

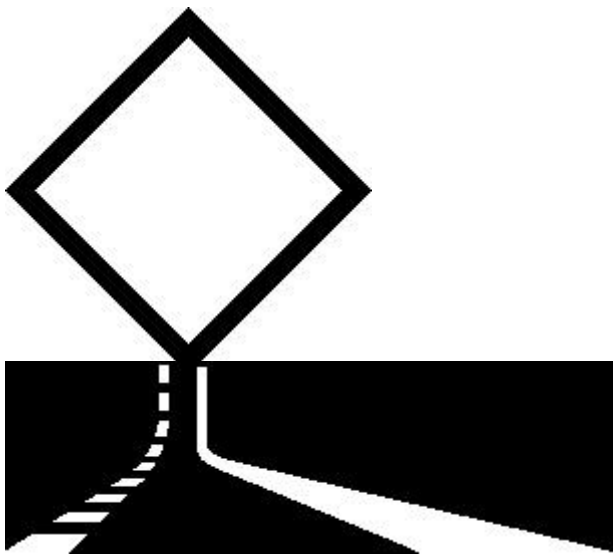
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**A Technical Publication
from the Co-ordination
and Information Centre**

Transportation of Propane Cylinders and Bulk Tanks by Road

November 2009

**Dangerous Goods
And Rail Safety**



**Government
of Alberta** ■
Transportation

This material is meant as a guide to certain parts of the Transportation of Dangerous Goods Regulations and is not meant to be a substitute for them. It is the responsibility of handlers, offerers and transporters of dangerous goods to consult the Regulations for the exact requirements. The Coordination and Information Centre of Alberta Transportation can provide accurate information regarding the Regulations 24 hours a day.

Co-ordination and Information Centre

**Alberta Transportation
Dangerous Goods and Rail Safety Branch
Main Floor, Twin Atria Building
4999 – 98 Avenue
Edmonton, Alberta, T6B 2X3**

**Tel. Edmonton: (780) 422 – 9600
Tel. Province-wide: 1 (800) 272 – 9600
Fax: (780) 427 – 1044**

These telephone lines are recorded to assist in responding to the emergency (natural/manmade) and/or inquiry regarding dangerous goods and to ensure that the information is accurate. Direct any questions regarding the recording to the Compliance Officer responding to your call or contact the Manager of the CIC at 780-427-8660. *Legal Authority: Dangerous Goods Transportation and Handling Act, Section 13(1).*

INTRODUCTION

Propane is a flammable gas that is regulated for transport under the Transportation of Dangerous Goods (TDG) Act and Regulations. The movement of any propane tank or cylinder is fully regulated under the TDG Regulations unless an exemption applies.

DANGEROUS GOODS CLASSIFICATION

The first step in the transportation of dangerous goods is the classification of the product, which is the responsibility of the consignor. Propane is a flammable, compressed gas and either of the following shipping names may be used:

Shipping Name	Class	PIN
PROPANE	2.1	UN1978

According to Section 1.32.1 of the TDG Regulations, Propane may also be identified as Liquefied Petroleum Gas:

Shipping Name	Class	PIN
LIQUIFIED PETROLEUM GAS	2.1	UN1075

The use of "Liquefied Petroleum Gas" as the shipping name is intended for mixtures of petroleum gases containing any of the following: BUTANE (UN1011), BUTYLENE (UN1012), ISOBUTYLENE (UN1055), PROPYLENE (UN1077), ISOBUTANE (UN1969), and PROPANE (UN1978). If UN1978, PROPANE, is to be transported on a road vehicle and is identified as LIQUIFIED PETROLEUM GAS on the shipping document, the shipping name PROPANE must be shown, in parentheses, following the words LIQUIFIED PETROLEUM GAS.

When propane or any of the gases mentioned above are from a producing well or gas plant and have not had an odorant added, there is a requirement to add the words "Not Odorized" or "Not Odourized" or "Sans Odorisant" after the shipping name of the document [Section 3.5 (1)(c)(i)(B)].

CYLINDER LOADING AND SECURING

All compressed gas cylinders are considered dangerous because they contain gas under pressure. The cylinder's valve can easily be damaged by falling or striking another object; something that could create a rocket out of an ordinary cylinder. The TDG Regulations [Section 5.4] say only that the small means of containment must be loaded and secured on a means of transport in such a way as to prevent, under normal conditions of transportation, damage to the means of containment or to the means of transport that could lead to an accidental release of the dangerous goods. There is no direction as to how it should be done. In addition, according to CSA Standard B340 [Section 4.2.3.1], containers filled with a refrigerated or a liquefied flammable gas (for example, propane which is liquefied, or acetylene, which is dissolved in acetone), shall be transported in an upright position, unless they are designed for horizontal service, so that the safety valves are in contact with the vapour space and not the liquid.

Schedule 1, Column 9 of the TDG Regulations, also indicates that propane is forbidden to be shipped in a passenger carrying road or rail vehicle, such as a bus.

EXEMPTIONS

Class 2, Gases, in Small Means of Containment Exemption (Section 1.32.2)

A common use of propane is as a welding gas. The TDG Regulations contain an exemption that allows for the transportation of **propane, acetylene, compressed air, compressed argon, carbon dioxide, mixtures of methylacetylene and propadiene, compressed nitrogen and/or compressed oxygen**, without any dangerous goods documentation or training if the following conditions are complied with:

- the dangerous goods are contained in **no more than 5 small means of containment**;
- the gross mass of the dangerous goods is less than or equal to **500 kg gross mass**; and
- the **labels displayed on the small means of containment can be seen from outside** the road vehicle.

150 Kg Gross Mass Exemption (Section 1.15)

Part 3 (Documentation), Part 4 (Safety Marks), Part 5 (Means of Containment), Part 6 (Training) and Part 8 (Accidental Release and Imminent Accidental Release Reporting Requirements) do not apply to the purchase and transportation of small propane cylinders, or bottles from retail outlets. The restrictions of this exemption are:

- the propane is in one or more small means of containment in compliance with requirements for transporting gases in Part 5, Means of Containment; and
- the gross mass of all dangerous goods transported on the road vehicle or the railway vehicle is less than or equal to 150 kg.

An example would be the purchase or refilling of a 20-lb propane tank for use with a gas barbecue.

500 Kg Gross Mass Exemption (Section 1.16)

Part 3 (Documentation), Part 4 (Dangerous Goods Safety Marks) and Part 5 (Means of Containment) do not apply to the handling, offering for transport or transport of Class 2, Gases, (ie. Propane) if

- they are in one or more small means of containment in compliance with Part 5 (Means of Containment);
- the gross mass of all the dangerous goods transported on the road vehicle or the railway vehicle is less than or equal to 500 kg;
- each means of containment has displayed on one side, other than a side on which it is intended to rest or to be stacked during transport, the safety marks required by Part 4;
- the dangerous goods are accompanied by a shipping document that is located in accordance with the requirements for location of a shipping document in sections 3.7 to 3.9 of Part 3; and
- the shipping document includes the primary class of the dangerous goods following the word “Class” or “Classe,” and the total number of means of containment, on which a dangerous goods safety mark is required, following the words “number of means of containment” or “nombre de contenants.”

For example: “Class 2, number of means of containment, 7”

This exemption does not apply to propane that is contained in a cylinder with a capacity greater than 46 litres [Section 1.16(2)(d)].

Operation of a Means of Transport or a Means of Containment Exemption (Section 1.27)

The TDG Regulations do not apply to propane on a means of transport that is required for the propulsion of the means of transport and intended to remain on the means of transport until used, and contained in a fuel tank permanently installed on the means of transport.

This exemption does not apply to dangerous goods being delivered to a destination and from which a portion is drawn off during transport for propulsion of the means of transport (ie. a tank truck delivering Liquefied Petroleum Gas that uses part of that load of gas to propel the vehicle).

Please note that if ALL of the conditions outlined for a specific exemption cannot be met, then the TDG Regulations must be fully complied with.

MEANS OF CONTAINMENT FOR PROPANE

Small propane cylinders must meet the requirements of standard CAN/CSA-B340-02. Large containers must meet the requirements of standard CAN/CSA-B620-03 [Section 5.10].

SHIPPING DOCUMENT

It is the responsibility of the consignor to prepare a proper shipping document when offering dangerous goods for transportation [Section 3.1]. The document is similar to a standard bill of lading but must contain information needed to describe the dangerous goods. The shipping document is handed over to the initial carrier and must accompany the consignment throughout its journey. The consignor and each carrier that transported shall retain a copy of the shipping document for a period of two years [Section 3.11].

Minimum Dangerous Goods Shipping Document Requirements for Propane

1. Name and address of consignor
2. Date the shipping document was prepared
3. Description of the dangerous goods in the following order:
 - a. Shipping name: Propane
 - b. The words "Not Odorized" for propane that has not been odorized
 - c. Primary classification: 2.1
 - d. UN Number: UN 1978
 - e. Packing group: none for compressed gases
4. The quantity in the International System of Units (SI) ^{1,2}
5. The number of containers for dangerous goods in small containers requiring safety labels ²
6. The words "24-Hour Number" followed by a telephone number where the consignor can be easily reached ³
7. Emergency Response Assistance Plan (ERAP) number and telephone number to activate it (if required)




Note:

1. If the quantity of dangerous goods or the number of small means of containment changes during transport, the carrier must show on the shipping document or on a document attached to the shipping document the change in the quantity of dangerous goods or the number of small containers. How the carrier shows the change in the quantity is the carriers choice. The carrier can change the number used to describe the quantity or show additions or subtractions from the number used to express the quantity [Section 3.5(5)].
2. A consignor can also use the telephone number of an agency that is competent to give the technical information on the shipment. For example, it is possible to use CANUTEC as a source of technical information provided that the consignor has received permission in writing from CANUTEC [Section 3.5(2)].

SAFETY MARKS

Small Means of Containment

Safety marks are the signs, labels and markings which are required by the TDG Regulations. The Regulations require that small means of containment (capacity of 450 litres or less) display the appropriate label for that particular class of dangerous good. A small container must display the dangerous goods label, the shipping name and the UN number of the product [Sections 4.10 to 4.12]. The label must be at least 100 mm on each side. If the container is too small or it has an irregular shape, the label can be reduced in size up to a dimension of 30 mm on each side [Section 4.7(2)].

Example of Safety Marks for Small Containers In this case the product is PROPANE, Class 2.1, UN1978	
 <p>A red diamond-shaped label with a white flame icon at the top, the number '1978' in a white box in the center, and the number '2' at the bottom.</p>	 <p>PROPANE</p>  <p>A red diamond-shaped label with a white flame icon at the top, the number '2' at the bottom, and a white box containing 'UN 1978' and 'PROPANE' to the right.</p>
Class 2.1 safety label is red with a small white flame	

Large Means of Containment



Placards representing the hazard class(es) of the dangerous goods being transported are placed on all four sides of a large means of containment (capacity greater than 450 litres) or transport units (gross mass greater than 500 Kgs).

Each side of a placard must be at least 250 mm in length. Except for the DANGER placard, all placards have a line running 12.5mm inside the edge. If the large means of containment has an irregular shape or its size is too small, the placard can be reduced in size but the dimensions must never be less than 100 mm on each side [Section 4.7(3)].

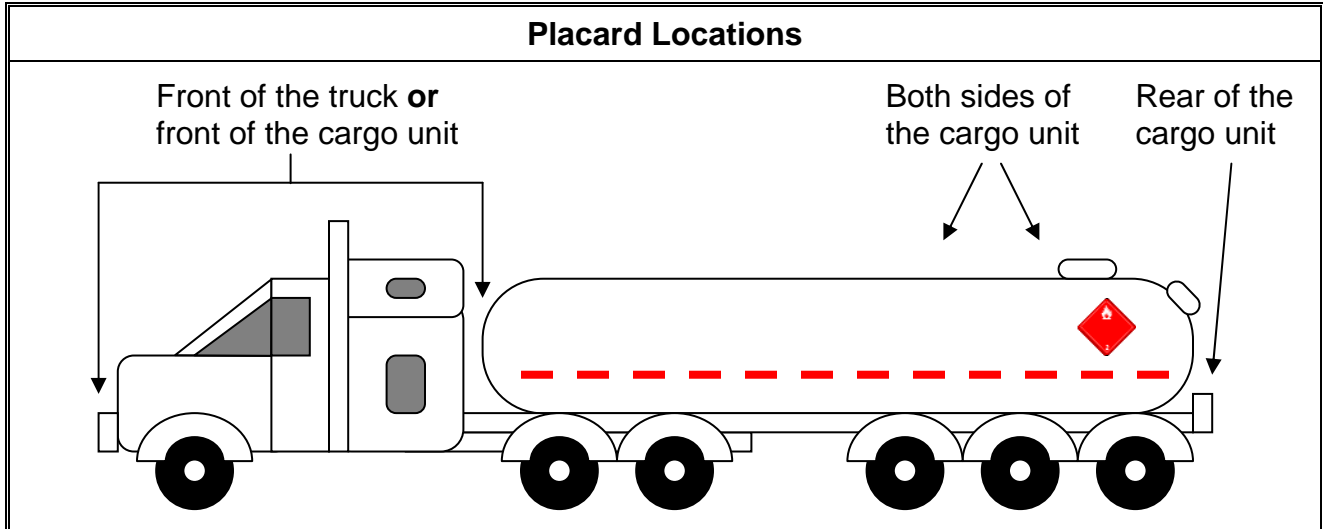
Placards and UN numbers must be displayed in accordance with the table in Section 4.15 of the TDG Regulations if the dangerous goods:

- are in a quantity or concentration for which an emergency response assistance plan is required;
- are included in Class 7, Radioactive Materials, for which a Category III Yellow Label is required; or
- are a liquid or gas in direct contact with the large means of containment;
- have a gross mass greater than 500 kg; or
- are included in Class 1.1, 1.2, 1.3 or 1.5 and are (i) not subject to special provision 85 or 86 and exceed 10 kg Net Explosive Quantity, or (ii) subject to special provision 85 or 86 and the number of articles exceed 1000.

The UN number of the dangerous goods being transported must be displayed inside the placard or on an orange panel next to the placard. The letters “UN” are always omitted [Section 4.8(2)].

Example of Safety Marks for a Large Means of Containment In this case the product is LIQUEFIED PETROLEUM GASES, Class 2.1, UN1075	
	
Class 2.1 placards have a red background and a white flame symbol	

The placards must be displayed on each side and each end of a large means of containment. The placards may be displayed on the frame of the means of transport or the frame permanently attached to the large means of containment. The placard may also be placed at the front of a truck, instead of on the leading end of a trailer unit of the truck [Section 4.15(3)].



PERMITS FOR EQUIVALENT LEVEL OF SAFETY

Permits to transport propane in a manner which does not comply with the Regulations but does not present a public safety hazard are available from the Dangerous Goods and Rail Safety Branch of Alberta Transportation at no charge. For details of the permit, please consult the Co-ordination and Information Centre at 1-800-272-9600 and/or to determine if there is a permit for your specific requirements.

TRAINING

Unless there is an exemption under the TDG Regulations, anyone who handles, offers for transport or transports dangerous goods must be adequately trained and have a valid Dangerous Goods Training Certificate or must be under the direct supervision of a trained person [Section 6.1].

A person is adequately trained if the person has sound knowledge of the topics listed below that relate directly to the person's duties and to the dangerous goods the person is expected to handle, offer for transport or transport [Section 6.2]:

- classification of dangerous goods, shipping names, UN numbers, packing groups;
- shipping documentation;
- safety marks;
- certification safety marks, safety requirements and safety standards;
- emergency response assistance plan requirements;
- reporting requirements;
- safe handling and transportation practices;
- proper use of equipment; and
- emergency measures to take in case of releases.

The employer must issue a training certificate when he/she has reasonable grounds to believe that an employee is adequately trained and will perform duties to which the training relates . A training certificate must have the following information [Section 6.3]:

- the name and address of the employer,
- the name of the employee,
- the date when the training certificate expires, 36 months after being issued,
- the aspects of handling, offering for transport or transporting dangerous goods for which the employee is trained, and
- the signatures of the employer and the employee.

Self-employed people can issue training certificates for themselves. The employer or self-employed person must keep a record of training or a statement of experience and a copy of his/her training certificate beginning on the date the training certificate is issued and continuing until two years after the date it expires [Section 6.6]. The training certificate must be immediately presented to an inspector who requests it [Section 6.8].

ACCIDENTAL RELEASES OF DANGEROUS GOODS

In the event of an accidental release or imminent accidental release of dangerous goods, the person who has possession of the dangerous goods must report this incident immediately. In the case of propane an immediate report is required when the release involves **any quantity that could pose a danger to public safety or any sustained release of 10 minutes or more [Section 8.1] or if there is an imminent accidental release.**

In Alberta, the report must be made to the local police and to Alberta Transportation, Dangerous Goods and Rail Safety Branch at 1-800-272-9600 which is the provincial authority.

For the full reporting requirements, refer to the CIC Bulletin entitled "Reporting an Accidental Release of Dangerous Goods". A copy can be obtained by calling the Co-ordination and Information Centre at 1-800-272-9600.

Note:

The following document is included with this bulletin:

- A sample of a Dangerous Goods Shipping Document for Road Transport

DANGEROUS GOODS SHIPPING DOCUMENT

FOR ROAD TRANSPORT

DESTINATION (City-Town) Name: Address:				CONSIGNOR Name: Address:			
Name of Carrier		Prepaid <input type="checkbox"/>	Collect <input type="checkbox"/>	Transport Unit Number			
Point of Origin				Shipping Date		Shipper's No.	
REGULATED DANGEROUS GOODS				24-Hour Number: ERAP Reference _____ and Telephone Number _____			
Shipping Name	Primary Class	Subsidiary Class	UN Number	Packing Group	Quantity	Packages Requiring Labels	
This is to certify that the above named articles are properly classified, described, packaged, marked and labelled and are in proper condition for transportation according to the <i>Transportation of Dangerous Goods Regulations</i> .							
Special Instructions							
NON-REGULATED GOODS							
Packages	Description of Articles					Weight	
Received in apparent good order				_____ Consignee Signature		_____ Shipper's Signature	
Received in Apparent Good Order		_____ Driver's Signature			_____ Driver's No.		

Please note that this sample shipping document contains some information that is not required in the TDG Regulations. The additional information reflects current industry practices