



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **RIIPRE204A Sinter materials**

**Release: 1**

## RIIPRE204A Sinter materials

### Modification History

Not applicable.

### Unit Descriptor

This unit covers the sintering of materials in the metalliferous mining industry. It includes preparing materials for feeding into sinter strand, sintering materials, cooling and screening sinter and fines, and operating environmental controls. 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 materials for feeding into sinter strand	1.1. Access, interpret and apply <i>compliance documentation</i> relevant to the work activity 1.2. Add (reagents) to meet production targets and sintering specifications 1.3. <i>Monitor</i> and control moisture content of materials 1.4. Monitor and control material feed rate 1.5. Identify and remove <i>feedstock material</i> before processing begins
2. Sinter materials	2.1. Monitor and adjust correct suction rate throughout bed to ensure sintering is complete 2.2. Identify and separate materials not meeting material size to raw material mix or other specified location 2.3. Monitor and adjust temperature to maintain uniform distribution across the bed 2.4. Screen hot sinter where applicable 2.5. Check and confirm strand discharge chutes are working 2.6. Confirm roll feeder is clear of debris and build-up 2.7. Check and confirm condition of pallet seal and wind box to prevent leakage 2.8. Check and confirm fire bars and spade pins are intact to minimise fall through of material 2.9. Deposit blend across full width of strand 2.10. Operate at full bed depth and constant waste gas temperature
3. Cool and screen sinter and fines	3.1. Receive and assess material size according to hearth layer requirements 3.2. Maintain hopper levels ensuring contract feed to screening station 3.3. Crush oversize material from scalping screens 3.4. Monitor and cool sinter to the required temperature 3.5. Monitor cooler operations to maintain required temperature, minimise air leakage,

	and meet cooling rate requirements 3.6. Monitor and maintain appropriate depth of sinter on cooling pallets
4. Operate environmental controls	4.1. Ensure <i>environmental</i> systems are operating correctly 4.2. Check wastes and emission collection meets operational compliance

## 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 sinter materials:

- apply legislative, organisation and site requirements and procedures for sintering materials
- discharging materials
- bed materials
- stock materials
- communicate within work group
- report faults and variances

### 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 sinter materials:

- precautions necessary for safe working
- system for accessing safe working procedures
- use of protective clothing and equipment
- sinter feedstock
- sinter yield
- sinter feedstock additions
- operating procedures
- quality procedures
- blend profile to give optimum strand conditions
- sinter techniques and production
- cooling requirements
- screening
- hearth layer requirements
- importance of correct pallet side walls
- reasons for maintaining maximum depth of sinter in cooler pallets
- cooler air leakage
- danger of high temperature sinter/pellets on conveyors
- importance of no over size material after final cold fines screen
- temperature distribution
- combustion requirements
- suction requirements
- processing of sinter and fines

- effects of strand leakage's
- importance of correct strand disposition
- importance of roll feeder operation
- over size material
- hot screening
- dangers presented by specific plant and equipment
- report faults
- limits of authority
- team working practices
- minimising conflict
- information to be communicated, to whom and when
- requirements on job holder of quality systems

## 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><b>Overview of assessment</b></p>	
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></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"> <li>• knowledge of the requirements, procedures and instructions for sintering materials</li> <li>• implementation of requirements, procedures and techniques for the safe, effective and efficient completion of materials sintering</li> <li>• working with others to undertake and complete the materials sintering in a way that meets all of the required outcomes</li> <li>• consistent timely completion of materials sintering that safely, effectively and efficiently meets the required outcomes</li> </ul>
<p><b>Context of and specific resources for assessment</b></p>	<ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• Customisation of assessment and delivery environment to sensitively accommodate</li> </ul>

	<p>cultural diversity.</p> <ul style="list-style-type: none"> <li>• Aboriginal people and other people from a non English speaking background may have second language issues.</li> <li>• 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.</li> </ul>
<b>Method of assessment</b>	<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"> <li>• written and/or oral assessment of the candidate's required knowledge</li> <li>• observed, documented and/or first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> <li>• implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes</li> <li>• consistent achievement of required outcomes</li> </ul> </li> <li>• first hand testimonial evidence of the candidate's: <ul style="list-style-type: none"> <li>• working with others to undertake and complete the materials sintering</li> </ul> </li> </ul>
<b>Guidance information for assessment</b>	<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><b>Relevant compliance documentation</b> may include:</p>	<ul style="list-style-type: none"> <li>• legislative, organisational and site requirements and procedures</li> <li>• manufacturer's guidelines and specifications</li> <li>• Australian standards</li> <li>• Employment and workplace relations legislation</li> <li>• Equal Employment Opportunity and Disability Discrimination legislation</li> </ul>
<p><b>Legislation</b> may include Acts and regulations dealing with:</p>	<ul style="list-style-type: none"> <li>• mining safety and health</li> <li>• mine inspection</li> <li>• OHS</li> <li>• explosives</li> </ul>
<p><b>Monitoring the sintering process</b> may include the checking of:</p>	<ul style="list-style-type: none"> <li>• blockages and spillages</li> <li>• feed rates</li> <li>• on stream analysis (OSA)</li> <li>• overloads</li> <li>• pressures</li> <li>• power draw</li> <li>• wear and tear</li> <li>• levels</li> <li>• waste gas</li> </ul>
<p><b>Feedstock materials</b> may include:</p>	<ul style="list-style-type: none"> <li>• ore blend</li> <li>• limestone fines</li> <li>• return fires</li> <li>• burnt lime</li> <li>• water</li> </ul>
<p><b>Environmental issues</b> may include:</p>	<ul style="list-style-type: none"> <li>• drainage</li> <li>• dust (dump)</li> <li>• emissions</li> <li>• flora and fauna</li> <li>• hazardous chemicals</li> <li>• noise</li> <li>• recycling</li> <li>• run-off</li> </ul>

	<ul style="list-style-type: none"> <li>• spills</li> <li>• waste management and disposal</li> <li>• water quality</li> </ul>
<b>Plant</b> may include:	<ul style="list-style-type: none"> <li>• heat exchanger</li> <li>• burners</li> <li>• lines</li> <li>• conveyors</li> <li>• valves</li> <li>• roll feeder</li> <li>• drums (mixing, granulating)</li> <li>• feed bins</li> </ul>
<b>Hazards</b> may include:	<ul style="list-style-type: none"> <li>• rail and road movements</li> <li>• cranes</li> <li>• noise</li> <li>• wind borne dust</li> <li>• sharp objects</li> <li>• moving machinery</li> <li>• falling</li> <li>• falling objects</li> </ul>

## Unit Sector(s)

Refining

## Competency field

Refer to Unit Sector(s).

## Co-requisite units

Not applicable.