



Australian Government

Department of Education, Employment and Workplace Relations

PMC552006C Operate an autoclave

Revision Number: 1

PMC552006C Operate an autoclave

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the operation of autoclaves including identifying and isolating equipment malfunctions. It involves operating equipment correctly, monitoring the process and resolving routine problems.
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Application of the Unit

Application of the unit	This unit of competency applies to operators in a plant who are responsible for operating an autoclave to facilitate the curing of products in the glass, cement, clay, ceramic and fibre-cement industries. This unit of competency includes the operation of all ancillary equipment. The unit of competency is typically performed by operators working either independently or as part of a work team.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare the equipment for production	1.1. Conduct equipment pre-startup procedure and visual checks according to enterprise procedure 1.2. Set up and configure equipment startup function in accordance with procedures/work instructions 1.3. Load raw materials onto autoclave cars in accordance with procedures/work instructions 1.4. Charge materials into autoclave and close and secure the vessel in accordance with procedures/work instructions
2. Operate equipment	2.1. Start up equipment in accordance with procedures/work instructions 2.2. Ensure equipment is operated in accordance with established enterprise procedures
3. Monitor and record operation	3.1. Monitor equipment performance in accordance with work instructions and manufacturer's specifications 3.2. Monitor operating pressures and temperatures 3.3. Adjust and control equipment to ensure correct product quality 3.4. Complete appropriate records and logs
4. Rectify routine problems	4.1. Identify the range of faults that can occur during the operation 4.2. Determine and rectify fault causes by procedures/work instructions 4.3. Identify and rectify equipment failure causes in accordance with procedures/work instructions 4.4. Ensure appropriate records and log books of equipment operations are maintained to meet procedures/work instructions 4.5. Identify non-routine problems and report to designated person
5. Shut down equipment	5.1. Shut down equipment and depressurise vessel in accordance with work instructions 5.2. Open the vessel and discharge cured product 5.3. Complete appropriate records and logs 5.4. Ensure autoclave cars are clear of all product and left ready for reuse 5.5. Shut down equipment in an emergency situation
6. Prepare equipment	6.1. Isolate equipment in accordance with work

ELEMENT	PERFORMANCE CRITERIA
for maintenance	instructions 6.2. Remove any broken materials safely 6.3. Make sure area is clear and safe for maintenance
7. Control hazards	7.1. Identify hazards from the autoclave 7.2. Identify other hazards in autoclave area 7.3. Assess the risks arising from those hazards 7.4. Implement measures to control those risks in line with procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

Required skills include:

- recognising conditions which will lead to out of specification product
- implementing the enterprise's procedures and relevant regulatory requirements within time constraints and in a manner relevant to the operation of the equipment
- conveying information relevant to the operation clearly and effectively
- reading and numeracy to interpret workplace documents and technical information

Required knowledge

Required knowledge includes:

- hazards associated with and sequence of isolation procedures
- operational processes and functions, including startup and shutdown processes
- composition and nature of finished product
- construction and limitations of the equipment
- out of specification situations
- types of defects/faults
- electrical/instrumental causes of malfunctions

Evidence Guide

EVIDENCE GUIDE	
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.	
Overview of assessment	The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	It is essential that the equipment and the process be understood and that the importance of critical settings and readings is known. Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action. Consistent performance should be demonstrated. In particular look to see that: • startup and shutdown procedures are applied without variation • signals and alarms are responded to immediately • isolation procedures for maintenance are followed • all OHS requirements are followed. Competence must be demonstrated in the operation of all ancillary equipment to the level required for this unit of competency.
Context of and specific resources for assessment	Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. Assessment will occur over a range of situations which will include disruptions to normal, smooth operation. Simulation or case studies/scenarios may be required to allow for timely assessment of parts of this unit of competency. Simulation should be based on the actual plant and will include 'walk-throughs' of the relevant competency components. A bank of scenarios/case studies/what ifs and questions will be required to probe the reasoning behind observable actions.
Method of assessment	In all plants it may be appropriate to assess this unit

EVIDENCE GUIDE	
	concurrently with relevant teamwork and communication units. Individual enterprises may choose to add prerequisites and co-requisites relevant to their processes.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.

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. 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.

Procedures	All operations are performed in accordance with standard procedures and work instructions
Variations	Variations may include: • nature and type of plant configuration • nature and type of material or product to be autoclaved • safe work practices and the use of protective clothing, hard hats and safety glasses
Checking equipment	Checking equipment includes: • vessel door closing and locking equipment • vessel cars • steam and pressure generation equipment
Use of equipment	Use of equipment includes: • instruments and PLCs but not control panels • measuring and/or recording equipment • communication equipment
Typical problems	Typical problems include: • equipment malfunctions • temperature or pressure fluctuations • product quality variations • material/feed variations • vessel pressure losses
Occupational health and safety (OHS)	All operations are subject to stringent OHS requirements and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and OHS requirements, the OHS requirements take precedence.

Unit Sector(s)

Unit sector	Operational/technical
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Competency field

Competency field	
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Co-requisite units

Co-requisite units		