



Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**

Dangerous Goods Safety Guide

Road transport of dangerous goods in receptacles of more than 500 L or kg

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Introduction

When dangerous goods are transported by road in receptacles with a capacity greater than 500 litres or net mass greater than 500 kilograms (> 500 L or kg), certain duties and requirements apply under the Dangerous Goods Safety (Road and Rail Transport of Non-explosives) Regulations 2007 and the *Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG)* to ensure the goods are transported safely.

This Guide assists those transporting dangerous goods on Western Australian roads to comply with the relevant safety requirements for:

- road tank vehicles
- conventional vehicles that are provided with transportable tanks
- tank containers or intermediate bulk containers (IBCs) that are filled or emptied while on the vehicle.

This includes isotainers and multi-element gas containers (MEGCs) that individually have a capacity of more than 500 kg (or L).

The Guide does not apply to transport:

- of explosives and infectious or radioactive substances
- on roads excluded from public access
- where the aggregate quantity of the dangerous goods in the load is less than 25% of the placard load, and the dangerous goods are being transported by someone who is not in the dangerous goods transport business.

Note: If your receptacle has a capacity or net mass of 500 L or kg or less, such as packages or cylinders, refer to the Department's [Road transport of dangerous goods in receptacles of 500 L or kg or less: Guide](#).

Duties

Anyone involved in dangerous goods transport tasks has a duty of care to ensure that the goods are transported in a safe manner. In addition to the vehicle requirements, everyone involved in the transport operation must be sufficiently trained and competent to undertake tasks safely.

Contracting or subcontracting tasks related to the transport of dangerous goods does not relieve consignors and prime contractors of their responsibility to ensure that the dangerous goods are transported safely and in accordance with the legislative requirements. If you are contracting out work relating to the transport of dangerous goods, you need to ensure that:

- contractors meet the requirements of the legislation
- all persons employed by contractors are sufficiently trained and competent to undertake their tasks safely.

All responsible parties involved in the transport of dangerous goods must comply with procedures for breakdowns, general precautions and recommended routes for transport of dangerous goods in accordance with Part 13 of the ADG.

Incidents involving dangerous goods transport need to be reported to the Department.

General requirements

Vehicle licensing

Only road tank vehicles with capacities > 500 L or kg are required to be licensed for transporting dangerous goods in Western Australia. A copy of the dangerous goods vehicle licence should accompany the dangerous goods vehicle.

Prime movers and dollies do not require dangerous goods vehicle licences as they are not considered vehicles that transport dangerous goods.

Driver licensing

A person who drives a vehicle on which dangerous goods are carried in receptacles with individual capacities > 500 L or kg requires a dangerous goods driver licence.

The licence must be carried when driving a vehicle transporting dangerous goods.

Licensing exclusion

Drivers transporting IBCs do not require licensing if the total capacity on the vehicle is no more than 3,000 litres and receptacles are not filled or emptied on the vehicle.

Design approval

Tanks and receptacles with capacities > 500 L or kg used to transport dangerous goods must be approved by a Competent Authority. For land transport in Western Australia, this is the Chief Dangerous Goods Officer for Classes 1 to 5, Division 6.1, Class 8 and Class 9 dangerous goods.

Tank approval

Tanks must be built in accordance with an approved design (e.g. for new tanks, this is the latest edition of Australian Standard AS 2809 *Road tank vehicles for dangerous goods*).

Note: Sufficient detail must be provided to demonstrate compliance with the applicable standards for the tank and vehicle as required by the ADG. Depending on the adequacy of the supporting documentation, the approval process may be involved and lengthy. The application form for the approval of a tank design form can be found on the [Department's website](#).

Third-party certification by a recognised body may be accepted as evidence of compliance with a particular standard.

A compliance plate must be affixed to the tank and include specified information and other requirements as stated in Chapter 6.9 of the ADG.

IBC approval

IBCs must be approved by a Competent Authority and built in accordance with the ADG.

Note: Contact the Dangerous Goods team regarding the application for approval of a design. Sufficient detail must be provided to demonstrate compliance with the ADG. Depending on the adequacy of the supporting documentation, the approval process may be involved and lengthy.

Maintenance checks

Tank maintenance checks

Tanks should have a maintenance plate affixed displaying the dates of:

- maintenance checks (every two and a half years)
- pressure tests (in accordance with the design approval conditions).

Note: AS 2809 requires pressure tests at intervals no longer than five years.

IBC maintenance checks

The ADG details the maintenance checks that should be followed for IBCs.

Record the results of initial and periodic testing of IBCs in test reports, which are kept by the owner of the IBC until at least the date of the next inspection.

IBCs must be inspected in accordance with the ADG's requirements. For most dangerous goods, plastic IBCs and composite IBCs with plastic inners may not be used beyond five years from the date of manufacture of the plastic component, with the exception of nitric acid and hydrofluoric acid, which must not be used beyond two years.

Insurance

Vehicles used to transport placard loads of dangerous goods must have insurance cover of at least \$5,000,000 per event covering:

- property damage, personal injury and other damage arising out of any fire, explosion, leakage or spillage of dangerous goods in, on or from the vehicle or a container transported on the vehicle
- costs incurred by or on behalf of a government authority in a clean-up operation.

Documentation

Transport and emergency procedures

Transport documentation and emergency information

- The latest edition of the:
 - emergency procedure guides covering the dangerous goods being transported and vehicle fire, or
 - National Transport Commission's [Australian and New Zealand emergency response guide book](#)

must be carried in the emergency holder in a prominent position in the driver's compartment – preferably on the inside of the driver's door.

- Transport documentation for all dangerous goods loaded on the vehicle must be carried in the emergency information holder.

Note: Any vehicle carrying a placard load of dangerous goods must be fitted with an emergency information holder marked with the words "Emergency procedure guides" or "Emergency information" in red letters at least 10 mm high on a white background. The holder must be secured on the inside of a door of the cabin in a conspicuous position. If this is not possible, it may be positioned adjacent to the door.

Emergency responders

A prime contractor transporting a placard load of dangerous goods in Western Australia must either:

- be an approved emergency responder, or
- have a contract with an approved emergency responder.

Note: The role of an emergency responder is to control the clean-up response that may result from an incident involving a road vehicle transporting the goods. For further information, refer to the Department's [Approval of responders to dangerous goods emergencies: Guide](#) and [Approved emergency responders list: Information sheet](#).

Transport emergency response plan

The prime contractor is responsible for ensuring a transport emergency response plan is available for the transport of placard loads of dangerous goods.

Note: For further information, refer to the Department's [Documenting a transport emergency response plan for dangerous goods: template](#).

Vehicle placarding

Vehicles transporting dangerous goods in receptacles of capacity > 500 L or kg must be placarded in accordance with Part 5 of the ADG. As a guide:

- **Dangerous goods with the same UN number in receptacles > 500 L or kg** require a class or division label and subsidiary risk label, if applicable, and emergency information panels.
- **Dangerous goods with different UN numbers in receptacles > 500 L or kg** require a class or division label for each class or division of dangerous goods and, if applicable, a subsidiary hazard label, mixed class label or both. If the goods comprise a mixed load of refined petroleum products then mixed load (refined petroleum product) emergency information panels are required. If the goods are not a mixed load of refined petroleum products, then multi-load emergency information panels are required.
- **Dangerous goods of same class and sub-hazard, if applicable, in receptacles > 500 L or kg and ≤ 500 L or kg** require emergency information panels and labels as if there were only dangerous goods in receptacles of capacity > 500 L or kg. Class or division labels and subsidiary hazard labels, if applicable, are also required except where the subsidiary hazard is already indicated by a class or division label.
- **Dangerous goods of different class and sub-hazard, if applicable, in receptacles > 500 L or kg and ≤ 500 L or kg** may use emergency information panels and mixed class labels.

Class labels must be at least 250 mm x 250 mm.

Class or division labels or mixed class labels must be positioned at the front and rear of the vehicle, with an emergency information panel on each side and rear of all trailers loaded with dangerous goods in receptacles of capacity > 500 L or kg.

Personal protective and safety equipment

There are minimum requirements to be met for the provision and location of fire extinguishers, personal protective equipment and other safety equipment on vehicles transporting placard loads of dangerous goods.

Note: For further information, refer to the Department's [Safety equipment for road vehicles transporting dangerous goods: Guide](#).

Segregation

Incompatible dangerous goods must be segregated in accordance with Part 9 of the ADG.

Attachment systems

A transport unit on a vehicle must be securely attached to the vehicle in accordance with Chapter 8.2 of the ADG.

Portable tanks and freight containers must be secured on a vehicle using either four engaged twist locks or another equally effective method.

Note: Chains are not usually considered to be suitable.

Specific tanker requirements

Spill protection

Shields or deflectors shall be provided for road tank components where potential spillage or leakage could create a hazard.

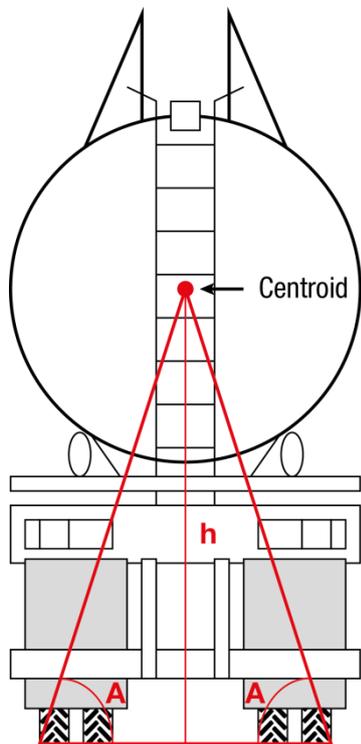
Tank-to-cabin clearance

Under no conditions may the distance between the cab and tank be less than 75 mm.

Vehicle stability

The maximum stability angle ("A" in Figure 1) is:

- 64 degrees for rigid road tank vehicles for Class 2 dangerous goods (gases), designed in accordance with the edition of AS 2809.3 *Road tank vehicles for dangerous goods, Part 3: Road tank vehicles for compressed liquefied gases* or AS 2809.6 *Road tank vehicles for dangerous goods, Part 6: Tankers for cryogenic liquids* current at the time the tank was put into service
- 62 degrees for all other road tank vehicles, portable tanks and demountable tanks.



Note: Measurements made with vehicle fully laden. Tankers with non-uniform barrels require special consideration.

Figure 1 Measurement of vehicle stability angle “A” using an isosceles triangle (two equal sides), where “h” is the centroid height (see Figure 2).

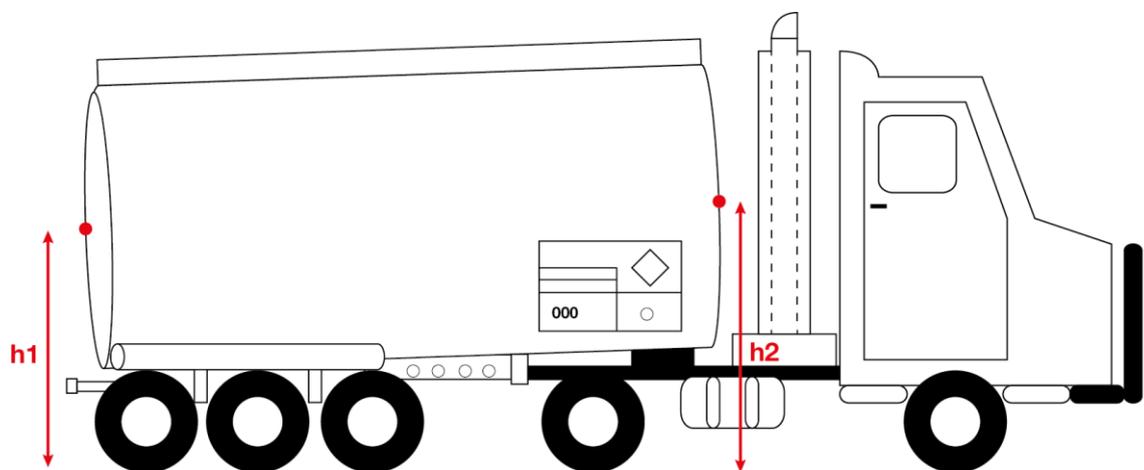


Figure 2 Determination of centroid height (“h” in Figure 1), which is the height of the centre of mass of a fully laden tanker. Centroid height $h = (h1 + h2)/2$.

Rear impact protection

The rear of a road tank vehicle shall have a:

- rear underrun protection device, and
- bumper system which must be at least 150 mm clear of the bulk container or the rearmost vertical projection of the tank or any component or fitting (Figure 3).

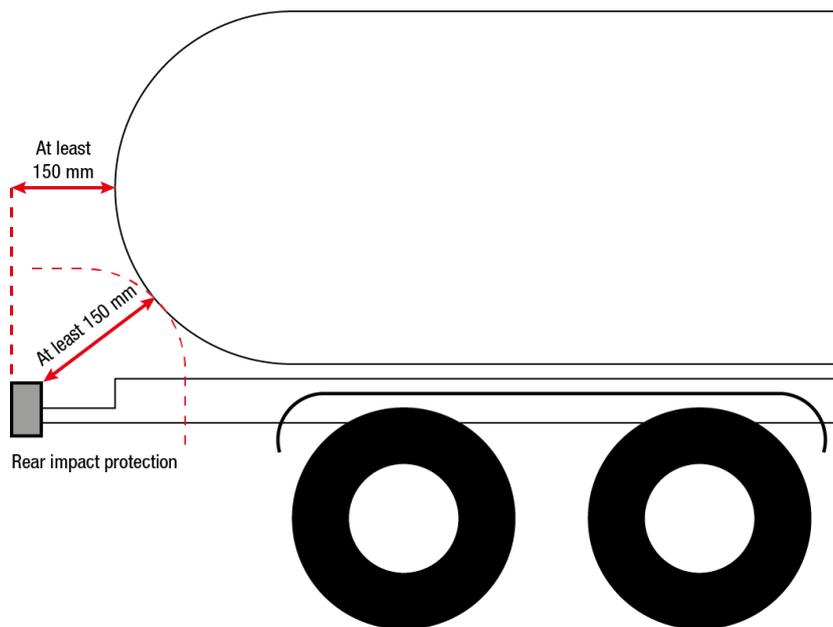


Figure 3 Location of rear bumper

Road clearance

When the vehicle is unladen, the ground clearance for tank components and protection devices must not be less than either:

- 250 mm within one metre of any axle, or
- 350 mm for any other location.

Tank filling and discharge connections that are rigidly attached to the tank must not extend lower than 40 mm below the plane through the centre-line of the axles.

Vehicle rollover protection

For rollover protection requirements, refer to the edition of AS 2809 current at the time the tank was put into service.

Tail shaft

The tank and any components carrying dangerous goods must be protected from contact with the tail shaft mechanism in the event of it failing.

Battery

The vehicle battery must be firmly secured to prevent movement and shall be protected on all sides. The battery terminals shall be electrically insulated or have an insulating cover. A minimum of a 25 mm clearance shall be provided between the battery terminals and any conductive surface.

Wiring

Cables must be securely fastened and protected. The following cables are adequately protected:

- Cables installed in rigid conduits in accordance with AS/NZS 2053.1 *Conduits and fittings for electrical installations, Part 1: General requirements* or AS/NZS 2053.7 *Conduits and fittings for electrical installations, Part 7: Rigid metal conduits and fittings*
- Cables conforming to the requirements of regulation 105 of the Economic Commission for Europe of the United Nations – *Uniform provisions concerning the approval of vehicles intended for the carriage of dangerous goods with regard to their specific constructional features*
- Cables meeting the Zone 1 requirements of AS/NZS 60079.14 *Explosive atmospheres, Part 14: Design selection, erection and initial inspection*.

The wiring requirements for vehicles transporting flammable dangerous goods are detailed below in *Additional tanker requirements for flammable dangerous goods*.

Drive-away protection

The road tank vehicle needs to be immobilised whenever there is a transfer to or from it.

Note: Wheel chocks or other external wheel-locking devices must not be used as the primary method of immobilisation.

The method of immobilisation must be such that it cannot operate while the road tank vehicle is being normally driven.

Pumps

Pumps for handling the cargo of a road tank vehicle must be fit-for-purpose.

Hose assemblies

Hose assemblies used for transferring dangerous goods must be chemically compatible with the dangerous goods to be transferred. They must comply and be tested in accordance with the ADG and relevant Australian standards.

Do not use a hose assembly if visual inspection or hydrostatic testing indicates it is damaged or leaking.

Battery isolation switch

A battery isolation switch must be located on the driver's side and to the immediate rear outside the cabin. It must be clearly labelled and easily accessible from outside the cab.

Vehicle rollover device

Road tank vehicles must be fitted with a vehicle rollover device that shuts down the engine and isolates the battery. The device should not activate at less than 45 degrees to the vertical.

Additional tanker requirements for flammable dangerous goods

Electrical equipment

Electrical equipment should always be mounted as far as practicable from any cargo connection or cargo vent points and preferably outside the hazardous area. Further details on installing electrical equipment in hazardous areas can be found in Section 2.3 of AS2809.1 *Road tank vehicles for dangerous goods, Part 1: General requirements for all road tank vehicles*.

Hazardous areas

A hazardous area classification should be undertaken for the tanker, however it is common practice for equipment on tankers to be suitable for the following hazardous areas:

- Within tanks – Zone 0
- Within 0.5 m of rollover coamings – Zone 1
- Within 1 m of cargo connections, sample points, down to ground level – Zone 1

Note: For further information on hazardous areas, refer to the latest editions of Australian Standard AS/NZS 2809.2 Road tank vehicles for dangerous goods, Part 2: Road tank vehicles for flammable liquids.

Exhaust system

The engine exhaust system shall not discharge within 1 metre of any cargo connection point, vent or cargo carrying component opening. No part of the engine exhaust system shall be located within 200 mm of any cargo carrying component.

Dangerous Goods Road Transport Decoder App

The [Dangerous Goods Road Transport Decoder App](#) gives drivers and transport companies access to dangerous goods transport information from computers, smartphones and tablets.