Australian Government

Department of Education, Employment and Workplace Relations

# MSATCM508A Monitor secondary steelmaking operations

**Revision Number: 1**

# MSATCM508A Monitor secondary steelmaking operations

## Modification History

Not applicable.

## Unit Descriptor

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| **Unit Descriptor** | This unit covers the knowledge and skills to monitor the production of slabs prior to rolling |

## Application of the Unit

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| **Application of the unit** | In a typical scenario, a technician will be required to monitor the post steelmaking processes including adjustments within the ladle and control of the continuous casting of slabs in accordance with parameters provided and standard operating procedures |

## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

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| **Pre-requisite Units** | *MSATCM301A* | *Test the mechanical properties of materials* |
| | *MSATCM304A* | *Interpret basic binary phase diagrams* |
| | *MSATCM503A* | *Recommend a refractory for an application* |
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# Employability Skills Information

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| **Employability Skills** | This unit contains employability skills. |

# Elements and Performance Criteria Pre-Content

Not applicable.

# Elements and Performance Criteria

| ELEMENT | PERFORMANCE CRITERIA |
|---|---|
| 1. Produce slabs to specification | 1.1. Adjust contents of ladle in accordance with procedures<br>1.2. Monitor continuous casting process in accordance with standard operating procedure<br>1.3. Apply metallurgical principles to determine and prioritise required actions in accordance with standard operating procedures<br>1.4. Record adjustments and variations to specifications / schedules and report to appropriate personnel<br>1.5. All events outside of parameters or standard operating procedures is immediately referred to appropriate personnel for remedial action |

# Required Skills and Knowledge

**REQUIRED SKILLS AND KNOWLEDGE**

This describes the essential skills and knowledge and their level, required for this unit.

**Required skills**:

- Carry out all work according to OH&S practices
- Read, interpret and follow information on work specifications, standard operating procedures and work instructions and other reference material
- Maintain accurate records
- Meet specifications for furnace output
- Communicate within the workplace

**Required knowledge**:

Competency includes sufficient knowledge of:

- post steelmaking methods employed
    - ladler stirring
    - adle heating/ladle furnace
    - degassing - vacuum, ladle, stream, circulating.
    - argon oxygen decarburation (AOD)
    - lectroslag refining, remelting (ESR)
    - vacuum melting e.g. VAR
- types of steel - ingot characteristics (rimmed, capped, killed and semi-killed)
- factors contributing to successful casting
- ingots
    - influence of pouring techniques on structures of ingots
    - pit practices
    - teeming - type of ingot moulds
- mode of solidification
    - types of ingot structure
    - control of ingot structure
    - ingot defects
- continuous casting processes
    - basic principles
    - need for concast
    - development - new technologies and facilities of continuous casting for concast
    - types of concast units - VCC, HCC, curvilinear
    - description of plant equipment and process principles ,concast operations
- metallurgical aspects
    - instrumentation - sensor quality

| REQUIRED SKILLS AND KNOWLEDGE |
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| • solidification/internal quality<br>• defects and their origin - avoidance of defects<br>• compare concast units and static ingot production |

# Evidence Guide

| EVIDENCE GUIDE | |
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| The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package. | |
| **Overview of assessment** | A person who demonstrates competency in this unit must be able to monitor secondary steelmaking operations. Critical aspects for assessment and evidence are required to demonstrate competency in this unit. |
| **Critical aspects for assessment and evidence required to demonstrate competency in this unit** | It is essential that competence is demonstrated in the ability to:<br>• Use OH&S practices in accordance with standard operating procedures<br>• Explain the general principles of continuous casting<br>• Monitor the operation of a continuous cast process under direction and consistently achieve required slab output specification |
| **Relationship to other units** | This unit may be assessed concurrently with other relevant units. |
| **Assessment method and context** | Assessors must be satisfied that the person can consistently perform the unit as a whole, as defined by the elements, performance criteria, skills and knowledge. A holistic approach should be taken to the assessment.<br>Assessors should gather sufficient, fair, valid, reliable, authentic and current evidence from a range of sources. Sources of evidence may include direct observation, reports from supervisors, peers and colleagues, project work, samples, organisation records and questioning. Assessment should not require language, literacy or numeracy skills beyond those required for the unit.<br>The assessee will have access to all techniques, procedures, information, resources and aids which would normally be available in the workplace.<br>The method of assessment should be discussed and agreed with the assessee prior to the commencement of assessment. |

| EVIDENCE GUIDE | |
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| **Resource implications** | This section should be read in conjunction with the range of variables for this unit of competency. Resources required include suitable access to an operating plant or equipment that allows for appropriate and realistic simulation. A bank of case studies/scenarios and questions will also be required to the extent that they form part of the assessment method. Questioning may take place either in the workplace, or in an adjacent, quiet facility such as an office or lunchroom. No other special resources are required. |

# Range Statement

| RANGE STATEMENT | |
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| 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. | |
| **Codes of practice/standards** | Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used. |
| **Metallurgical principles** | • Post steelmaking methods employed<br>• Types of steel - ingot characteristics (Rimmed, capped, killed and semi-killed)<br>• Factors contributing to successful casting<br>• Mode of solidification<br>• Continuous Casting Processes<br>• Metallurgical aspects |

# Unit Sector(s)

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| **Unit Sector** | Metallurgy |

# Competency field

| Competency Field | |
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# Co-requisite units

| Co-requisite Units | | |
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