

Domain**PYROMETALLURGICAL PROCESSING****Title:****Control molten metal in a holding furnace****Level: 3****Credits: 8****Purpose**

This unit standard is intended for those who carry out metallurgical processing operations. People holding credit for this unit standard are able to: Plan and prepare to control molten metal; demonstrate knowledge relating to the process of controlling molten metal in a holding furnace; conduct pre-operational checks; operate and monitor holding furnace operations; discharge matte and slag to matte and slag pots; and complete duties pertaining to the controlling molten metal process.

Special Notes

1. Entry information:

Prerequisite

- 1449 - *Comply with health, safety and environmental rules and regulations pertaining to processing operations; or demonstrated equivalent knowledge and skills.*

2. Assessment evidence may be collected from a real workplace or a simulated workplace in which processing operations are carried out.
3. This unit standard refers to holding furnaces and holding vessels.
4. Safe working practices include day-to-day observation of safety policies and procedures and compliance with emergency procedures.
5. Specifications refer to any, or all of the following: manufacturer's specifications and recommendations, and workplace specific requirements.
6. Performance of all elements in this unit standard must comply with relevant regulatory, legislative, workplace requirements and/or manufacturers' specifications.
7. Regulations and legislation, including subsequent amendments, relevant to this unit standard may include but are not limited to the following:
 - Labour Act, No. 11, 2007
 - Mineral Act, No. 33, 1992
 - Mine Health and Safety Regulations, 1999
 - Regulations relating to the Health and Safety of employees at work, 1997 and all industry specific regulations, legislations, code of practice, or code of conduct.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and

moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority and the Namibia Training Authority. All approved unit standards, qualifications and national assessment arrangements are available on the Namibia Training Authority website www.nta.com.na.

Elements and Performance Criteria

Element 1: Plan and prepare to control molten metal

Performance Criteria

- 1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, explained, clarified and applied to the allocated task.
- 1.2 Safety and security requirements, including personal protective clothing and equipment are obtained from the site safety plan, workplace policies and procedures, explained, and applied to the allocated task.
- 1.3 Equipment, tools, fuel, lubricants, attachments and accessories selected to carry out tasks are checked for consistency with the requirements of the job, their usability and any faults rectified or reported prior to commencement of work.
- 1.4 Environmental protection requirements are identified from the project environmental management plan and applied to the allocated task.
- 1.5 Work area is inspected and prepared according to workplace procedures.

Element 2: Demonstrate knowledge relating to the process of controlling molten metal in a holding furnace

Range

Principal components include holding furnace system components; auxiliary systems; safety devices; and interlock systems.

Performance Criteria

- 2.1 The actions and conditions pertaining to a safe, healthy environment in the controlling molten metal process are described.
- 2.2 The importance of controlling molten metal in a holding furnace is described in terms of achieving specified production requirements.
- 2.3 Hazards and associated risks are identified through relevant risk assessment procedures.
- 2.4 The principal components, applicable to the holding furnace and molten metal control process, are identified and their functions described in terms of design and operational requirements.

- 2.5 The communication requirements pertaining to the converting process are described.
- 2.6 Corrective actions, in case of sub-standard conditions and problems be encountered, are described.

Element 3: Conduct pre-operational checks

Performance Criteria

- 3.1 Workplace hazards and associated risks are identified, minimised or eliminated according to workplace procedures and legislative requirements.
- 3.2 The holding furnace system is examined and substandard conditions are reported to appropriate personnel according to workplace procedures.
- 3.3 Start-up and shutdown procedures are conducted according to manufacturer's specifications.

Element 4: Operate and monitor holding furnace operations

Range

Monitor and control may include but is not limited to furnace rotation and/or tilting; main and secondary burner operation; tonnage adjustment; and holding furnace drive equipment diagnoses.

Performance Criteria

- 4.1 Workplace hazards and associated risks are identified, minimised or eliminated according to workplace procedures and legislative requirements.
- 4.2 Remote control and monitoring systems are checked and tested for correct operation according to workplace procedures.
- 4.3 Holding furnace operations are monitored and controlled, and optimum production ensured through effective communication according to workplace procedures.
- 4.4 Matte and/or slag are monitored and received. Matte supply to converter is planned and organised with relevant personnel according to workplace procedure.
- 4.5 Spots are maintained clean to allow consistent and continuous flow of molten metal.
- 4.6 If necessary, corrective and/or reporting actions are taken according to workplace procedures.

Element 5: Discharge matte and slag to matte and slag pots

Performance Criteria

- 5.1 Workplace hazards and associated risks are described, identified, minimised or eliminated according to workplace procedures and legislative requirements.
- 5.2 Pot area is identified as free of personnel and machinery before pouring commences.
- 5.3 Pot is positioned to avoid splash, spillage or damage.
- 5.4 Even flow of matte is ensured by rotating vessel or pot at correct angle.
- 5.5 Slag is poured and matte disposed of according to correct pot levels.
- 5.6 Samples are taken and measured to ensure the slag and matte quantity is in an acceptable range according to workplace procedure.

Element 6: Complete duties pertaining to the controlling molten metal process

Range

Housekeeping may include but is not limited to ensure the work area is ready for next user; remove work materials to designated locations; correctly identify waste and re-usable material; and remove waste and re-usable materials to designated locations.

Performance Criteria

- 6.1 Task-specific tools, personal protective and safety equipment, are cleaned, maintained and stored for further use according to workplace procedures.
- 6.2 Good housekeeping practices are maintained according to workplace procedures.
- 6.3 Reporting and recording requirements are met according to workplace procedures.
- 6.4 Work related documents are completed according to job requirements and workplace procedures.

Registration Data

Subfield:	Metallurgy
Date first registered:	28 September 2016
Date this version registered:	28 September 2016
Anticipated review:	2021
Body responsible for review:	Namibia Training Authority