

Unit ID: 1516

Domain

PYROMETALLURGICAL PROCESSING

Title:

Operate furnaces

Level: 4

Credits: 20

Purpose

This unit standard is intended for those who operate furnaces on a routine day-to-day basis as part of metallurgical processing operations. People holding credit for this unit standard are able to: Plan and prepare for operating furnaces; demonstrate knowledge relating to the operation of furnaces and the smelting process; start-up furnace; monitor and control the smelting process; shutdown furnace; and complete duties pertaining to the replacement of furnaces.

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 pyrometallurgy operations are carried out.

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

4. Specifications refer to any, or all of the following: manufacturer's specifications and recommendations, and workplace specific requirements.

5. Performance of all elements in this unit standard must comply with relevant regulatory, legislative, workplace requirements and/or manufacturers' specifications.

6. 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 for operating 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, 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 operation of furnaces and the smelting process

Range

Components may include but are not limited to insulation (refractory); physics of operation; and chemistry of operation

Performance Criteria

- 2.1 The actions and conditions pertaining to a safe, healthy environment when operating furnaces are described.
- 2.2 The operational characteristics, performance, and components of furnaces are described.
- 2.3 The importance of controlling the furnace operation, including flame patterns and flame impingement, is described in terms of achieving specified production requirements in the smelting process.
- 2.4 Hazards and associated risks are identified through relevant risk assessment procedures.
- 2.5 The communication requirements pertaining to furnace operation are described.
- 2.6 Corrective actions, in case of sub-standard conditions and problems be encountered, are described.

Element 3: Start-up furnace

Performance Criteria

- 3.1 Workplace hazards and associated risks are identified, minimised or eliminated according to workplace procedures and legislative requirements.
- 3.2 Computer systems and equipment pre-start checks are carried out according to workplace procedures.
- 3.3 Start-up furnace procedures are carried out according to workplace procedures and manufacturer's specifications.
- 3.4 The system is stabilised to produce in-specification product at specified rates according to workplace requirements.

Element 4: Monitor and control the smelting process

Performance Criteria

- 4.1 Workplace hazards and associated risks are identified, minimised or eliminated according to workplace procedures and legislative requirements.
- 4.2 The checks, adjustments, control and monitoring procedures are demonstrated according to workplace procedures and environmental protection requirements.
- 4.3 Furnace is operated according to operating and workplace procedures.
- 4.4 If necessary, corrective and/or reporting actions are taken according to workplace procedures.

Element 5: Shutdown furnace

Performance Criteria

- 5.1 Workplace hazards and associated risks are identified, minimised or eliminated according to workplace procedures and legislative requirements.
- 5.2 Type of shutdown required is determined according to workplace procedures.
- 5.3 Warnings of shutdown are given according to workplace procedures.
- 5.4 Furnace system is shutdown according to established operating procedures for type of shutdown.

Element 6: Complete duties pertaining to the operation of furnaces

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

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|--------------------------------------|----------------------------|
| Subfield: | Metallurgy |
| Date first registered: | |
| Date this version registered: | |
| Anticipated review: | 2021 |
| Body responsible for review: | Namibia Training Authority |