

Unit ID: 1514

Domain

**PYROMETALLURGICAL PROCESSING**

Title:

**Tap furnaces**

Level: 3

Credits: 6

### 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 tap furnaces; demonstrate knowledge relating to the tapping furnace process; conduct pre-operational checks; tap molten metal from furnace; carry out routine operator maintenance; and complete duties pertaining to the tapping operations.

### 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. Safe working practices include day-to-day observation of safety policies and procedures and compliance with emergency procedures.

4. *'Burners'* refer to diesel or natural gas.  
*'Furnaces'* refer to fixed (vertical or cylindrical) or rotary (vertical or cylindrical).

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](http://www.nta.com.na).

## **Elements and Performance Criteria**

### **Element 1: Plan and prepare to tap furnaces**

#### **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 tapping furnace process**

#### **Performance Criteria**

- 2.1 The actions and conditions pertaining to a safe, healthy environment in the tapping process are described.
- 2.2 Hazards and associated risks are identified through relevant risk assessment procedures.
- 2.4 Burners and furnaces are identified and their functions described in terms of design and operational requirements.
- 2.5 The communication requirements pertaining to the tapping 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 Plant and equipment are 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: Tap molten metal from furnace**

##### **Range**

Monitoring and controlling of the roasting process may include but is not limited to feed mechanism operation; adjustment of feed rate; reading and interpretation of equipment indicators; inspection of catchment area; adjustment of cooling system; and gas by-product output.

##### **Performance Criteria**

- 4.1 Workplace hazards and associated risks are identified, minimised or eliminated according to workplace procedures and legislative requirements.
- 4.2 Tap hole is drilled or made with oxy lance, and molten metal flow established according to workplace procedures.
- 4.3 Burners are ignited and applied to ensure molten metal does not solidify.
- 4.4 Interference with molten metal flow is identified and controlled to ensure quality and production targets according to workplace procedures.
- 4.5 Samples are taken at appropriate bath heights for metallurgical testing to quality requirements according to workplace procedures.
- 4.6 If necessary, corrective and/or reporting actions are taken according to workplace procedures.

#### **Element 5: Carry out routine operator maintenance**

##### **Performance Criteria**

- 5.1 Workplace hazards and associated risks are described, identified, minimised or eliminated according to workplace procedures and legislative requirements.
- 5.2 The work area is prepared in readiness for maintenance work to be carried out.
- 5.3 Maintenance, replacement or other maintenance is carried out within scope of responsibility according to manufacturer's specifications and workplace procedures.
- 5.4 System is restored to operational status and relevant documentation completed.

#### **Element 6: Complete duties pertaining to the tapping operations**

## **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**

<b>Subfield:</b>	Metallurgy
<b>Date first registered:</b>	
<b>Date this version registered:</b>	
<b>Anticipated review:</b>	2021
<b>Body responsible for review:</b>	Namibia Training Authority