



Australian Government

Department of Education, Employment and Workplace Relations

TLIW3035A Heat and cut materials using oxy-LPG equipment for the rail industry

Release: 1

TLIW3035A Heat and cut materials using oxy-LPG equipment for the rail industry

Modification History

Not Applicable.

Unit Descriptor

This unit involves the skills and knowledge required to heat and cut materials using oxy-LPG equipment for the rail industry. It includes planning and preparing for the work, setting up and testing the equipment, heating and cutting materials, shutting down equipment, and completing clean-up activities.

Licensing or certification requirements are not applicable to this unit. Persons achieving competence in this unit will need to fulfil legislated OH&S and rail safety requirements, including acts and regulations from each applicable state and territory, together with any nationally approved compliance codes and/or guidelines.

Application of the Unit

Work involves the heating and cutting of steel and includes cutting up waste for salvage; and cutting steel, rails, bolts and cutting holes in plate (with the exception of structural steel members). Heating activities include steel and bolts (excluding structural steel members).

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT

PERFORMANCE CRITERIA

1 Plan and prepare for work

- 1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied to the scope of work to be performed
- 1.2 Safety and OH&S requirements are followed in accordance with safety plans and organisational policies
- 1.3 Signage and barricade requirements are identified and implemented as required
- 1.4 Plant, tools and equipment consistent with the requirements of the job are selected, checked for serviceability, and any faults rectified or reported prior to commencement
- 1.5 Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use
- 1.6 Environmental requirements are identified and work is carried out in accordance with environmental plans and statutory and legislative authority obligations

2 Set up and test equipment

- 2.1 Appropriate type of fire extinguisher is selected and located to be readily accessible prior to and during operations
- 2.2 Regulators are attached to oxy and LPG bottles in accordance with manufacturer specifications and OH&S regulations
- 2.3 Lines are purged to manufacturer recommendations prior to lighting up
- 2.4 Equipment is tested for leaks and corrective action undertaken or faults reported
- 2.5 Correct pressures and cutting tips are selected in accordance with material to be heated or cut and manufacturer specifications

3 Heat and cut material

- 3.1 Material is accurately marked and secured or clamped ready for cutting
- 3.2 Torch is lit correctly and safely in accordance with manufacturer specifications
- 3.3 Setting of flame is adjusted for cutting in line with manufacturer recommendations
- 3.4 Heat is applied to specified material and weakening effects of the heating process are minimised
- 3.5 Correct cutting position is adopted during cutting to set out mark
- 3.6 Material is correctly cooled

4 Shut down equipment and clean up

- 4.1 Torch is switched off in accordance with manufacturer specifications
- 4.2 Gas supply is shut off in accordance with manufacturer specifications
- 4.3 Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice

and job specification

4.4 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and organisational policies and procedures

5 Complete documentation

5.1 Documentation is completed as required in accordance with workplace procedures

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

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

Required knowledge:

- Regulations relating to heating and cutting materials using oxy-LPG equipment for the rail industry
- Relevant OH&S and environmental protection procedures and guidelines
- Oxy-LPG heating and cutting equipment set-up and operating techniques
- LPG heating and cutting equipment types, characteristics, uses and limitations
- Job safety analysis (JSA) and safe work method statements
- Characteristics from material safety data sheets (MSDS)
- Correct storage of materials and environmentally friendly waste management
- Problems that may occur and action that can be taken to resolve them
- Hazards that may occur and ways of controlling the risks involved
- Knowledge of rail stresses

Required skills:

- Communicate effectively with others when heating and cutting materials using oxy-LPG
- Read and interpret instructions, procedures, information and relevant documentation
- Interpret and follow operational instructions and prioritise work
- Complete documentation
- Operate electronic communication equipment to required protocol
- Work collaboratively with others
- Report and rectify within limits of own role problems, faults and malfunctions that may occur in accordance with regulatory requirements and workplace procedures
- Apply precautions and required action to minimise, control or eliminate potential hazards during work activities
- Plan own work, including predicting consequences and identifying improvements
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Maintain equipment to manufacturer specifications
- Identify, select and effectively use relevant materials and equipment
- Adapt to differences in equipment in accordance with standard operating procedures

- Select and use required personal protective equipment (PPE) conforming to industry and OH&S standards

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
 - the underpinning knowledge and skills
 - relevant legislation and workplace procedures
 - other relevant aspects of the range statement
- Assessment must include exercises that demonstrate competent performance of the following in a range of situations:
 - locate, interpret and apply relevant information, standards and specifications
 - comply with site safety plan and OH&S legislation, regulations and codes of practice applicable to workplace operations
 - comply with organisational policies and procedures, including quality requirements
 - safely and effectively use tools, plant and equipment
 - communicate and work effectively and safely with others
 - use oxy-LPG systems to heat and cut rails to specification

Context of and specific resources for assessment

- Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- Resources for assessment include:
 - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
 - access to an appropriate range of relevant operational situations in the workplace
- In both real and simulated environments, access is required to:
 - relevant and appropriate materials and equipment, and
 - applicable documentation, including workplace procedures, regulations, codes of practice and operation manuals

Method of assessment

- As a minimum, assessment of knowledge must be

conducted through appropriate written/oral tests

- Practical assessment must occur:
 - through activities in an appropriately simulated environment, and/or
 - in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Work may involve exposure to:

- chemicals
- dangerous or hazardous substances
- movement of equipment, goods and vehicles

Types of cutting may vary according to:

- location
- rail mass or type
- crossing and switch type
- rail, switch or crossing material

Equipment may include:

- mechanical handling and lifting equipment
- hand tools, including impact wrenches, tie tampers, gauges, track jacks, spiking hammers and bars
- oxy-LPG equipment, including:
 - cylinders
 - regulators
 - cutting tips
 - heating tips
 - gas hoses
 - cutting blowpipes
 - flint lighters
 - hand grinders
 - wire brushes
 - rail thermometers and/or 'thermomelt' crayons
- cutting and boring equipment
- fastening equipment
- fume extraction equipment for use with manganese rail
- measuring tapes and rules
- clamps and support stands

Materials may include:

- heating and cutting consumables
- rails
- rail bolts
- plain rod, plate and pipe

PPE may include:

- high visibility clothing
- long pants and shirts
- hearing protection
- long gloves
- spats
- sunscreen

- sunglasses
- welding helmet
- safety glasses
- insect repellent
- safety headwear
- safety footwear
- portable radios and mobile phones
- hand lamps
- flags
- safety devices
- special PPE when cutting manganese rail

Communication equipment may include:

- two-way radios
- telephones, including mobile phones
- agreed audible or hand signals

Depending on the type of organisation concerned and the local terminology used, organisational procedures may be known as:

- company procedures
- enterprise procedures
- workplace procedures
- established procedures

Information and documents may include:

- information provided by other workplace personnel
- inspection reports
- work orders
- technical instructions and MSDS
- manufacturer or workplace equipment instructions and operation manuals
- emergency procedure manuals
- two-way radio or mobile telephone operation procedures
- conditions of service, legislation and industrial agreements, including workplace agreements and awards

Applicable procedures and codes may include:

- legislated rail safety requirements, including acts and regulations from each applicable state and territory, together with any nationally approved compliance codes and/or guidelines
- relevant state and territory legislation relating to:
 - environmental protection
 - OH&S
- local authority regulations and procedures

Unit Sector(s)

Not applicable.

Competency Field

W – Equipment and Systems Operations