



Australian Government

Department of Education, Employment and Workplace Relations

RIIPSM301A Cast a blast furnace

Release: 1

RIIPSM301A Cast a blast furnace

Modification History

Not applicable.

Unit Descriptor

This unit covers the casting of blast furnaces in the metalliferous mining industry. It includes planning and preparing for casting, casing ore and slag, and separating ore and slag. 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

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. Plan and prepare for casting	1.1. Access, interpret and apply <i>compliance documentation</i> relevant to the work activity 1.2. Select <i>personal protective equipment</i> appropriate for work activities 1.3. Place and operate all <i>runners</i> , dams and skimmers correctly 1.4. Ensure that <i>tools</i> are at the correct temperature for effective operations 1.5. Ensure that <i>casting equipment</i> is ready for correct operation 1.6. Maintain tap hole correctly for efficient operation
2. Cast ore and slag	2.1. Follow safe working procedures at all times 2.2. Use appropriate safety clothing and equipment provided 2.3. Identify, address and report <i>environmental issues</i> 2.4. Drain runners after cast as required 2.5. Safely and correctly complete off blast activities 2.6. Correctly secure and plug the tap hole 2.7. Ensure that only iron enters the iron receiving vessel 2.8. Correctly open and keep the tap hole clear during cast 2.9. Operate correct <i>warnings</i> when instructed to activate item 2.10. Ensure fume extraction and indicator lights, when under front side control, are operating efficiently
3. Separate ore and slag	3.1. Follow safe working procedures at all times 3.2. Use appropriate safety clothing and equipment provided 3.3. Segregate slag according to retained ore proportion and direct accordingly 3.4. Contain slag flows within the runner system to minimise damage and spillage

	<p>3.5. Ensure that tools are at the correct temperature throughout to reduce the risk of explosion</p> <p>3.6. Correctly maintain runner system to ensure casting proceeds to specification</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 cast a blast furnace:

- apply legislative, organisation and site requirements and procedures for casting a blast furnace
- apply precautions necessary for safe working
- use protective clothing and equipment
- apply operating procedures
- report faults
- recognise limits of authority
- apply team working practices
- communicate information
- 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 cast a blast furnace:

- preparing a cast
- opening and plugging of tap hole
- off blast activities
- separating slag
- dealing with hazards
- communication within work group
- reporting of faults and variances
- productive teams
- safe working

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 casting a blast furnace • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of blast furnace casting • working with others to undertake and complete the blast furnace casting in a way that meets all of the required outcomes • consistent timely completion of blast furnace casting 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 blast furnace casting
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 • environment
<p>Personal protective equipment may include:</p>	<ul style="list-style-type: none"> • helmet • eye/face protection • respiratory protection • heat resistant clothing • gloves • hearing protection • safety footwear
<p>Runners systems may include:</p>	<ul style="list-style-type: none"> • dams • skimmers • tilters
<p>Tools may include:</p>	<ul style="list-style-type: none"> • chisel bars • shovels • scrapers • rammers
<p>Casting equipment may include:</p>	<ul style="list-style-type: none"> • mud gun • drill • soaker bar • oxygen lance
<p>Environmental issues may include:</p>	<ul style="list-style-type: none"> • drainage • dust

	<ul style="list-style-type: none"> • emissions • flora and fauna • hazardous chemicals • noise • run-off • spills • waste management and disposal • water quality
Warnings may include:	<ul style="list-style-type: none"> • cast commencing • receiving vessel movement • slag casting
Non-casting activities may include:	<ul style="list-style-type: none"> • claying tuyere stocks • drawing copper • changing copper cooling elements • tap hole re-facing • changing injecting equipment
Hazards may include:	<ul style="list-style-type: none"> • rail and road movement • cranes • hot materials • noise • air pollution • sharp objects • moving machinery • falling • falling objects • gases
Teams may be formal or informal and variances may occur in:	<ul style="list-style-type: none"> • product • plant • equipment

Unit Sector(s)

Smelting

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.