



Australian Government

TLIW3015 Weld rail using aluminothermic welding process

Release: 2

TLIW3015 Weld rail using aluminothermic welding process

Modification History

Release 2. This is the second release of this unit of competency in the TLI Transport and Logistics Training Package:

- Minor statement changes in Assessment Conditions.

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to weld rail using the aluminothermic welding process in accordance with safeworking and regulatory requirements, and workplace procedures.

It includes preparing and planning the welding method, preparing the rail for aluminothermic welding, carrying out the welding process, checking weld conformance and completing required documentation.

People achieving competence in this unit will need to fulfil the applicable state/territory legislated rail safety and to comply with relevant codes of practice and/or guidelines.

Work is performed under some supervision, generally within a team environment. It involves the application of routine operational principles and procedures when welding rail using the aluminothermic welding technique, as part of workplace activities across a variety of operational contexts within the Australian rail system.

Operators of mechanised equipment must have undertaken training and, where appropriate, hold the relevant licence, permit or certificate and be recognised as competent for the class of machinery being used.

Pre-requisite Unit

Not applicable.

Competency Field

W – Equipment and Systems Operations

Unit Sector

Rail sector.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare and plan welding method

- 1.1** Work requirements are determined to identify scope of work and resources required
- 1.2** Welding equipment and consumables are prepared and checked for serviceability
- 1.3** Hazards are identified, risks are assessed and control measures are implemented
- 1.4** Site is cleared of obstructions and combustible material to minimise risk of accidents and fire
- 1.5** Firefighting and other safety equipment is organised, checked and located in accordance with required regulations
- 1.6** Personnel are briefed about safety precautions specific to aluminothermic welding as required to minimise risk of injury

2 Prepare rail for welding

- 2.1** Location of weld is identified and assessed in accordance with standards and procedures
- 2.2** Track is prepared for welding in accordance with workplace standards and procedures
- 2.3** Rail is prepared for welding in accordance with workplace standards and procedures

3 Carry out welding process

- 3.1** Moulds are fitted and luted to standard to prevent leakage of the molten reaction
- 3.2** Rails are pre-heated to standard to prevent heat loss
- 3.3** Rails are welded using aluminothermic method in accordance with approved procedures
- 3.4** Welding equipment is removed according to approved procedures
- 3.5** Excess material is removed from weld in accordance with workplace procedures

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|---------------------------------|------------|---|
| | 3.6 | Rail profile is restored to standard using rail profile grinder in accordance with workplace procedures |
| | 3.7 | Arrangements are made for track to be restored |
| 4 Check weld conformance | 4.1 | Finished ground weld area is visually inspected for surface finish and defects |
| | 4.2 | Finished ground weld area is checked for conformance to rail profile and geometry acceptance standards |
| 5 Complete documentation | 5.1 | Required documentation and/or record keeping procedures and processes are confirmed |
| | 5.2 | Documentation and/or records are filled in legibly and proofread |
| | 5.3 | Documentation and/or records are processed in accordance with workplace requirements |

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Unit Mapping Information

This unit replaces and is equivalent to TLIW3015A Weld rail using aluminothermic welding process.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>

Assessment Requirements for TLIW3015 Weld rail using aluminothermic welding process

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least ten separate occasions and include:

- applying relevant safeworking system and workplace procedures
- carrying out required welding operations
- checking compliance of work with job specifications
- identifying job hazards and taking required action to minimise, control or eliminate identified hazards
- implementing fire control workplace procedures
- interpreting and following operational instructions and prioritising work
- modifying activities depending on operational contingencies, risk situations and environments
- monitoring work activities in terms of planned schedule
- operating and adapting to differences in equipment in accordance with manufacturer specifications and operating procedures
- performing pre-operational and post-operational equipment checks in accordance with manufacturer specifications
- planning and preparing for welding method
- preparing rail for welding in accordance with workplace procedures
- reading and interpreting relevant technical data, drawings, instructions and manuals
- reporting and/or rectifying identified problems, faults or malfunctions, in accordance with workplace procedures
- selecting and using required personal protective equipment (PPE)
- using appropriate type or types of welding processes
- working systematically with required attention to detail without injury to self or others, or damage to equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- characteristics of plant and equipment, hardware and components used in welding activities
- contents of relevant workplace technical manuals and instructions
- hazards that may exist when welding rail and ways of controlling the risks involved
- impact of other work activities on welding integrity
- materials identification, handling and storage, safety data sheets (SDS)/material safety data sheets (MSDS) and/or manufacturer instructions
- problems that may occur when welding rail using the aluminothermic technique, and action that can be taken to report or resolve these problems
- relevant rail industry standards
- relevant rail safety, work health and safety (WHS)/occupational health and safety (OHS) and environmental procedures and regulations
- site inspection techniques
- workplace documentation and/or record keeping requirements
- workplace procedures for welding rail using the aluminothermic technique.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Practical assessment of ten (10) successful rail welds using the aluminothermic method in an appropriate range of situations in the rail corridor workplace is required.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation including workplace procedures, regulations, rail industry standards, codes of practice, SDS/MSDS and operation manuals.

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