



Australian Government

Department of Education, Employment and Workplace Relations

SUGPCSP2A Operate a crystalliser station process

Revision Number: 1

SUGPCSP2A Operate a crystalliser station process

Modification History

Not applicable.

Unit Descriptor

Unit descriptor

This is a Specialist unit. It covers the skills and knowledge required to operate the process from the low grade pan receiver through the crystallisers to the reheater.

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 crystalliser station for operation	1.1 Massecuite is confirmed and available to meet production requirements 1.2 Services are confirmed as available and ready for operation 1.3 Equipment is checked to confirm readiness for use 1.4 The crystallisers are set up to meet production requirements
2. Operate and monitor crystalliser station	2.1 The crystallisation station is started up and operated according to company procedures 2.2 Control points are monitored to confirm performance is maintained within specification 2.3 C massecuite feed to fugals meets specification 2.4 Equipment is monitored to confirm operating condition 2.5 Out-of-specification process and equipment performance is identified, rectified and/or reported according to workplace reporting procedure 2.6 The workplace meets housekeeping standards
3. Handover the crystalliser station	3.1 Workplace records are maintained in accordance with workplace procedures 3.2 Handover is carried out according to workplace procedure 3.3 Crystalliser station operators are aware of system and related equipment status at completion of handover
4. Shut down the crystalliser station	4.1 The appropriate shut down procedure is identified 4.2 The crystalliser station is shut down according to workplace procedures 4.3 The crystalliser station is prepared for storage in shut down mode 4.4 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. Start up from empty and start up from full
6. Maintain required levels in the crystallisers
7. Follow cooling and reheating profiles
8. Start up and operate in both automatic and manual modes
9. Monitor the process and equipment operation to maintain the process within the required parameters. This typically involves monitoring:
 - throughput
 - loads on crystalliser drives
 - sugar crystal size and distribution
 - massecuite conductivity
 - massecuite dilution rates
 - end of cooling and reheating temperatures
 - stocks of C massecuite to match pan stage throughput
 - equipment condition
10. Detect and report water leaks from crystalliser coils
11. Take corrective action in response to out-of-specification results
12. Report and/or record corrective action as required
13. Record workplace information
14. Demonstrate shift handover procedure
15. Shut down equipment in response to an emergency situation
16. Demonstrate an operational shut down procedure
17. Prepare equipment for cleaning/maintenance
18. Maintain work area to meet housekeeping standards

May include the ability to:

19. Use process control systems
20. Clean and sanitise equipment
21. Take samples and conduct tests

Knowledge of:

22. Purpose and basic principles of crystallisation. This includes a basic understanding of crystal growth and super saturation of solutions
23. The effect of C molasses dilution on C massecuite viscosity
24. The effect on C molasses purity of variation in:
 - end of cooling and reheating temperatures
 - residence time
25. The effect of C massecuite conditioning on low grade fugal performance
 - the circuit flow of this process and relationship to related processes

- equipment purpose and basic operating principles of crystallization equipment
 - the risks and consequences of pipe failure related to massecuite decomposition
26. Services used
27. Operating requirements and parameters
- requirements when starting up full crystallisers containing cold massecuite
 - requirements when shutting down full crystallisers containing hot massecuite
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. Lock out and tag out procedures
32. shut down sequence including massecuite pumps and reheaters
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. Cleaning and sanitation procedures
40. 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
- Crystalliser station equipment
- Materials including C massecuite and 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 access to:

- Cleaning procedures, 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
- The crystalliser station may include low grade pan receiver, massecuite pumps, batch and continuous crystallisers, reheater, molasses lubrication system and hot and cold water systems
- 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. It may also involve checking operation/calibration of measuring instrumentation
- Operation and monitoring of equipment and processes typically requires the use of control panels and systems
- Services may include power, water, compressed and instrumentation air
- Where tests are conducted as part of operation a typical requirement is observation using a microscope
- 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.