

Title	Transport gas cylinders by road		
Level	4	Credits	15

Purpose	<p>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.</p> <p>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.</p>
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Classification	Commercial Road Transport > Goods Service
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Available grade	Achieved
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Prerequisites	Drivers must hold a current full driver licence appropriate to the class of vehicle being driven, a current D endorsement, and, if required, a current Approved Filler certificate.
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Guidance Information

- 1 Legislation, regulations, references and/or industry standards relevant to this unit standard include but are not limited to the:
 - Hazardous Substances and New Organisms (HSNO) Act 1996;
 - Health and Safety at Work Act 2015;
 - Land Transport Act 1998;
 - Resource Management Act 1991;
 - Health and Safety at Work (Hazardous Substances) [HSW(HS)] Regulations 2017;
 - Land Transport Rule: Dangerous Goods 2005;
 - Land Transport (Driver Licensing) Rule 1999;
 - Land Transport Rule: Heavy Vehicles 2004;
 - Land Transport (Road User) Rule 2004;
 - Environment Protection Authority Notice. Hazardous Substances (Hazard Classification) Notice 2020. Available from: <https://www.epa.govt.nz/>;
 - Environment Protection Authority Notice. Hazardous Substances (Hazardous Property Controls) Notice 2017. Available from: <https://www.epa.govt.nz/>;

- NZS 5433:2020 *Transport of dangerous goods on land* and associated handbook, SNZ HB 5433:2021 *New Zealand Handbook, UN Dangerous Goods List*. Available from: <https://www.standards.govt.nz/>.

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

2 Definitions

Approved Filler refers to a person who is approved by a compliance certifier to fill pressurised containers with compressed gases.

Compliance certificates refers to certificates issued by a compliance certifier.

Compliance certifier refers to a person approved to certify that the requirements of the HSW(HS) Regulation have been met.

Delivery documentation may include dangerous goods declarations, load plans, schedules of quantities and any hand-held electronic data processing devices.

Driving conditions refers to any of the six conditions (road, weather, vehicle, traffic, light, driver) from which driving hazards will arise.

Emergency response documentation may include the Safety Data Sheet (SDS) for the product, an Emergency Procedure Guide (EPG), or The *Australian & New Zealand Emergency Response Guide Book*.

EPA refers to Environmental Protection Authority, New Zealand.

Materials handling equipment – includes cranes, tail lifts, forklifts, and trolleys.

Trundling refers to the recommended manual handling technique for rolling gas cylinders across a flat surface.

United Nations (UN) number refers to an international system of classification used to identify hazardous [chemicals](#) or classes of hazardous materials.

Vehicle dynamic effects refers to 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.

Workplace procedures refers to organisation policies and procedures that are documented in memo, electronic, or manual format and available in the workplace. They may include but are not limited to – standard operating procedures, site specific procedures, site safety procedures, equipment operating procedures, quality assurance procedures, product quality specifications, manufacturer's requirements, references, approved codes of practice, housekeeping standards, environmental considerations, on-site briefings, supervisor's instructions, and procedures to comply with legislative and local body requirements relevant to the commercial road transport sector.

3 Assessment information

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

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 type of gas.

Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable service information, workplace procedures and legislative requirements.

Outcomes and performance criteria

Outcome 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 Driver and Approved Filler requirements for the gas being transported are identified in accordance with the HSW (HS) 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 (acid or alkali), toxic, inert, cryogenic, oxidiser, ecotoxic, acetylene gas (unique cylinder).
- 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.
- 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.
- Range may include but not limited to - flashlights, head torches, mobile phones, key fobs.

Outcome 2

Carry out a pre-trip inspection.

Performance criteria

2.1 An inspection is carried out to determine 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.

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 An inspection is carried out to determine whether mechanical handling equipment is complete, fully functional, properly maintained, and stowed and secured in accordance with workplace procedures. Any unserviceable items are replaced, reported, or repaired.

Range may include – tail lift, crane, trolleys.

2.3 An inspection is carried out to determine whether safety and personal protective equipment is available, ready for use, and complies with organisational requirements. Any unserviceable items or items with expired test dates are replaced or reported.

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.

Outcome 3

Position vehicle and prepare to load gas cylinders.

Performance criteria

3.1 The vehicle is driven into the loading area safely and positioned correctly for loading 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.
- 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.

Outcome 4

Load a vehicle with gas cylinders.

Performance criteria

- 4.1 The cylinders are loaded safely.
Range using approved equipment and manual handling techniques.
- 4.2 The load is secured for maximum load safety and 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.
- 4.6 The vehicle is moved from the loading area without damage to property or injury to people and in accordance with site procedures.

Outcome 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 safely 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.
- 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.

Outcome 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.
- 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, certification plate (if appropriate).
- 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 personal safety measures 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.

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.

Outcome 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.

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.

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.

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

Planned review date	31 December 2028
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	25 May 1999	31 December 2023
Review	2	20 June 2001	31 December 2023
Review	3	25 May 2007	31 December 2025
Review	4	20 November 2009	31 December 2025
Review	5	30 November 2023	N/A

Consent and Moderation Requirements (CMR) reference

0014

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

Comments on this unit standard

Please contact Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.