



Australian Government

Department of Education, Employment and Workplace Relations

FDFSUG216A Operate a crystalliser station process

Release: 1

FDFSUG216A Operate a crystalliser station process

Modification History

New Unit based on *SUGPCSP2A Operate a crystalliser station process*.

Unit Descriptor

This unit describes the outcomes required to operate the process from the low grade pan receiver through the crystallisers to the re-heater.

Application of the Unit

This unit has application in the sugar milling industry.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

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

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Prepare the crystalliser station for operation	1.1 Masecuite 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 masecuite 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

This section describes the skills and knowledge required for this unit.

Required skills include:

Ability to:

- access workplace information to identify production requirements
- select, fit and use personal protective clothing and/or equipment
- confirm supply of necessary materials and services
- confirm equipment status and condition
- start up from empty and start up from full
- maintain required levels in the crystallisers
- follow cooling and reheating profiles
- start up and operate in both automatic and manual modes
- monitor the process and equipment operation to maintain the process within the required parameters including 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
- detect and report water leaks from crystalliser coils
- take corrective action in response to out-of-specification results
- report and/or record corrective action as required
- record workplace information
- demonstrate shift handover procedure
- shut down equipment in response to an emergency situation
- demonstrate an operational shut down procedure
- prepare equipment for cleaning/maintenance
- maintain work area to meet housekeeping standards

Required knowledge includes:

Knowledge of:

- purpose and basic principles of crystallisation including a basic understanding of crystal growth and super saturation of solutions
- the effect of C molasses dilution on C massecuite viscosity
- the effect on C molasses purity of variation in:
 - end of cooling and reheating temperatures

- residence time
- 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
- services used
- operating requirements and parameters
- requirements when starting up full crystallisers containing cold massecuite
- requirements when shutting down full crystallisers containing hot massecuite
- significance and method of monitoring control points within the process
- common causes of variation and corrective action required
- hazards and controls
- lock out and tag out procedures
- shut down sequence including massecuite pumps and re-heaters
- 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
- procedures and responsibility for reporting problems
- environmental issues and controls
- waste handling requirements and procedures
- recording requirements and procedures

Evidence Guide

<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<p>Overview of assessment</p>	<p>Assessment must be carried out in a manner that recognises the cultural and literacy requirements of the assessee and is appropriate to the work performed.</p>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>Evidence of ability to:</p> <ul style="list-style-type: none"> • start up from empty or from full in manual and automatic modes • monitor the process and equipment operation • detect and report water leaks from crystalliser coils • demonstrate shift handover procedure • shut down equipment in response to an emergency situation • demonstrate an operational shut down procedure.
<p>Context of and specific resources for assessment</p>	<p>Assessment must occur in a real or simulated workplace where the assessee has access to:</p> <ul style="list-style-type: none"> • 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 masseuite 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. <p>They may also require access to:</p> <ul style="list-style-type: none"> • Cleaning procedures, sampling schedule and procedures and maintenance procedures and tools depending on the work requirements.
<p>Method of assessment</p>	<p>Other units of competency relevant to the work role should be assessed in conjunction with this unit. This may include:</p>

	<ul style="list-style-type: none">• SUG202A Collect and prepare samples• SUG213A Perform standard tests on a cane sample• FDFOP2030A Operate a process control interface.
Guidance information for assessment	To ensure consistency in one's performance, competency should be demonstrated on more than one occasion over a period of time in order to cover a variety of circumstances, cases and responsibilities, and where possible, over a number of assessment activities.

Range Statement

<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. 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) may also be included.</p>	
Policies and procedures	Work is carried out in accordance with company policies and procedures, licensing requirements, manufacturer's recommendations, legislative requirements, codes of practice and industrial awards and agreements.
Codes of practice	Codes of practice include the Sugar Milling Operations Industry Code of Practice.
Workplace information	Workplace information can include: <ul style="list-style-type: none"> • Standard Operating Procedures (SOPs) • manufacturer's specifications.
Crystalliser station	The crystalliser station may include: <ul style="list-style-type: none"> • low grade pan receiver • massecuite pumps • batch and continuous crystallisers • re-heater • molasses lubrication system • hot and cold water systems.
Equipment status	Confirming equipment status involves <ul style="list-style-type: none"> • conducting relevant pre-start checks • confirming that housekeeping standards are met • all safety guards are in place • equipment is operational. <p>It may also involve checking operation/calibration of measuring instrumentation.</p>
Equipment operation and monitoring	Operation and monitoring of equipment and processes typically requires the use of control panels and systems.
Services	Services may include: <ul style="list-style-type: none"> • power • water • compressed and instrumentation air.
Tests	Where tests are conducted as part of operation a typical requirement is observation using a microscope.

Process monitoring	Monitoring the process may involve the use of production data such as performance control charts.
Control points	Control points refer to those key points in a work process which must be monitored and controlled.
Teamwork	Work may require the ability to work within a team environment.
Information systems	Information systems may be print or screen based.

Unit Sector(s)

Sugar Milling.