

PART 10

Bulk Transfer of Dangerous Goods

10.1.1 APPLICATION AND DEFINITIONS

10.1.1.1 Application

This Part applies to the transfer by gravity, pump or pressure differential of liquid, solid or gaseous dangerous goods into or out of a tank vehicle, or into or out of a portable tank, demountable tank, bulk container, pressure drum, tube, MEGC or IBC that is on a vehicle, utilising pipework and/or hose assembly.

10.1.1.2 Definitions

For the purposes of this Part:

Maximum delivery pressure means the maximum pressure that can occur in a system regardless of whether or not it is under pump pressure or at zero flow, including the effects of dead heading and system back pressure;

Maximum design pressure means the maximum pressure for which hose assembly has been designed and tested;

Transfer out of a vehicle includes transfer out of the tank of a tank vehicle or from a portable tank, demountable tank, bulk container, pressure drum, tube, MEGC or IBC that is on a vehicle;

Transfer into a vehicle includes transfer into the tank of a tank vehicle or into a portable tank, demountable tank, bulk container, pressure drum, tube, MEGC or IBC that is on a vehicle.

10.1.2 TRANSFER EQUIPMENT AND HOSE ASSEMBLIES

10.1.2.1 General

Transfer equipment and hose assemblies used for transfer of dangerous goods must be fit for purpose.

10.1.2.2 Hose assemblies for Class 2 (other than LP Gas or anhydrous ammonia)

A hose assembly used to transfer dangerous goods of Class 2, other than LP Gas or anhydrous ammonia (UN 1005), must have a maximum design pressure of not less than 1.5 times the maximum delivery pressure of the transfer system in which the hose is used.

10.1.2.3 Hose assemblies for LP Gas

A hose assembly used to transfer LP Gas must:

- (a) comply with AS/NZS 1869 or UL 21;
- (b) be tested in accordance with AS/NZS 1869; and
- (c) be retested in accordance with AS/NZS 1596.

10.1.2.4 Hose assemblies for anhydrous ammonia (UN 1005)

A hose assembly used to transfer anhydrous ammonia (UN 1005) must:

- (a) comply with AS/NZS 2022; and
- (b) be tested in accordance with AS/NZS 2022.

10.1.2.5 Hose assemblies for Class 3 petroleum products

10.1.2.5.1 A hose assembly used to transfer dangerous goods of Class 3 petroleum products must:

- (a) comply with AS 2683; and
- (b) be tested in accordance with AS 2683.

10.1.2.5.2 A hose coupling used to transfer dangerous goods of Class 3 petroleum products must comply with AS 3664.

10.1.2.6 Hose assemblies for liquid dangerous goods other than Class 2 or Class 3 petroleum products

A hose assembly used to transfer dangerous goods in liquid form other than Class 2 or Class 3 petroleum products must:

- (a) comply with AS 2594;
- (b) be tested in accordance with AS 2594; and
- (c) have a rated maximum design pressure of not less than 1.5 times the maximum delivery pressure of the transfer system in which the hose is used.

10.1.3 HOSE TESTING**10.1.3.1 Periodic inspection**

A hose assembly must be inspected for damage over its entire length at intervals of not more than one month.

10.1.3.2 Electrical continuity testing

10.1.3.2.1 This clause applies to a hose assembly used to transfer:

- (a) dangerous goods of Class 3 or 4; or
- (b) dangerous goods (other than Class 2) with a Subsidiary Risk of 3 or 4.

10.1.3.2.2 The hose assembly must be tested in accordance with AS 1180.13B for electrical continuity before it is first used to transfer dangerous goods. The resistance of the hose assembly must comply with the resistance values specified for electrical properties in AS 2683 for the kind of hose assembly being tested.

10.1.3.2.3 The hose assembly must be retested in accordance with AS 1180.13B, and, where applicable to the kind of hose assembly being tested, for electrical continuity in accordance with AS 1180.13C at intervals of no more than 6 months. The resistance of the hose assembly must comply with the resistance values specified for electrical properties in AS 2683 for the kind of hose assembly being tested.

10.1.3.2.4 If a hose assembly consists of two or more Kind 1 hose assemblies* coupled together, it must be constructed, assembled and maintained, so that the resistance between the end couplings does not exceed 10 ohms.

10.1.3.2.5 If a hose assembly consists of two or more hose assemblies which are not of Kind 1, it must be constructed, assembled and maintained so that the resistance between the couplings does not exceed the resistance values for electrical properties in AS 2683 for the relevant kind of hose assembly.

* *Kind 1 hose as described in AS 2683.*

10.1.3.3 Hydrostatic pressure testing

Unless otherwise specified in this Code or a relevant Standard, a hose assembly used to transfer dangerous goods must be hydrostatically tested at the pressure required by this Code, which must be not less than the rated maximum working pressure:

- (a) prior to its initial use; and
- (b) thereafter, at intervals required by the relevant Standard, or otherwise not exceeding 12 months.

10.1.3.4 Keeping records

10.1.3.4.1 Each hose assembly must be marked with a distinctive identifying number.

10.1.3.4.2 An accurate record must be kept for the life of each hose assembly of:

- (a) the date on which each test required to be carried out by this Chapter is carried out;
- (b) the nature of the test carried out;
- (c) the date on which maintenance work is carried out on the hose assembly; and
- (d) the nature of the maintenance work.

10.2.1 WHERE TO TRANSFER DANGEROUS GOODS

10.2.1.1 Position of vehicle during transfer of Division 2.1 or Class 3

10.2.1.1.1 Dangerous goods of Division 2.1, Class 3, or with a Subsidiary Risk 2.1 or 3, must not be transferred into or out of a road vehicle unless the vehicle is positioned:

- (a) so that it can be driven away in a forward direction; or
- (b) if it is not reasonably practicable to drive the vehicle in a forward direction owing to the layout of the site —so that it can be driven away with minimal manoeuvring.

10.2.1.1.2 The area through which the vehicle needs to move or manoeuvre in order to leave the premises on which the transfer takes place must, as far as practicable, be kept clear while the vehicle is on the premises.

10.2.1.2 Transfer in a public area

10.2.1.2.1 This sub-section applies at any place that is:

- (a) in a built up area with public access; or
- (b) within 15 metres of any building or any other place where there is likely to be a concentration of people, other than a building on the premises where the transfer takes place.

10.2.1.2.2 Dangerous goods of packing group I or Division 2.3 [other than ammonia, anhydrous (UN 1005) or ammonia solution (UN 3318)] must not be transferred out of a road vehicle in a place described in 10.2.1.2.1.

10.2.1.2.3 Dangerous goods must not be transferred out of one vehicle into another vehicle in a place described in 10.2.1.2.1.

10.2.1.3 Transfer operation within a designated transfer area

If dangerous goods are to be transferred into or out of a vehicle, and the occupier of premises has marked or otherwise designated an area on the premises in which a transfer operation is to take place, the vehicle must be parked within the designated area during the transfer operation.

10.2.1.4 Transfer in enclosed space

Dangerous goods must not be transferred into or out of a vehicle that is in an enclosed space if the transfer is likely to give rise to dangerous concentrations of dusts, mists or vapours.

10.2.1.5 Positioning of hose assembly during transfer

If dangerous goods are to be transferred into or out of a vehicle in an area which is accessible to other vehicles, all reasonably practicable measures must be taken to prevent any vehicle from driving over the hose assembly or striking its connections.

10.2.2 PREVENTING FIRE DURING A TRANSFER OPERATION

10.2.2.1 Distance from ignition sources

During a transfer operation into or out of a vehicle, there must be no source of ignition: within any hazardous area determined in accordance with AS/NZS 60079.10*, or:

- (a) AS/NZS 2430.3.3 (for Class or Subsidiary Risk 3); or
- (b) AS/NZS 2430.3.4 (for Division or Subsidiary Risk 2.1).

10.2.2.2 Engine precautions

10.2.2.2.1 During transfer of dangerous goods of Class, Division or Subsidiary Risk 2.1, 3 or 4 into or out of a road vehicle, the engine of the vehicle must remain stopped unless the transfer involves the use of a pump or compressor driven by the vehicle's engine. This does not prevent the minimal necessary use of the engine to clear the contents of hoses back into the tank following the transfer.

10.2.2.2.2 The engine of the vehicle, and any internal combustion auxiliary engine on the vehicle, must be stopped while hose connections for the transfer of dangerous goods of Division or Subsidiary Risk 2.1 are coupled to or uncoupled from the vehicle or tank on the vehicle.

10.2.2.3 Electrical bonding

10.2.2.3.1 Before LP Gas is transferred into or out of a vehicle, the supplying receptacle must be electrically bonded to the receiving receptacle in accordance with AS/NZS 1596.

10.2.2.3.2 Where dangerous goods of Division 2.1 (other than LP Gas) are transferred into or out of a vehicle and the receiving receptacle is not an underground tank, the supplying receptacle must be electrically bonded to the receiving receptacle before the transfer commences. The bonding must remain in place until all hose assemblies have been uncoupled and all closures have been closed.

10.2.2.3.3 Before dangerous goods of Class 3 are transferred into or out of a vehicle, the supplying receptacle must be electrically bonded to the receiving receptacle in accordance with AS 1940.

10.2.2.4 Loading spear for Class 3

If a tank is filled from the top with dangerous goods of Class or Subsidiary Risk 3, and is not filled through a tight fill connection and fill pipe in accordance with AS 1692, the loading spear must be in contact with the bottom of the tank while the goods are being transferred.

10.2.2.5 Heater restrictions

Except where permitted by 13.1.3.5, if a road tank vehicle is equipped with a burner or other means to heat the cargo, the heater must not be operated during a transfer operation.

10.2.3 TRANSFER OF DANGEROUS GOODS—GENERAL REQUIREMENTS

10.2.3.1 Dangerous goods must not be transferred into or out of a vehicle, unless the vehicle is secured against movement.

10.2.3.2 If dangerous goods are transferred into or out of a vehicle, a person must:

* *These Standards are recognised nationally as defining hazardous areas. They prescribe distances both in text and pictorially. These distances vary with the type of dangerous goods and, in the case of tanker loading, are different for installations with or without vapour recovery,*

- (a) remain in proximity with the vehicle during the transfer operation; and
 - (b) be in a position to observe all relevant valves, fittings, gauges and hose connections that are used or may be used during the transfer operation; and
 - (c) have access to all equipment necessary to stop the transfer operation in the event of an escape, leak or spill.
- 10.2.3.3 Dangerous goods must not be transferred into or out of a road vehicle, while the cabin of the vehicle is occupied.
- 10.2.3.4 The level of light at all valves, fittings, gauges and hose connections that are used or may be used during a transfer operation must be adequate to allow the transfer operation to be conducted safely.
- 10.2.3.5 If dangerous goods are transferred under gas pressure into or out of a vehicle:
- (a) the design pressure of the supplying receptacle must not be exceeded; and
 - (b) the gas used in the transfer operation must be chemically inert to the dangerous goods being transferred; and
 - (c) air must not be used to transfer dangerous goods of Class 3 or 4 or with a Subsidiary Risk of 3 or 4.
- 10.2.3.6 A hose used in connection with a transfer operation should be handled so as to avoid excessive curvature, stress, abrasion or kinking that may damage the hose or its connections.

10.2.4 TRANSFER OF GAS

- 10.2.4.1 LP Gas must be transferred into or out of a vehicle in accordance with AS/NZS 1596.
- 10.2.4.2 Liquefied gas must not be transferred into a storage tank or other receptacle housed within a building unless:
- (a) the building is designed and used solely for the purpose of storing dangerous goods of Class 2; or
 - (b) the building may be used for that purpose under a law of the State or Territory in which the building is located that relates to the storage and handling of dangerous goods.
- 10.2.4.3 Subject to 10.2.4.1, when dangerous goods of Division 2.1 or Division 2.3 are transferred out of a vehicle into a storage receptacle and if:
- (a) the line of sight between the vehicle, portable tank or MEGC and the filling point of the storage container is obstructed so that one cannot be seen from the other; or
 - (b) the transfer is at a place described in 10.2.1.2.1:
a person capable of using the transfer equipment must remain at the vehicle and another person capable of using the transfer equipment must remain at the storage container.
- 10.2.4.4 A person must not transfer liquefied oxygen into or out of a road vehicle unless, during the transfer operation, all surfaces within a distance of 1 metre of the transfer hose are made of concrete or other non-combustible material.

10.2.5 TRANSFER OF DANGEROUS GOODS OF CLASS 3

10.2.5.1 Dangerous goods of Class or Subsidiary Risk 3 must be transferred out of a vehicle into a storage receptacle, in accordance with AS 1940. Direct transfer of these goods out of the vehicle into drums or smaller packagings is not permitted except at facilities designed or designated for the purpose, taking into account the requirements of AS 1940, AS/NZS 60079.10 and AS/NZS 2430.3.3.

10.2.5.2 If a pump is fitted to or carried on the vehicle to or from which dangerous goods of Class or Subsidiary Risk of 3 are transferred:

- (a) the propulsion engine of the vehicle must not be used to power the pump unless:
 - (i) the engine is a compression-ignition engine; and
 - (ii) the pump and all associated pipework are shielded from the engine of the vehicle by the provision of a fire shield or by equally effective means; and
 - (iii) the pump driving engine requirements of AS 2809.2 are complied with; and
- (b) a spark ignition engine must not be used to power an auxiliary or portable pumping unit; and
- (c) an auxiliary or portable pumping unit powered by a compression-ignition engine must not be used unless the unit is approved by a Competent Authority for that purpose and is operated in accordance with the approval; and
- (d) an electric motor must not be used to power the pump unless the motor and all associated electrical fittings and equipment are suitable for use in a Zone 1 hazardous area as defined in AS/NZS 60079.10 or AS/NZS 2430.

10.2.5.3 All valves and closures that were removed or opened to enable the transfer to take place must be reinstated or closed after the transfer is completed.

10.2.5.4 Manner of filling

10.2.5.4.1 Except where 10.2.5.4.2 applies, when dangerous goods of Class or Subsidiary Risk 3 are transferred into or out of a vehicle, the receptacle on the vehicle and the receiving tank or storage receptacle must be connected by pipeline and hose connection.

10.2.5.4.2 A hand-held nozzle may be used for the transfer of dangerous goods of Class or Subsidiary Risk 3 into or out of a vehicle if:

- (a) the transfer:
 - (i) takes place on premises which are a farm or mine site; or
 - (ii) is into or out of a tank described in AS 1940 as a minor storage tank; and
- (b) the receiving tank or storage container is fitted with a fill pipe at the tank or container opening.

Chapter 10.3 — Ullage and Maximum Permitted Filling Ratio

NOTE: This Chapter applies only to the filling of tank vehicles.

Portable tanks and MEGCs must be filled only in accordance with the provisions for use in Chapter 4.2, as referenced:

- (a) for portable tanks, –from the portable tank instructions and special provisions for the particular dangerous goods in Columns (10) and (11) of the Dangerous Goods List in Chapter 3.2; or
- (b) for MEGCs, –from packing instruction P200 in Chapter 4.1.

Bulk containers must be filled in accordance with the provisions for use in Chapter 4.3., as referenced from Column (10) of the Dangerous Goods List.

IBCs must be filled in accordance with the provisions of 4.1.1, 4.1.2 and the relevant IBC packing instructions and special packing provisions in 4.1.4.2, as referenced from Columns (8) and (9) of the Dangerous Goods List.

10.3.1 ULLAGE

10.3.1.1 Liquid dangerous goods (other than Class 2)

Unless elsewhere specified in this Code or a relevant code or standard referenced in this Code, the ullage in a tank vehicle containing liquid dangerous goods (other than dangerous goods of Class 2) must not be less than:

- (a) 2% — for dangerous goods having a coefficient of expansion of not more than 90×10^{-5} per degree Celsius;
- (b) 3% — for dangerous goods having a coefficient of expansion of more than 90×10^{-5} but not more than 135×10^{-5} per degree Celsius;
- (c) 4% — for dangerous goods having a coefficient of expansion of more than 135×10^{-5} but not more than 180×10^{-5} per degree Celsius; or
- (d) 5% — for dangerous goods having a coefficient of expansion of more than 180×10^{-5} per degree Celsius.

10.3.1.2 Ullage of large tank or compartment

10.3.1.2.1 Liquid dangerous goods having a viscosity less than 2,680 mm²/s at 20 °C, or the maximum temperature of the substance during transport in the case of the heated substance, must not be transported in a large compartment tank as defined in AS 2809.1, if the ullage in the large compartment is more than 20% but less than 85%.

NOTE 1: 10.3.1.2.1 applies only to those tanks or compartments of a road tank vehicle that individually exceed 8,600 L. It does not apply to portable tanks, or to smaller tanks or compartments on the same vehicle.

NOTE 2: This ullage requirement corresponds to a restriction on the transport of a large compartment tank having a degree of filling of more than 15% but less than 80%.

NOTE 3: Different limits apply to the compartment sizes and degree of filling of portable tanks in 4.2.1.9.6.

10.3.1.2.2 10.3.1.2.1 does not apply to liquefied gases, or to TARS, LIQUID (UN 1999), or to elevated temperature liquids (UN 3256 and 3257).

10.3.1.3 Ullage—Class 2 refrigerated liquid

If dangerous goods of Class 2 in the form of a refrigerated liquid are transferred into a tank vehicle, the tank must not be filled with liquid to the extent that, when the liquid is uniformly at the temperature which corresponds to the start-to-discharge pressure of:

- (a) the safety relief valve of the tank; or
- (b) where the tank is fitted with a pressure control valve in addition to a safety relief valve— the pressure control valve;

the ullage below the inlet to the valve is less than 2% when the tank is level.

NOTE: *Consideration should also be given to Portable Tank Instruction T75 and any Portable Tank Special Provisions specified for the substance in Column (11) of the Dangerous Goods List in Chapter 3.2.*

10.3.2 MAXIMUM PERMITTED FILLING RATIO —CLASS 2 LIQUID

10.3.2.1 The maximum permitted filling ratio for a tank vehicle containing dangerous goods of Class 2 in a liquefied form (other than refrigerated liquid) is:

- (a) the ratio specified in Portable Tank Instruction T50 in Chapter 4.2 for goods of that type ; or
- (b) if no ratio is specified in Portable Tank Instruction T50—the ratio determined by a Competent Authority in relation to goods of that type when transferred into a tank of that type.