



Australian Government

PMC552030 Operate a firing kiln

Release: 1

PMC552030 Operate a firing kiln

Modification History

Release 1. Supersedes and is equivalent to PMC552030C Operate a firing kiln.

Application

This unit of competency covers the skills and knowledge required to operate a firing kiln and ancillary equipment that is integral to the process. It applies to large production contexts and smaller craft contexts.

This unit of competency applies to operators who are required to prepare the firing equipment, load and stack products, monitor and adjust kiln operation and rectify routine problems.

This unit of competency does not apply to forming, drying prior to firing, finishing or operation of rotary kilns.

This unit of competency applies to an individual working alone or as part of a team or group and working in liaison with other shift team members, team leader and supervisor, as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Operations

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

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|---|-------------------------------------|---|
| 1 | Prepare the firing equipment | 1.1 Determine the firing requirements from the production program |
| | | 1.2 Identify and set up the kiln cars or furniture |
| | | 1.3 Ensure kiln refractories are within specification, including kiln cars, kiln lining and refractories at burners, as appropriate |
| | | 1.4 Ensure the firing equipment is safe to use |
| | | 1.5 Check for fuel feed obstructions and clear burner pathways |
| | | |
| 2 | Load kiln | 2.1 Ensure products are set or stacked to specification |
| | | 2.2 Ensure correct stacking pattern is used |
| | | 2.3 Ensure adequate space is allowed around each item |
| | | 2.4 Use kiln space effectively |
| | | |
| 3 | Monitor kiln operation | 3.1 Monitor kiln firing to ensure temperature rise and fall rate is to specification |
| | | 3.2 Monitor and record kiln car movement, or kiln contents |
| | | 3.3 Monitor and adjust kiln heating equipment (elements or burners) and record temperature gradient details |
| | | 3.4 Monitor the kiln atmosphere |
| | | 3.5 Monitor for correct operation of kiln |
| | | 3.6 Move kiln car or kiln contents to the appropriate storage area |
| | | 3.7 Check and record condition of products leaving the kiln |

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|---|---------------------------------|-----|--|
| 4 | Rectify routine problems | 4.1 | Identify the range of faults that can occur during the operation |
| | | 4.2 | Determine and rectify fault causes in accordance with 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 | Control hazards | 5.1 | Identify hazards in kiln work area |
| | | 5.2 | Assess the risks arising from those hazards |
| | | 5.3 | Implement measures to control those risks in line with procedures and duty of care |

Foundation Skills

This section describes those required skills (language, literacy and numeracy) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Regulatory framework

The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used.

Applicable legislation, regulations, standards and codes of practice include:

- health, safety and environmental (HSE) legislation, regulations and codes of practice relevant to the workplace, equipment and production processes and hazardous materials
- Australian/international standards relevant to the materials being used and products being made
- any relevant licence and certification requirements.

All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through state/territory or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and such requirements the legislative requirements take precedence.

Procedures

All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, and include one or any combination of:

- job cards
- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Tools and equipment

Tools and equipment include:

- firing kiln
- programmable logic controllers (PLC), if fitted
- instrument panels (local)
- measuring and recording equipment
- kiln cars, racking or other kiln furniture
- ancillary equipment that is integral to the process.

Problems/known solutions

Routine problems must be resolved by applying known solutions.

Routine problems/known solutions are predictable and include one or more of:

- ensuring moisture content of product prior to firing is within specification
- furnace temperature profile variations
- drying variations
- distribution of product in kiln or on kiln car
- correct transition through quartz inversion, as appropriate
- distortion of refractories or mechanical failures.

Known solutions are drawn from one or more of:

- procedures
- training
- remembered experience.

Non-routine problems must be reported according to according to relevant procedures.

Hazards

Hazards must be identified and controlled. Identifying hazards requires consideration of:

- high temperatures
- smoke, dust, vapours or other atmospheric hazards
- weight, shape, volume of materials to be handled
- hazardous products and materials
- sharp edges, protrusions or obstructions
- slippery surfaces, spills or leaks
- electricity
- gas
- gases and liquids under pressure

- noise
- rotational equipment or vibration
- plant services (steam, condensate, cooling water, etc)
- structural hazards
- equipment failures
- machinery, equipment and product mass
- limited head spaces or overhangs
- working at heights
- working in restricted or confined spaces
- other hazards that might arise.

Records and reports

Records include one or more of:

- log books/sheets
- electronic records
- job/work sheets
- other records used for the smooth running of the plant.

Reports include one or more of:

- paper or electronic-based logs and reports
- verbal/radio reports
- reporting items found which require action.

Unit Mapping Information

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Links

MSA Training Package Implementation Guides - <http://mskills.org.au/training-packages/info/>