - vacuum and pressure
 - condensate flow and quality
 - steam flow and pressure
 - throughput
 - juice level of evaporators
 - heat transfer coefficients
 - evaporated product characteristics
 - equipment condition
8. Monitor supply and flow of materials to and from the process
9. Take corrective action in response to out-of-specification results
10. Report and/or record corrective action as required
11. Record workplace information
12. Demonstrate shift handover procedure
13. Shut down equipment in response to an emergency situation
14. Demonstrate an operational shut down procedure
15. Prepare equipment for cleaning/maintenance
16. Maintain work area to meet housekeeping standards

May include the ability to:

17. Use process control systems
18. Take samples and conduct tests

Knowledge of:

19. Purpose and basic principles of evaporation including multiple-effect evaporation, entrainment and the properties of steam
20. The circuit flow of this process and the effect of product output on downstream processes
21. Effect of raw materials and additives on process outcomes
22. The effect of high and low brix materials on evaporator performance
23. Quality characteristics and uses of evaporated product
24. Relationship between boiling point and pressure in the evaporation process
25. Equipment purpose and basic operating principles of evaporation equipment. This includes vacuum pumps and condensers
26. Services used
27. Operating requirements and parameters

28. Significance and method of monitoring control points within the process
29. Common causes of variation and corrective action required
30. Hazards and controls
31. Purpose and limitations of protective clothing and equipment
32. Lock out and tag out procedures
33. Requirements of both operational and long term shut down conditions to ensure the equipment is left in a safe state for the period of the shutdown and to minimise any delays in future start up
34. Procedures and responsibility for reporting problems
35. Environmental issues and controls
36. Waste handling requirements and procedures
37. Recording requirements and procedures

May include knowledge of:

38. Basic operating principles of process control where relevant. This includes the relationship between control panels and systems and the physical equipment
39. Sampling and testing procedures

Relationship with other standards

Pre-requisite units

There are no pre-requisite units for this competency standard.

Co-assessment of related units

Other units of competency relevant to the work role should be assessed in conjunction with this unit. This may include:

- SUGPCPS2A Collect and prepare samples
- SUGPPST2A Conduct standard tests
- SUGZPCI2A Operate a process control interface

Resources required for assessment

Assessment must occur in a real or simulated workplace where the assessee has access to:

- Operating procedures and related advice on equipment operation including advice on safe work practices and environmental requirements
- Personal protective clothing and equipment
- Product and process specifications and operating parameters
- Evaporator and related equipment
- Materials to be evaporated
- Services as required
- Material Safety Data Sheets where appropriate
- Housekeeping standards and procedures
- Advice on environmental management issues relevant to work responsibilities
- Workplace information recording systems, requirements and procedures

They may also require

- Sampling schedule and procedures and maintenance procedures and tools depending on the work requirements.

Assessment requirements

For information on how to assess this competency standard and who can assess, refer to the Assessment Guidelines for this Training Package.

Range Statement

Range statement

The range statement indicates the context for demonstrating competence. This statement is a guide and unless otherwise indicated, items may or may not apply as required by the work context.

- Work is carried out in accordance with company policies and procedures, manufacturer's recommendations, legislative requirements, codes of practice and industrial awards and agreements. Codes of practice include the Sugar Milling Operations Industry Code of Practice
- Workplace information can include Standard Operating Procedures (SOPs), specifications, production schedules and manufacturer's specifications
- Evaporation equipment may include heat exchangers, vapour separators, vapour condensers, vacuum and condensate pumps. Evaporators may have single or multiple stages and effects
- Confirming equipment status involves conducting relevant pre-start checks, confirming that cleaning standards are met, all safety guards are in place and equipment is operational
- Operation and monitoring of equipment and processes typically requires the use of control panels and systems
- Services may include power, steam, water, vacuum, compressed and instrumentation air
- Materials can include anti-scalants and enzymes
- Where tests are conducted as part of operation, typical requirements are for brix and thymol testing
- Monitoring the process may involve the use of production data such as performance control charts
- Control points refer to those key points in a work process which must be monitored and controlled
- Work may require the ability to work within a team environment
- Information systems may be print or screen based
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Unit Sector(s)

Not applicable.