

Transport gas cylinders by road

Level 4

Credits 15

Purpose This unit standard is for drivers of heavy rigid or heavy combination vehicles that carry gas cylinders containing hazardous or non-hazardous gases under pressure (including cryogenic gases) with a capacity of less than 500 litres.

People credited with this unit standard are able to: describe the properties and hazards of gases in cylinders and the features of vehicles that transport gas cylinders; carry out a pre-trip inspection; position vehicle and prepare to load gas cylinders; load a vehicle with gas cylinders; transport a load safely and efficiently to a customer site; deliver a load to a customer site; and describe procedures for emergencies.

Subfield Commercial Road Transport

Domain Goods Service

Status Registered

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Entry information Candidates must hold a minimum of the full class of licence required for the vehicle being driven, a current D endorsement, and, if required, a current Approved Handler and/or Approved Filler certificate.

Accreditation Evaluation of documentation and visit by NZQA, industry and NZ Transport Agency.

Standard setting body (SSB) NZ Motor Industry Training Organisation (Incorporated)

Accreditation and Moderation Action Plan (AMAP) reference 0092

This AMAP can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Special notes

- 1 Legal and formal requirements relevant to this unit standard include:
Hazardous Substances and New Organisms (HSNO) Act 1996;
Health and Safety in Employment Act 1992;
Land Transport Act 1998;

Resource Management Act 1991;
Transport Act 1962;
Hazardous Substances (Classes 1 to 5 Controls) Regulations 2001;
Hazardous Substances (Classes 6, 8, and 9 Controls) Regulations 2001;
Hazardous Substances (Classification) Regulations 2001;
Hazardous Substances (Compressed Gases) Regulations 2004;
Hazardous Substances (Dangerous Goods and Scheduled Toxic Substances)
Transfer Notice 2004;
Hazardous Substances (Emergency Management) Regulations 2001;
Hazardous Substances (Identification) Regulations 2001;
Hazardous Substances and New Organisms (Personnel Qualifications) Regulations
2001;
Hazardous Substances (Tracking) Regulations 2001;
Land Transport Rule: Dangerous Goods 2005;
Land Transport (Driver Licensing) Rule 1999;
Land Transport Rule: Heavy Vehicles 2004;
Land Transport (Road User) Rule 2004;
NZS 5433:2007 *Transport of dangerous goods on land*.

2 Any new, amended or replacement Acts, regulations, Rules, standards, codes of practice, or NZ Transport Agency requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.

3 Definitions

Approved Filler means a person who is approved by a test certifier to fill pressurised containers with compressed gases;
Approved Handler means a person who is approved by a test certifier to handle nominated hazardous substances;
delivery documentation may include dangerous goods declarations, load plans, schedules of quantities and any hand-held electronic data processing devices;
driving conditions means any of the six conditions (road, weather, vehicle, traffic, light, driver) from which driving hazards will arise;
emergency response documentation may include the SDS (Safety Data Sheet) for the product, an EPG (Emergency Procedure Guide), or the New Zealand Standards publication *HB:76 Initial Emergency Response Guide*;
ERMA is the Environmental Risk Management Authority New Zealand;
materials handling equipment includes cranes, tail lifts, forklifts, and trolleys;
organisational requirements include any legal requirements, standards, codes of practice, company and/or site procedures, industry best practice, and manufacturers' instructions. These must be available to candidates, providers, and assessors;
test certificates mean certificates issued by a test certifier;
test certifier means a person approved by ERMA to certify that the requirements of the HSNO Act have been met;
trundling refers to the recommended manual handling technique for rolling gas cylinders across a flat surface;
vehicle dynamic effects are the influences of physics (kinetic energy, centrifugal force, gravity etc) on a heavy motor vehicle, that a driver must manage to maintain stability and control.

4 Competency for this unit standard must be demonstrated on-job.

- 5 If the candidate is transporting more than one gas in the same trip, they must be able to demonstrate the appropriate knowledge and skills for each gas.

Elements and performance criteria

Element 1

Describe the properties and hazards of gases in cylinders and the features of vehicles that transport gas cylinders.

Performance criteria

- 1.1 UN class and UN number of the gas being transported are identified in accordance with emergency response documentation.
- 1.2 Approved Handler and Approved Filler requirements for the gas being transported are identified in accordance with the HSNO regulations.
- 1.3 Properties of the gas being transported are described in accordance with emergency response documentation.
- Range the physical properties of the gases; the effects of heat and pressure on the gases; the characteristics of the gases in a leak, in a fire situation, or in the presence of static electricity.
- 1.4 Hazards associated with the different classes of gas being transported are described.
- Range flammable, corrosive, toxic, inert, cryogenic, oxidiser.
- 1.5 The effects of a massive rapid release of gas are described in terms of the danger to people and property.
- Range damaged valve, fractured cylinder.
- 1.6 Hazards associated with the manual handling of gas cylinders are described in accordance with organisational requirements.
- Range includes but is not limited to – slopes and grades, steps, cylinder diameter, cylinder centre of gravity, weight, direction of rotation.
- 1.7 The functions of equipment fitted to a typical vehicle used for carrying gas cylinders are described in relation to the safe transport and transfer of gas cylinders.
- Range includes but is not limited to – safety equipment, restraint equipment, tail lift, crane, trolleys.
- 1.8 Factors that cause static electricity and how to minimise the risks associated with static electricity are described in accordance with organisational requirements.

Element 2

Carry out a pre-trip inspection.

Performance criteria

2.1 The inspection determines whether the Certificate of Fitness for the vehicle and any trailers are current, and whether the vehicle systems and equipment comply with organisational requirements. Non-complying vehicles or trailers are repaired or reported in accordance with company procedures.

Range includes but is not limited to – fuel, fluids, wheels and tyres, steering, brakes, lights and indicators, warning devices, securing devices, vehicle documentation, load anchorage certification; may include – trailer couplings.

2.2 The inspection determines whether mechanical handling equipment is complete, fully functional, properly maintained, and stowed and secured in accordance with organisational requirements. Any unserviceable items are replaced, reported, or repaired in accordance with company procedures.

Range may include – tail lift, crane, trolleys.

2.3 The inspection determines whether safety and personal protective equipment is available, ready for use, and meets organisational requirements. Any unserviceable items or items with expired test dates are replaced or reported in accordance with company procedures.

Range may include – approved gloves, safety glasses or visors, safety footwear, hard hat, hearing protection, overalls, high visibility vest, first aid kit, fire extinguishers, triangles, cones, signs.

Element 3

Position vehicle and prepare to load gas cylinders.

Performance criteria

3.1 The vehicle is driven into the loading/unloading area safely and positioned correctly for loading/unloading in accordance with site procedures.

3.2 The park brake is applied and the engine, unless required for the operation of equipment, is turned off.

3.3 Personal protective equipment is used in accordance with organisational requirements and the location of any on-site emergency equipment and procedures are identified before loading commences.

Range includes but is not limited to – fire extinguisher, fire alarms, first aid kit.

- 3.4 The labels on the gas cylinders to be loaded are checked for consistency with delivery documentation, and to ensure compliance with the requirements of the Dangerous Goods Rule.
- 3.5 The product type and quantity to be loaded are checked to determine whether they are in accordance with delivery documentation (including any schedule of quantities), and organisational requirements. Any discrepancies are identified and reported in accordance with company procedures.
- 3.6 Load distribution calculations are checked against planned deliveries, segregation requirements, and the vehicle's axle and gross weight limitations. Any discrepancies are identified and reported in accordance with company procedures.

Element 4

Load a vehicle with gas cylinders.

Performance criteria

- 4.1 The vehicle is loaded safely in accordance with organisational requirements.
Range using approved equipment and manual handling techniques.
- 4.2 The load is secured to meet legal requirements and, where necessary, segregated in accordance with the Dangerous Goods Rule.
- 4.3 Vehicle placarding is checked and, if necessary, adjusted for the load being carried, and is correctly displayed in accordance with the Dangerous Goods Rule.
- 4.4 Pre-departure inspection of the loaded vehicle is conducted to ensure materials handling equipment and personnel are clear of the vehicle, and that any equipment and gates are secure.
- 4.5 Delivery documentation is complete and correct, and emergency response documentation is checked as appropriate for the gases being carried. All documents are secured in the vehicle in accordance with organisational requirements.
- 4.6 The vehicle is moved from the loading area without damage to property or injury to people and in accordance with site procedures.

Element 5

Transport a load safely and efficiently to a customer site.

Range vehicle must be driven over a distance of at least 25 km and be loaded to at least 50% of payload.

Performance criteria

5.1 The vehicle is driven and manoeuvred in accordance with legal requirements and consistent with efficient vehicle operation.

Range efficient vehicle operation includes but is not limited to – observance of speed limits, signs and controls; correct signalling; appropriate transmission use; fuel economy driving; may include – observance of railway crossing obligations.

5.2 The driver interacts courteously and professionally with other road users and any prescribed routes are followed in accordance with organisational requirements.

5.3 Vehicle dynamic effects are managed using techniques that are consistent with the safe operation of the vehicle and reflect the prevailing driving conditions.

Range may include – corners, intersections, following distances, hills, steering control, use of auxiliary braking systems.

Element 6

Deliver a load to a customer site.

Performance criteria

6.1 A pre-delivery assessment is made before entering the delivery site, and site features that constitute a hazard and/or prevent delivery are rectified or reported in accordance with organisational requirements.

Range may include – vehicle dimension restrictions, ground stability and surface conditions, slopes or grades, steps, room to manoeuvre, sources of ignition, incompatible dangerous goods and chemicals, vehicle or pedestrian traffic, ease of access and egress, weather conditions.

6.2 Any site instructions and/or restrictions are complied with.

Range may include – speed, right of way, reporting, access restrictions, prohibited items, electronic restrictions, personal protective equipment, loading or unloading instructions, emergency procedures.

- 6.3 The vehicle is positioned safely and in such a way that unloading can be conducted efficiently and safely and in accordance with site procedures. The park brake is applied and the engine, where appropriate, is turned off.
- 6.4 Personal protective equipment is worn in accordance with organisational requirements and steps are taken to apply personal safety measures.
- Range may include – manual lifting techniques, three points of contact when using ladders, correct use of trolleys, tail lifts and cranes, trundling techniques.
- 6.5 The vehicle is unloaded without injury to people or damage to the load, vehicle or equipment in accordance with organisational requirements.
- Range unloading requirements include – cylinders are handled using company approved manual handling equipment and techniques, cylinders are secured in a safe location so they do not create a hazard, site segregation requirements are observed, distribution of remaining load is managed, load restraint equipment is used correctly.
- 6.6 Used cylinders are recovered and loaded safely in accordance with organisational requirements and valves are checked for closure, where appropriate.
- 6.7 Delivery documentation is completed to reflect changes in the load and distributed in accordance with organisational requirements.
- 6.8 A pre-departure inspection is conducted to determine that loading equipment and personnel are clear of the vehicle and that any equipment and gates are secure.
- 6.9 The vehicle is driven from the site safely in accordance with site procedures.

Element 7

Describe procedures for emergencies.

Performance criteria

- 7.1 Procedures for emergencies that may occur during loading and unloading are described in accordance with emergency response documentation and organisational requirements.
- Range fire, earthquake, rapid release of gas being transported.

7.2 Procedures for emergencies that may occur in transit are described in accordance with emergency response documentation and organisational requirements.

Range road crash, fire, rapid release of gas being transported, breakdown.

7.3 Initial responses to a person affected by the gases being transported are described in accordance with the emergency response documentation and organisational requirements.

Range may include – inhalation, oxygen enrichment, asphyxiation, cold contact injuries.

Please note

Providers must be accredited by NZQA, or an inter-institutional body with delegated authority for quality assurance, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be accredited by NZQA before they can register credits from assessment against unit standards.

Accredited providers and Industry Training Organisations assessing against unit standards must engage with the moderation system that applies to those standards.

Accreditation requirements and an outline of the moderation system that applies to this standard are outlined in the Accreditation and Moderation Action Plan (AMAP). The AMAP also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact the NZ Motor Industry Training Organisation (Incorporated) info@mito.org.nz if you wish to suggest changes to the content of this unit standard.