



Australian Government

Department of Education, Employment and Workplace Relations

RIIPBE311B Conduct magnetic separation

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of magnetic separation in the mining industry. It includes planning and preparing for magnetic separation, starting up equipment in sequence, operating and monitoring equipment, conducting housekeeping activities, and shutting down in sequence and/or isolating equipment. 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
- Coal 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. Plan and prepare for magnetic separation	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 1.4. Select personal protective equipment appropriate for work activities 1.5. Select appropriate type of auxiliary equipment for work activities 1.6. Perform equipment pre-start checks 1.7. Identify, address and report potential risks and hazards 1.8. Identify, address and report environmental issues 1.9. Adhere to emergency procedures 1.10. Use approved dust suppression and extraction methods 1.11. Ensure area is well ventilated
2. Start-up equipment in sequence	2.1. Carry out start-up procedures and complete start-up checks according to plant configurations and system requirements 2.2. Confirm plant is operational
3. Operate and monitor equipment	3.1. Read and interpret data from equipment indicators to determine separation efficiency 3.2. Continuously inspect and monitor plant and identify defects and potential problems 3.3. Assess mineral content of ore according to separation parameters 3.4. Make appropriate adjustments to separation process 3.5. Adjust equipment to agreed parameters 3.6. Control feed to separation equipment 3.7. Carry out operator level maintenance to maintain condition of equipment 3.8. Complete all required documentation 3.9. Pass on end of shift information to oncoming shift
4. Conduct housekeeping	4.1. Clean plant

activities	4.2. Identify, address and report hazards
5. Shutdown in sequence and/or isolate equipment	5.1. Shutdown and/or isolate equipment based on process and safety requirements 5.2. Perform <i>post-shutdown</i> and/or isolation checks

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 magnetic separation:

- apply legislative, organisation and site requirements and procedures
- handle hazardous substances
- identify hazards
- interpret reports
- use lifting techniques (manual, cranes and loads)
- monitor operation
- report defects
- employ safe work practices
- use hand and power tools
- find operational faults

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 magnetic separation:

- contaminants
- emergency procedures
- environmental principles
- equipment operating parameters
- equipment safety requirements
- separation plant
- hazardous substance procedures and consequences of spills
- identifying repair requirements
- isolation procedures
- metallurgical and technical data
- operational procedures and checks
- magnetic separation safety requirements
- types of ores and grades

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 magnetic separation • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of magnetic separation • working with others to undertake and complete the magnetic separation in a way that meets all of the required outcomes • consistent timely completion of magnetic separation 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.
Method of assessment	<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 magnetic separation
Guidance information for assessment	<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 • manufacturer's guidelines and specifications • Australian standards • Employment and Workplace Relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
<p>Legislation may include acts and regulations dealing with:</p>	<ul style="list-style-type: none"> • mining safety and health • mine inspection • OHS • explosives
<p>Pre-start checks may include:</p>	<ul style="list-style-type: none"> • availability of equipment • detection of conditions that are unusual • personnel availability • walk through plant • isolation and/or lockout checks • job requirements
<p>Environmental issues may include:</p>	<ul style="list-style-type: none"> • drainage • dust • emissions • flora and fauna • hazardous chemicals • noise • recycling • run-off • spills • waste management and disposal • water quality
<p>Start-up procedure may include:</p>	<ul style="list-style-type: none"> • cameras and monitors • distribution systems • drive belts • screens • fluid levels (grease, oil)

	<ul style="list-style-type: none"> • hoppers and launders • interlocks • isolations • pipes and flanges • conveyor systems • elevators and screw feeders • valves • visual and audio warning devices
Plant may include:	<ul style="list-style-type: none"> • compressors and blowers • vibrating screens • induction roll magnets • cross belt magnets • weightometers • dryers and burners • conveyors, screw feeders and elevators
Methods used to optimise the plant may include:	<ul style="list-style-type: none"> • adjust mineral cuts • adjust feed input rate • adjust temperatures • adjust magnetic intensity
Indicator readings may include:	<ul style="list-style-type: none"> • current • grade • heat • unusual noises • levels • radiation
Monitoring may include the checking of:	<ul style="list-style-type: none"> • air flows • blockages and spillages • current draw • feed rates • power • pressures • wear and tear • temperatures • particle size • throughput
Separation methods may include:	<ul style="list-style-type: none"> • magnetic • sizing
Separation quality targets may include:	<ul style="list-style-type: none"> • grades • consumption targets • percentage of recovery

Equipment may include:	<ul style="list-style-type: none"> gantry cranes and attachments hand and power tools hoses (air)
Equipment and plant cleaning methods may include:	<ul style="list-style-type: none"> shovels compressed air
Post-shutdown checks are like pre-start checks	
Materials may include:	<ul style="list-style-type: none"> gas
Contaminants are anything other than the slurry. Common contaminant may include.	<ul style="list-style-type: none"> wood fibre gravel silica
Site conditions may include:	<ul style="list-style-type: none"> day and night weather conditions working at heights

Unit Sector(s)

Beneficiation

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.