



Australian Government

Department of Education, Employment and Workplace Relations

RIIPBE205B Conduct roasting operations

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of roasting operations in the metalliferous mining industry. It includes preparing for and conducting roaster operations, managing delivery of concentrate to the fluid bed roaster, monitoring operation of the fluid bed roaster, managing roaster products, and conducting housekeeping activities. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

<p>Elements describe the essential outcomes of a unit of competency.</p>	<p>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.</p>
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for and conduct roaster operations	1.1. Access, interpret and apply compliance documentation relevant to the work activity 1.2. Receive, interpret and clarify shift changeover details 1.3. Communicate with other personnel using approved communication methods 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of auxiliary equipment for work activities 1.6. Identify, address and report potential risks and hazards 1.7. Identify, address and report environmental issues 1.8. Adhere to emergency procedures to ensure safety of personnel and plant 1.9. Use approved dust suppression and extraction methods 1.10. Ensure area is well ventilated before entry into work area
2. Manage delivery of concentrate to fluid bed roaster	2.1. Monitor feed mechanism operation (e.g. conveyor systems) 2.2. Monitor operating requirements 2.3. Adjust feed rate in accordance with operating requirements
3. Monitor operation of fluid bed roaster	3.1. Read and interpret data from equipment indicators to determine roaster efficiency 3.2. Continuously inspect operations/plant and catchment areas to identify roaster process defects and potential problems 3.3. Adjust cooling systems to optimise roaster operation temperature 3.4. Complete all required documentation clearly, concisely and on time 3.5. Pass on end of shift information to oncoming shift
4. Manage roaster products	4.1. Monitor gas by-product output and cooling 4.2. Monitor calcine cooling systems 4.3. Regulate the operation of calcine and gas

	<p>cooling systems</p> <p>4.4. Action and report all roaster operating and cooling system alarms</p> <p>4.5. Communicate with personnel to ensure effective management of roaster products and by-products</p>
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Required Skills and Knowledge

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

Required skills

Specific skills are required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following as required to conduct roasting operations:

- apply legislative, organisation and site requirements and procedures for conducting roasting operations
- diagnose faults
- handle hazardous goods
- interpret reports
- lift (manual, cranes and loads)
- maintain records
- report defects
- apply safe work practices
- use hand and power tools

Required knowledge

Specific knowledge is required to achieve the performance criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following as required to conduct roasting operations:

- breakdown procedures
- contaminant identification
- roasting process
- operating parameters and roasting capacities
- cooling systems
- boiler operation
- concentrate blending
- calcine storage
- gas management systems
- emergency procedures
- environmental procedures
- equipment safety requirements
- hazardous goods procedures and consequences of spills and hazardous goods
- identifying repair requirements
- isolation procedures
- metallurgical and technical data (basic)
- OHS procedures

- pumping system
- reagent types
- sampling
- site procedures
- site safety requirements
- types of ores (basic)
- wet and dry working 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>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following:</p> <ul style="list-style-type: none"> • knowledge of the requirements, procedures and instructions for conducting roasting operations • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of roasting operations • working with others to undertake and complete the roasting operations in a way that meets all of the required outcomes • consistent timely completion of roasting operations that safely, effectively and efficiently meets the required outcomes
<p>Context of and specific resources for assessment</p>	<ul style="list-style-type: none"> • This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job. • Customisation of assessment and delivery environment to sensitively accommodate

	<p>cultural diversity.</p> <ul style="list-style-type: none"> • Aboriginal people and other people from a non English speaking background may have second language issues. • Where applicable, physical resources should include equipment modified for people with disabilities. Access must be provided to appropriate learning and/or assessment support when required.
<p>Method of assessment</p>	<p>This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:</p> <ul style="list-style-type: none"> • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> • working with others to undertake and complete the roasting operations
<p>Guidance information for assessment</p>	<p>Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.</p>

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>	
<p>Relevant compliance documentation may include:</p>	<ul style="list-style-type: none"> • legislative, organisational and site requirements and procedures examples of legislation include: <ul style="list-style-type: none"> • mining safety and health • mine inspection • OHS • explosives • manufacturer's guidelines and specifications • Australian standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
<p>Auxiliary equipment may be anything that is portable and mobile that is not part of the fixed infrastructure, and may include:</p>	<ul style="list-style-type: none"> • compressors • distribution control systems (DCS) • feeders • gantry cranes and attachments and other mobile equipment • hand and power tools • hoses
<p>Environmental issues may include:</p>	<ul style="list-style-type: none"> • drainage • dust (dump) • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality
<p>Plant may include:</p>	<ul style="list-style-type: none"> • roaster • boilers • cyclones • drum coolers

	<ul style="list-style-type: none"> • gas precipitators • heat exchanger • burners • gas train • vessels • conveyors • valves • ladders • rails
Monitoring the roasting process may include the checking of:	<ul style="list-style-type: none"> • product composition (e.g. sulphate/sulphide %) • blockages and spillages • feed rates • moisture levels • overloads • pressures • power draw • wear and tear • emission (e.g. sulphides) • Contaminants, that is, anything other than the ore. Common contaminants may include oil, fuel, gases, organic materials, moisture
Indicator readings may measure:	<ul style="list-style-type: none"> • temperature • gas pressure • air flows • speed (e.g. cooling system pumps) • unusual noises • vibrations • power
Equipment or plant cleaning methods may include:	<ul style="list-style-type: none"> • hammer and bar • air lance • shovel and wheel barrow • vacuum • hosing with water • high pressure cleaning
Roasting process may include:	<ul style="list-style-type: none"> • fluid bed roaster • tantaline roaster • filtrate roasting
Feed materials may include:	<ul style="list-style-type: none"> • ore concentrate • calcine • other feed material

Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.