

GAS BOTTLES - TRANSPORTATION



BUTANE UN 1011

There is no packing group for Butane gas cylinders.

There is no limited quantity (LQ) or excepted quantities (E).

Transport Category 2, Tunnel Restriction Code (B/D)

Classification 2F

Special Provisions

- 652** Gas cylinders used for the purpose of hot air balloons. Refer ADR 2017 Special Provision 652 for full details.
- 657** This entry shall be used for the technically pure substance only; for mixture of LPG components, see UN No. 1965 or UN No. 1975 in conjunction with note 2 in ADR 2.2.2.3. Refer ADR 2017 Special Provision 657 for full details.
- 660** For the carriage of fuel gas containment systems designed for motor vehicles, ADR does not apply. Refer ADR 2017 Special Provision 660 for full details.
- 662** Cylinders not conforming to the provision of 6.2 which are used exclusively on board a ship or aircraft may be carried for the purpose of filling inspection and subsequent return. Refer ADR 2017 Special Provision 662 for full details.

Loading and unloading procedures

CV9 Packages shall not be thrown or subjected to impact. Receptacles should be stowed in the vehicle or container that they cannot overturn or fall.

CV10 Cylinders which are sufficiently stable or are carried in suitable devices effectively preventing them from overturning may be placed upright.

Cylinders which are laid flat shall be securely and appropriately wedged, attached or secured so they cannot shift.

Short cylinders of large diameter (about 30cm or over) may be stowed longitudinally with their valve protecting devices directed towards the middle or the vehicle or container.



Cylinders defined in 1.2.1, shall be laid parallel to or at right angles to the longitudinal axis of the vehicle or container. However, those situated near the forward traverse wall shall be laid at right angles to the said axis

- CV36** Packages shall be preferably loaded in open or ventilated vehicles or open or ventilated containers. If this is not feasible and packages are carried in other closed vehicles containers, the cargo doors of the vehicles or container shall be marked with the following in letters not less than 25mm high: "WARNING NO VENTILATION OPEN WITH CAUTION"

Operational

- S2** Additional requirements concerning the carriage of flammable liquid or gases.

- (1) Portable Lighting apparatus.

The load compartment of closed vehicles carrying liquids having a flash point not more than 60 °C or flammable substances of Class 2, shall not be entered by person carrying portable lighting apparatus other than those designed and constructed that they cannot ignite any flammable vapours or gases which may have penetrated the interior of the vehicle.

- (2) Operation of combustion heaters during loading and unloading.

Tank related Vehicle type FL. See ADR 2017 for further details.

- (3) Precaution against electrostatic charges.

Tank related Vehicle type FL. See ADR 2017 for further details.

- S20** The provisions of chapter 8.4 concerning the supervision of vehicle shall apply when the total mass or volume of these substances in the vehicle exceeds 10 000kg as packaged goods or 3 000 litres in tanks.

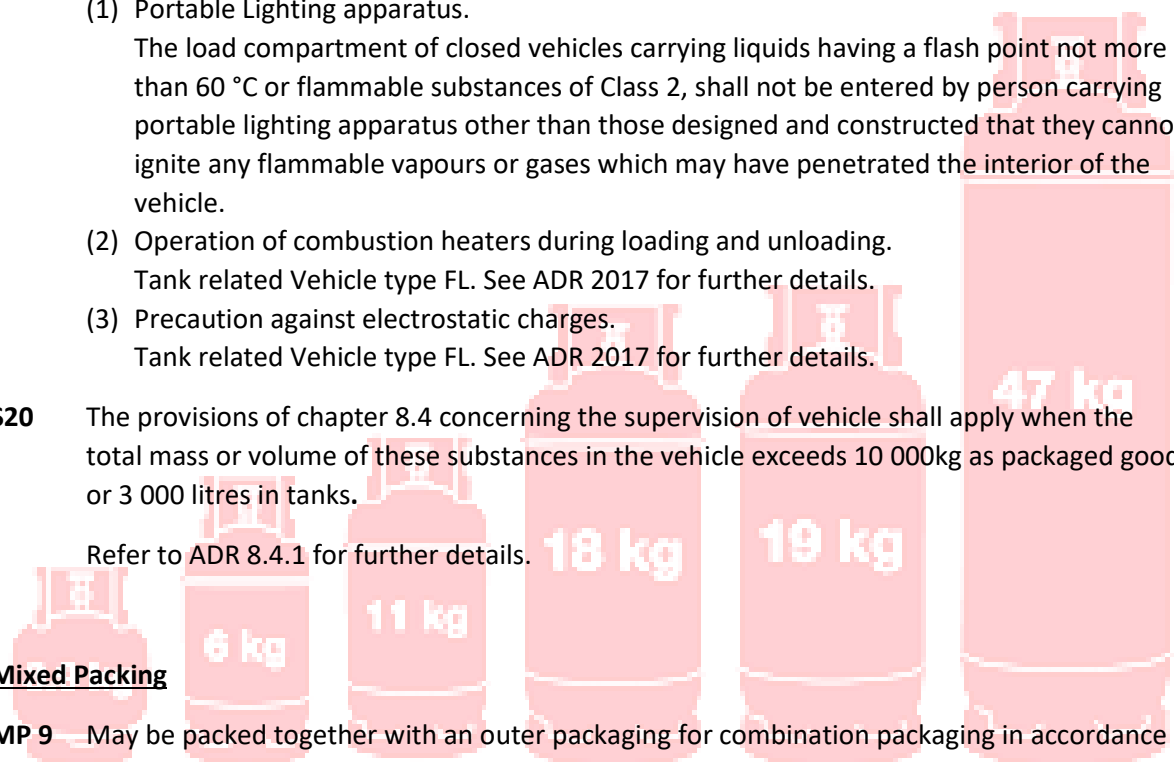
Refer to ADR 8.4.1 for further details.

Mixed Packing

- MP 9** May be packed together with an outer packaging for combination packaging in accordance with 6.1.4.21 with:

Other goods of the Class 2

With goods of other classes, when mixed packaging is also permitted for these or with goods which are not subject to the provisions of ADR provided that do not react dangerously with on another.



PROPANE UN 1978

There is no packing group for Propane gas cylinders.

There is no limited quantity (LQ) or excepted quantities (E).

Transport Category 2, Tunnel Restriction Code (B/D)

Classification 2F



Special Provisions

- 652** Gas cylinders used for the purpose of hot air balloons. Refer ADR 2017 Special Provision 652 for full details.
- 657** This entry shall be used for the technically pure substance only; for mixture of LPG components, see UN No. 1965 or UN No. 1975 in conjunction with note 2 in ADR 2.2.2.3. Refer ADR 2017 Special Provision 657 for full details.
- 660** For the carriage of fuel gas containment systems designed for motor vehicles, ADR does not apply. Refer ADR 2017 Special Provision 660 for full details.
- 662** Cylinders not conforming to the provision of 6.2 which are used exclusively on board a ship or aircraft may be carried for the purpose of filling inspection and subsequent return. Refer ADR 2017 Special Provision 662 for full details.

Loading and unloading procedures

- CV9** Packages shall not be thrown or subjected to impact. Receptacles should be stowed in the vehicle or container that they cannot overturn or fall.
- CV10** Cylinders which are sufficiently stable or are carried in suitable devices effectively preventing them from overturning may be placed upright.
 - Cylinders which are laid flat shall be securely and appropriately wedged, attached or secured so they cannot shift.

Short cylinders of large diameter (about 30cm or over) may be stowed longitudinally with their valve protecting devices directed towards the middle or the vehicle or container.

Cylinders defined in 1.2.1, shall be laid parallel to or at right angles to the longitudinal axis of the vehicle or container. However, those situated near the forward transverse wall shall be laid at right angles to the said axis

- CV36** Packages shall be preferably loaded in open or ventilated vehicles or open or ventilated containers. If this is not feasible and packages are carried in other closed vehicles containers, the cargo doors of the vehicles or container shall be marked with the following in letters not less than 25mm high: "WARNING NO VENTILATION OPEN WITH CAUTION"

Operational

S2 Additional requirements concerning the carriage of flammable liquid or gases.

(4) Portable Lighting apparatus.

The load compartment of closed vehicles carrying liquids having a flash point not more than 60 °C or flammable substances of Class 2, shall not be entered by person carrying portable lighting apparatus other than those designed and constructed that they cannot ignite any flammable vapours or gases which may have penetrated the interior of the vehicle.

(5) Operation of combustion heaters during loading and unloading.

Tank related Vehicle type FL. See ADR 2017 for further details.

(6) Precaution against electrostatic charges.

Tank related Vehicle type FL. See ADR 2017 for further details.

S20 The provisions of chapter 8.4 concerning the supervision of vehicle shall apply when the total mass or volume of these substances in the vehicle exceeds 10 000kg as packaged goods or 3 000 litres in tanks.

Refer to ADR 8.4.1 for further details.

Cylinder and Package ADR Definition

“Cylinder” means a transportable pressure receptacle of a water capacity not exceeding 150l.

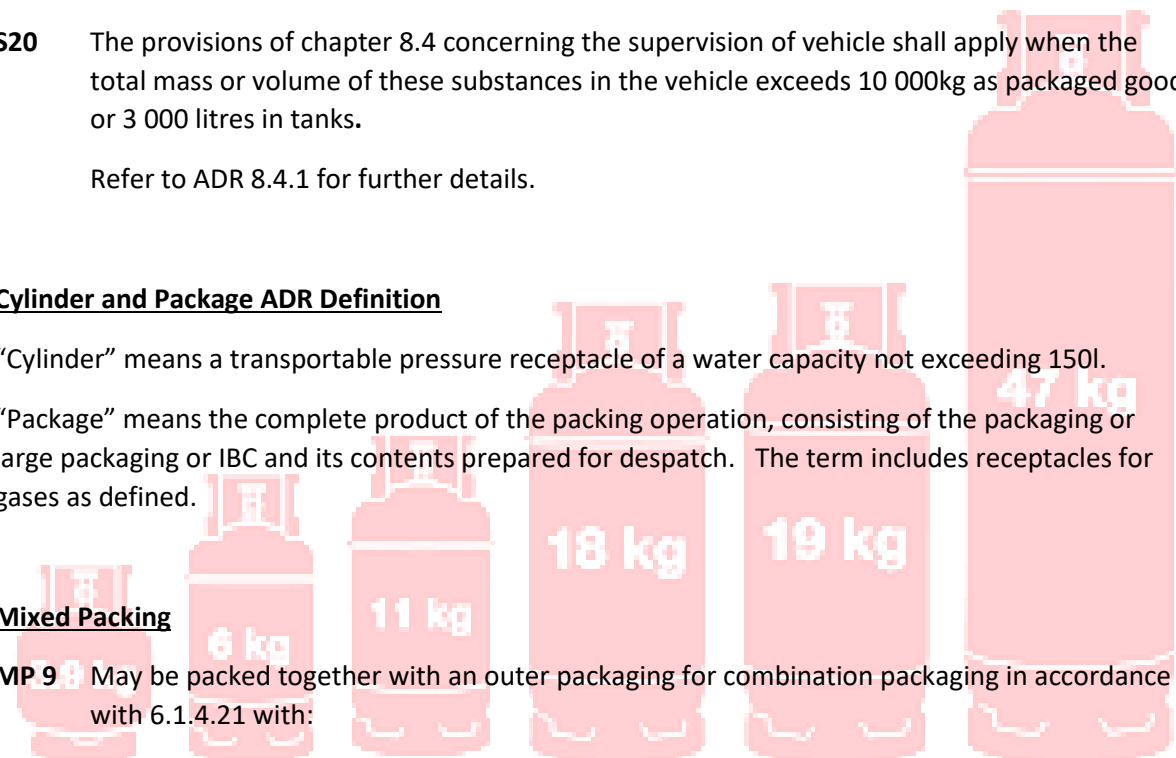
“Package” means the complete product of the packing operation, consisting of the packaging or large packaging or IBC and its contents prepared for despatch. The term includes receptacles for gases as defined.

Mixed Packing

MP 9 May be packed together with an outer packaging for combination packaging in accordance with 6.1.4.21 with:

Other goods of the Class 2

With goods of other classes, when mixed packaging is also permitted for these or with goods which are not subject to the provisions of ADR provided that do not react dangerously with on another.



Mixed Loading

Packages bearing different danger labels shall not be loaded together in the same vehicle or container unless mixed loading is permitted.

Labels Nos.	1	1.4	1.5	1.6	2.1, 2.2, 2.3	3	4.1	4.1 + 1	4.2	4.3	5.1	5.2	5.2 + 1	6.1	6.2	7 A, B, C	8	9
1	See 7.5.2.2										a							b
1.4					a	a	a		a	a	a	a		a	a	a	a	a b c
1.5																		b
1.6																		b
2.1, 2.2, 2.3		a			X	X	X		X	X	X	X		X	X	X	X	X
3		a			X	X	X		X	X	X	X		X	X	X	X	X
4.1		a			X	X	X		X	X	X	X		X	X	X	X	X
4.1 + 1								X										
4.2		a			X	X	X		X	X	X	X		X	X	X	X	X
4.3		a			X	X	X		X	X	X	X		X	X	X	X	X
5.1	d	a			X	X	X		X	X	X	X		X	X	X	X	X
5.2		a			X	X	X		X	X	X	X	X	X	X	X	X	X
5.2 + 1												X	X					
6.1		a			X	X	X		X	X	X	X		X	X	X	X	X
6.2		a			X	X	X		X	X	X	X		X	X	X	X	X
7A, B, C		a			X	X	X		X	X	X	X		X	X	X	X	X
8		a			X	X	X		X	X	X	X		X	X	X	X	X
9	b	a b c	b	b	X	X	X		X	X	X	X		X	X	X	X	X

X Mixed loading permitted.

^a Mixed loading permitted with 1.4S substances and articles.

^b Mixed loading permitted between goods of Class 1 and life-saving appliances of Class 9 (UN Nos. 2990, 3072 and 3268).

^c Mixed loading permitted between safety devices, pyrotechnic of Division 1.4, compatibility group G, (UN No. 0503) and safety devices, electrically initiated of Class 9 (UN No. 3268).

^d Mixed loading permitted between blasting explosives (except UN No. 0083 explosive, blasting, type C) and ammonium nitrate (UN Nos. 1942 and 2067), ammonium nitrate emulsion or suspension or gel (UN No. 3375) and alkali metal nitrates and alkaline earth metal nitrates provided the aggregate is treated as blasting explosives under Class 1 for the purposes of placarding, segregation, stowage and maximum permissible load. Alkali metal nitrates include caesium nitrate (UN 1451), lithium nitrate (UN 2722), potassium nitrate (UN 1486), rubidium nitrate (UN 1477) and sodium nitrate (UN 1498). Alkaline earth metal nitrates include barium nitrate (UN 1446), beryllium nitrate (UN 2464), calcium nitrate (UN 1454), magnesium nitrate (UN 1474) and strontium nitrate (UN 1507).

Calculating the Load

The calculation you perform will depend on whether you are transporting gases from one category or a combination of categories. For a loads containing a single transport category, calculate as follows:

$$\text{Points per cylinder} \times \text{Number of cylinders} = \text{Total Points}$$

Refer to the threshold table to determine if ADR applies. If your calculated points exceed the points threshold ADR regulation applies.





Mixed loads

For mixed load, a calculation must be performed for each individual category of gases. The total points for each category must then be multiplied by the “multiplier” based on the transport category.

Transport category	Multiplier
1	50
2	20
3	3
4	unlimited

Once calculated ascertain whether the total is below or above 1000. If the points exceed 1000 then full ADR applies. (1.1.3.6.4)

Threshold Table

Transport Category	Class	Hazard Label	Gas	Points Threshold
1	2.3		Toxic	20
1	2.3		Ammonia	50
2	2.1		Flammable	333
3	2.2		Asphyxiant and Oxidizing	1000
4		-	Unlimited load exemption	Unlimited load exemption

Dangerous Goods Note

The Dangerous Goods Note (DGN) must contain the correct information, assuming full ADR applies to your load. A separate document of each consignment should exist.

The DGN shall include the description of each of the dangerous goods and shall be written as per example::

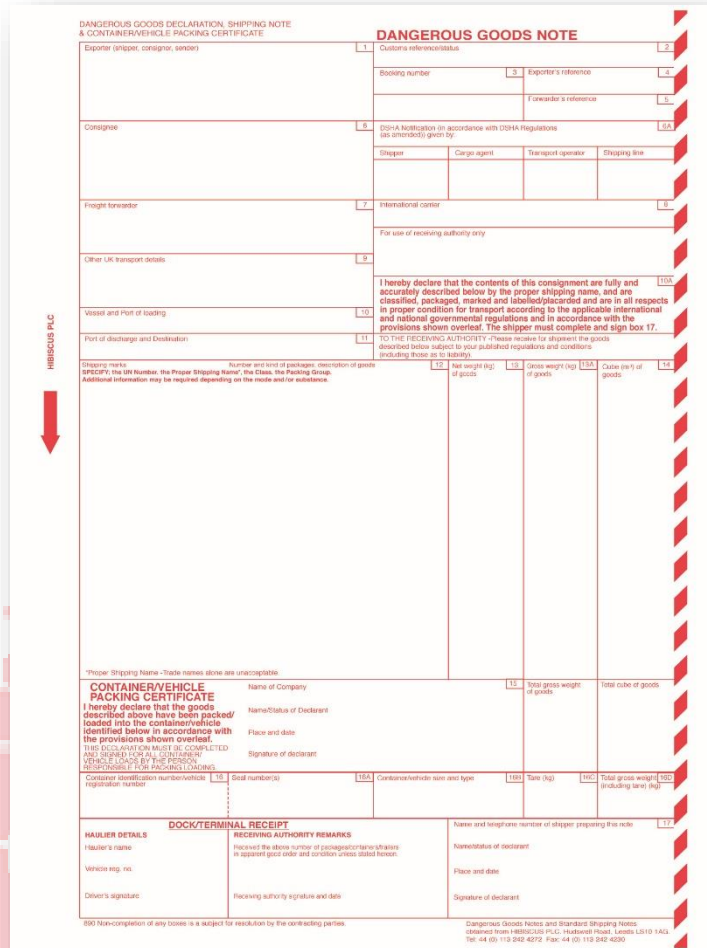
2 x 47kg UN 1978, PROPANE, 2.1, (B/D)

10 x 3.9kg UN 1011, BUTANE, 2.1, (B/D)

Additional full cylinders (spare bottles) carried on the transport should be accompanied by a completed DGN.

ADR does not apply to the carriage of empty gas cylinders. Empty gas cylinders are associated with transport category 4 - “empty , uncleaned packaging’s having contained dangerous goods except for those classified in transport category 0”.

Note: Some gas companies leave around 20% in the cylinder for quality purposes. If you are unsure check with the relevant gas supplier. This only really becomes a problem when back on site where under BGCA/HSE guidelines empties are stored away from full cylinders.



Threshold Quantities for Propane and Butane

Transport category	UN Number	Threshold Quantity (kg)
2	UN 1978	333
2	UN 1011	333

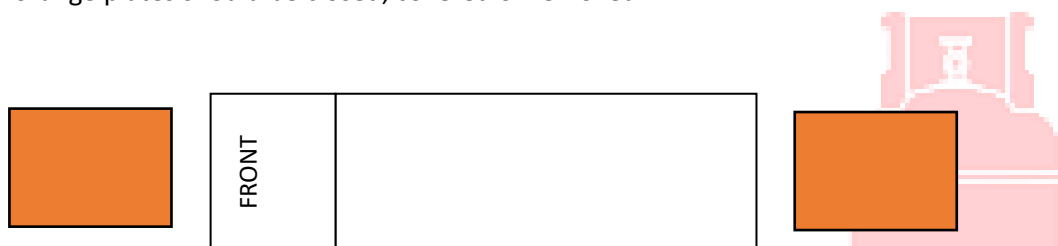
Exemptions

The requirements of ADR do not apply:

- When private individuals carry dangerous goods which are packaged for retail sale and are intended for personal use, or
- When dangerous goods are carried only incidentally to the enterprise's main activity (e.g. a plumber carrying propane on his way to a job or an engineer taking refrigerant gas to repair a refrigeration system)

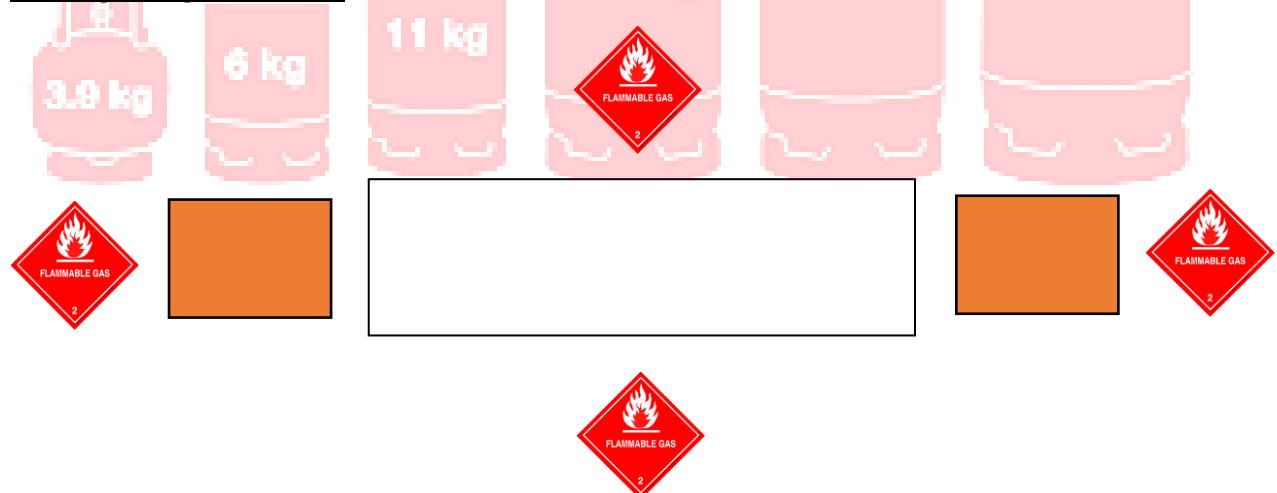
Vehicle Marking Gas Bottles

Packaged goods vehicles must be marked in accordance with ADR chapter 5.3. Orange plates shall be 400 x 300mm in accordance with regulation 5.3.2.2.1 of ADR 2017. If you are not carrying dangerous good, your orange plates should be closed, covered or removed.



For freight containers, vehicles must be marked with blank orange-coloured plates at the front and rear of the vehicle and with Class 2.1 placards on both sides and at each end of the container.

Marking a freight container



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Vehicle Equipment

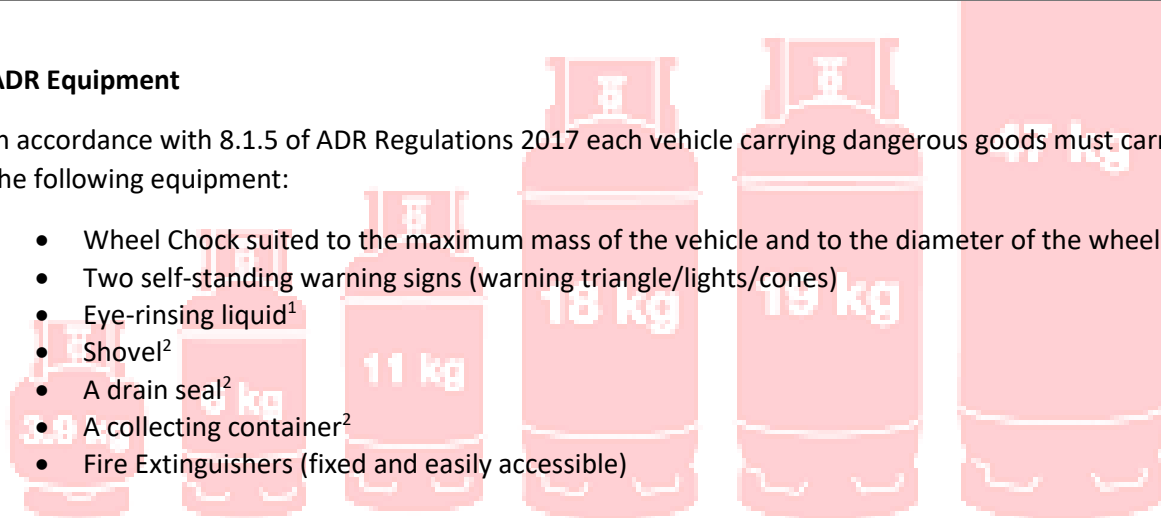
Fire Extinguishers.

In accordance with 8.1.4 of ADR Regulations 2017 a two fire extinguisher of at least a combined capacity of 4kg are required with a minimum 2kg for the cab and 2kg for tyres.

Vehicle (max permissible mass)	Minimum dry powder fire extinguisher provision
Up to 3.5 tonne	2kg for cab plus 2 kg
over 3.5 t and up to 7.5 tonne	2 kg for cab Total 8 kg (usually one 6 kg but other provision is acceptable as long as there is one 6 kg)
Over 7.5 tonne	2 kg for cab Total 12 kg (including at least one 6 kg)

ADR Equipment

In accordance with 8.1.5 of ADR Regulations 2017 each vehicle carrying dangerous goods must carry the following equipment:

- 
- Wheel Chock suited to the maximum mass of the vehicle and to the diameter of the wheel
 - Two self-standing warning signs (warning triangle/lights/cones)
 - Eye-rinsing liquid¹
 - Shovel²
 - A drain seal²
 - A collecting container²
 - Fire Extinguishers (fixed and easily accessible)

and for each member of the vehicle crew;

- A warning vest (Hi-visibility vest) conforming to EN 471 standard
- Portable lighting apparatus - conforming to the provisions of 8.4.4 of ADR Regulations 2017
- A pair of protective gloves (suited to goods being carried)
- Eye protection (e.g. protective goggles/hard hat with visors)
- An emergency escape mask⁴

¹Not required for hazardous goods in classes 1, 1.4, 1.5, 1.6, 2.1, 2.2 and 2.3

²Only required for hazardous solids and liquids in classes 3, 4.1, 4.3, 8 or 9

³Only a 2kg dry powder extinguisher is required when carrying hazardous goods in class 6.2

⁴Only required for hazardous goods in classes 2.3 or 6.1. An example of a suitable escape mask is a combined gas/dust filter of the A1B1E1K1-P1 or A2B2E2K2-P2 type which is similar to that described in the EN141 standard

Vehicle and Driver Documentation

ADR Driver Training Certificate/Card.

The driver must also carry an ADR Driver Training Certificate/Card for quantities carried in excess of the relevant threshold limit.

Instructions in Writing.

Instructions in writing (previously TREMc card/TEC) must be carried when gas bottles are being transported in quantities over the threshold limit. The instructions in writing provide emergency information for the driver. ADR 2017 5.4.3

Dangerous Good Note

The DGN is a transport document that gives details about the contents of a consignment to carriers, receiving authorities and forwarders. ADR 2017 5.4.1

Incidents

Regulation 1.8.5 ADR 2017 'A Company Ltd' has a legal responsibility to advise the Dangerous Goods Safety Adviser of any incident or accident involving the carriage, loading or unloading of dangerous goods.

