



Dangerous Goods and Rail Safety

**A Technical Publication from
ALBERTA EDGE (ENVIRONMENTAL AND
DANGEROUS GOODS EMERGENCIES)**

Flammable Liquids in Slip Tanks and Other Consumer Means of Containment

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Alberta 

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. Alberta EDGE (Environmental and Dangerous Goods Emergencies) of Alberta Transportation can provide accurate information regarding the Regulations 24 hours a day.

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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 Regulatory Compliance Officer responding to your call or contact the Manager of Alberta EDGE at 780-427-8660. *Legal Authority: Dangerous Goods Transportation and Handling Act, Section 13(1).*

EXEMPTIONS

The Transportation of Dangerous Goods (TDG) Regulations contains several exemptions for flammable liquids. These exemptions are applied according to the volume being transported. For the complete wording of the exemptions, refer to the TDG Regulations, Part 1.

Liquid	Volume	Compliance Case	Section of the TDG Regulations
Gasoline UN 1203	30 kg or less	150 kg Gross Mass Exemption	1.15
	30 L or less	Limited Quantity Exemption	1.17
	30 ml or less (inner MOC*) 500 ml or less (outer MOC*)	Excepted Quantity Exemption	1.17.1
	30 L to 2000 L	Gasoline and Diesel Exemption	1.35
	Over 2000 L	Full compliance with the requirements for large means of containment	
Diesel UN1202 Kerosene UN1223	450 L or less	Flammable Liquids Exemption	1.33
	450 L to 2000 L	Gasoline and Diesel Exemption	1.35
	Over 2000 L	Full compliance with the requirements for large means of containment	
Methanol (conc. less than or equal to 50%) UN 1230	450 L or less	Alcoholic Beverage and Aqueous Solution of Alcohol Exemption	1.36
	Over 450 L	Full compliance with the requirements for large means of containment	
Methanol (conc. greater than 50%) UN 1230	30 kg or less	150 kg Gross Mass Exemption	1.15
	1 L or less	Limited Quantity Exemption	1.17
	30 ml or less (inner MOC*) 500 ml or less (outer MOC*)	Excepted Quantity Exemption	1.17.1
	More than 1 L to 450 L	500 kg Gross Mass Exemption	1.16
	Over 450 L	Full compliance with the requirements for large means of containment	

*MOC = means of containment

150 kg Gross Mass Exemption (Section 1.15)

Part 3 (Documentation), Part 4 (Dangerous Goods Safety Marks), Part 5 (Means of Containment), Part 6 (Training) and Part 8 (Accidental Release and Imminent Accidental Release Report Requirements) do not apply to the handling, offering for transport or transporting of flammable liquids on a road vehicle, a railway vehicle or a ship on a domestic voyage if

1. the dangerous goods are not included in Class 2, Gases, they are in one or more small means of containment designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of the dangerous goods that could endanger public safety;
2. except for dangerous goods included in Class 2, Gases, the dangerous goods are contained in one or more means of containment each of which has a gross mass less than or equal to 30 kg;
3. the gross mass of all dangerous goods transported on the road vehicle or the railway vehicle is less than or equal to 150 kg; and
4. the dangerous goods are in a quantity or concentration available to the general public and are transported
 - (i) by a user or purchaser of the dangerous goods; or
 - (ii) by a retailer to or from a user or purchaser of the dangerous goods.

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 transporting of dangerous goods on a road vehicle, a railway vehicle or a ship on a domestic voyage if

1. the dangerous goods are not included in Class 2, Gases, they are in one or more means of containment
 - (i) each of which has a gross mass less than or equal to 30 kg and that is designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of the dangerous goods that could endanger public safety; or
 - (ii) that are drums in compliance with the requirements of section 5.12 of Part 5, Means of Containment, for transporting dangerous goods in drums;
2. the gross mass of all dangerous goods transported on the road vehicle or the railway vehicle is less than or equal to 500 kg;

3. 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 dangerous goods safety marks required by Part 4, Dangerous Goods Safety Marks;
4. the dangerous goods are accompanied by a shipping document or document that is located, for a road or railway vehicle or a ship, in accordance with the requirements for location of a shipping document in sections 3.7 to 3.9 of Part 3, Documentation; and
5. any document referred to in (4), other than a shipping document, includes
 - (i) the primary class of the dangerous goods, following the word "**CLASS**"; and
 - (ii) the total number of means of containment, on which a dangerous goods safety mark is required to be displayed, for each primary class, following the words "**NUMBER OF MEANS OF CONTAINMENT**".

For example,

Class 3, number of means of containment, 10

Class 8, number of means of containment, 12

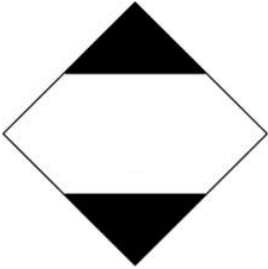

You will need Transportation of Dangerous Goods training to use the above exemption.



Limited Quantities Exemption (Section 1.17)

Part 3 (Documentation), Part 4 (Dangerous Goods Safety Marks), Part 5 (Means of Containment), Part 6 (Training), Part 7 (Emergency Response Plan) and Part 8 (Accidental Release and Imminent Accidental Release Report Requirements) do not apply to the handling, offering for transport, or transporting of limited quantities of flammable liquids. In order for the exemption to be applicable, the following conditions must be met:

1. The flammable liquids are in one or more means of containment designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of the dangerous goods that could endanger public safety;
2. Each outer means of containment has a gross mass less than or equal to 30 kg and the dangerous goods in the inner means of containment if a liquid, has a volume that is less than or equal to the number shown in Column 6(a) of schedule 1 when that number is expressed in litres (30 L or less for gasoline and 1 L or less for methanol (concentration greater than 50%));
3. Each means of containment is legibly and durably marked on one side, other than a side on which it is intended to rest or to be stacked during transport, with the **Limited Quantities Mark**. Until December 31, 2020, instead of the **Limited Quantities Mark**, a means of containment may have displayed on it the words "**Limited Quantity**", the abbreviation "**Ltd. Qty.**", or the words "**Consumer Commodity**" or the **UN number** of each limited quantity of flammable liquids preceded by the letters "UN", placed within a square on a point.

4. When a limited quantity of flammable liquids is in a means of containment that is inside another means of containment, the inner means of containment is not required to be marked if the outer means of containment is not intended to be opened during transport, and the outer means of containment is legibly and visibly marked, on a contrasting background, with the **Limited Quantities Mark**.
5. When a limited quantity of flammable liquids is in a means of containment that is inside an overpack, the following information must be displayed on the overpack unless the marks on the small means of containment are visible through the overpack: the word "**Overpack**" and the **Limited Quantities Mark** legibly and visibly marked on a contrasting background.

Limited Quantities Mark	
	
<p>The mark is a square on a point, and the line forming the square on point must be at least 2 mm wide. The top and bottom portions must be black and the central portion must be white or a contrasting colour. Each side of the mark must be at least 100 mm long. The letter "Y" may be displayed in the centre of the mark if the limited quantity is in compliance with the ICAO Technical Instructions. If the size of the means of containment so requires, the length of each side may be reduced to not less than 50 mm, provided that the mark remains clearly visible.</p>	

Example of a UN Number of Each Limited Quantity of Flammable Liquids GASOLINE, UN 1203, Class 3, Packing Group II and METHANOL, UN 1230, Class 3 (Subclass 6.1), Packing Group II	
	
<p>If the flammable liquids have different UN numbers, the square on a point must be large enough to include each UN number, but in any case, each side must be not less than 50 mm long. The UN numbers and letters must be at least 6 mm high. The line, UN numbers and letters must be on a contrasting background.</p>	

Excepted Quantities Exemption (Section 1.17.1)

A quantity of dangerous is an excepted quantity if it is transported in an appropriate inner and outer means of containment, meaning that a standardized means of containment is not required. The dangerous goods in the inner means of containment must have a mass (g), volume (ml) or capacity that is less than or equal to the number shown in Column 1 of the table found in 1.17.1(2). The units of measure for the Excepted Quantities Exemption are grams and milliliters, which are much smaller than the Kg or L used for the limited quantities exemption.

When dangerous goods in excepted quantities for which different alphanumeric codes are assigned are together in an outer means of containment, the total quantity of dangerous goods must not exceed the lowest maximum net quantity per outer means of containment that is set out in column 2 of the table listed below for any of the dangerous goods.

Part 3 (Documentation), Part 4 (Dangerous Goods Safety Marks), Part 5 (Means of Containment), Part 6 (Training), Part 7 (Emergency Response Assistance Plan) and Part 8 (Reporting Requirements) do not apply to the handling, offering for transport or transporting of dangerous goods in excepted quantities if each means of containment is marked on one side, other than a side on which it is intended to rest or to be stacked during transport, with the excepted quantities mark illustrated below.

**Table
Excepted Quantities**

Alphanumeric Code	Column 1 Maximum net quantity per inner means of containment (in g for solids and mL for liquids and gases)	Column 2 Maximum net quantity per outer means of containment (in g for solids and mL for liquids and gases, or sum of g and mL in the case of mixed packing)
E0	Not permitted as Excepted Quantity	
E1	30	1000
E2	30	500
E3	30	300
E4	1	500
E5	1	300

Excepted Quantities Mark



The mark is a square and the line forming the square must at least 100 mm wide. The line must be hatched around the edge of the square and it can be either black or red in colour. The symbol inside the square is a stylized capital E enclosed in a circle and all three cross bars of the letter E must touch the perimeter of the circle. The background of the excepted quantities mark is white or a colour that contrasts, as applicable, with black or red. The primary class is to replace *. The name of the consignor or the consignee is to replace **.

When dangerous goods in excepted quantities are in a means of containment that is inside an overpack, the following information must be displayed on the overpack, unless that information is on the means of containment and is visible through the overpack:

- (a) the word "**Overpack**"; and
- (b) the mark illustrated above.

The number of outer means of containment containing dangerous goods in excepted quantities on a road vehicle, a railway vehicle or an intermodal container must not exceed 1 000.

When dangerous goods in excepted quantities are in an inner means of containment that is inside an outer means of containment, the inner means of containment is not required to be marked if

- (a) the outer means of containment is not intended to be opened during transport; and
- (b) the outer means of containment is marked, legibly and visibly on a contrasting background, with the mark illustrated in that subsection.

If a shipping document or any other document accompanies dangerous goods in excepted quantities, the document must include the words "**dangerous goods in excepted quantities**" and must indicate the number of outer means of containment.

These Regulations, except for Part 1 (Coming into Force, Repeal, Interpretation, General Provisions and Special Cases) and Part 2, (Classification), do not apply to the handling, offering for transport or transporting of dangerous goods in excepted quantities that are assigned to alphanumeric codes E1, E2, E4 and E5 in column 6(b) of Schedule 1 if

- (a) the net quantity of the dangerous goods per inner means of containment is less than or equal to 1 mL for liquids and
- (b) the net quantity of the dangerous goods per outer means of containment is less than or equal to 100 mL for gases.

Example:

If we want to transport UN1203, GASOLINE, using the Excepted Quantities Exemption, refer to Schedule 1 and find UN1203. Then, look for Column 6(b) and determine the associated alphanumeric code. For gasoline, it is code E2. Then, refer to the table found in subsection (2) and find that E2 allows a maximum of 30 ml of gasoline in each inner means of containment and a maximum of 500 ml in each outer means of containment.

Class 3 Flammable Liquids: General Exemption (Section 1.33)

Flammable liquids such as diesel and kerosene belong to Class 3, Packing Group III. Part 3 (Documentation), Part 4 (Dangerous Goods Safety Marks), Part 5 (Means of Containment), Part 6 (Training), Part 7 (Emergency Response Assistance Plan), Part 9 (Road) and Part 10 (Rail) do not apply to the handling, offering for transport or transporting of dangerous goods included in Class 3, Flammable Liquids, on a road vehicle, a railway vehicle or a ship on a domestic voyage of the dangerous goods if the dangerous goods:

1. have no subsidiary class;
2. are included in Packing Group III and have a flash point greater than 37.8⁰C; and
3. are in one or more small means of containment (capacity of 450 L or less) designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of the dangerous goods that could endanger public safety.

Part 8 (Accidental Release and Imminent Accidental Release Report Requirements) must still be complied with.

UN1202, DIESEL FUEL, or UN1203 GASOLINE Exemption (Section 1.35)

Diesel Fuel (UN1202) and gasoline (UN1203) are exempt from Part 3 (Documentation), the UN number requirements in Section 4.15 of Part 4 (Dangerous Goods Safety Marks) and Part 6 (Training) if:

1. the dangerous goods are in one or more means of containment visible from outside the road vehicle and each of which has displayed on it the label or placard required for the dangerous goods by Part 4, Dangerous Goods Safety Marks; or

2. if a side or end of the means of containment is not visible from outside the road vehicle, the label or placard required for the dangerous goods by Part 4, Dangerous Goods Safety Marks, on a side or end that is visible from outside the road vehicle;
3. each means of containment is secured to the road vehicle so that the required label or at least one of the required placards displayed on it is visible from outside the road vehicle during transport; and
4. the total capacity of all the means of containment is less than or equal to 2,000 L.

According to this exemption the safety marks must be chosen as follows:

- Gasoline in containers with a volume greater than 30 L and less than or equal to 450 L require a Class 3 hazard label, the UN number "UN 1203" and the shipping name, "GASOLINE"; and
- Gasoline and diesel with a volume greater than 450 L and less than or equal to 2000 L require at least one Class 3 placard, with no UN number, be visible.

Class 3, Flammable Liquids: Alcoholic Beverage and Aqueous Solution of Alcohol Exemption [Section 1.36 (b)]

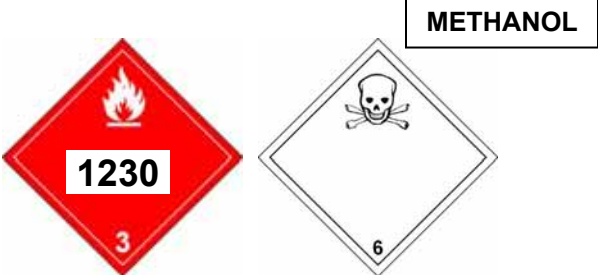

Part 3 (Documentation), Part 4 (Dangerous Goods Safety Marks), Part 5 (Means of Containment), Part 6 (Training), Part 7 (Emergency Response Assistance Plan), Part 8 (Reporting Requirements), Part 9 (Road) and Part 10 (Rail) do not apply to the handling, offering for transport or transporting on a road vehicle, a railway vehicle or a ship on a domestic voyage of an aqueous solution of alcohol if the aqueous solution has a flashpoint greater than 23°C and

- I. contains alcohol that is less than or equal to 50 percent by volume and at least 50 percent by volume of a substance that is not dangerous goods; and
- II. is contained in a small means of containment.

Alcohols such as methanol may use this exemption if the methanol shipment complies with the requirements of the exemption.


Greater than 50% Methanol in Small Means of Containment

Methanol with a concentration greater than 50% by volume must fully comply with the TDG Regulations when transported. A small means of containment requires a Class 3 Flammable Liquids label and a Class 6.1 Toxic label, a UN Number and a shipping name.

Example of Safety Marks for a Small Means of Containment	
 <p>METHANOL</p>	 <p>UN 1230 METHANOL</p>
Class 3 label - red with a white flame / Class 6.1 label - white with a skull and cross bones	

Flammable Liquids in Large Means of Containment

Unless the product complies with the flammable liquid exemption (Section 1.35), flammable liquids in large means of containment (capacity greater than 450 L), must fully comply with the TDG Regulations. The container must have four primary class placards and the UN number for the flammable liquid placed on the front, back and each side of the tank and/or vehicle. The shipment must also be accompanied by a shipping document and the driver of the vehicle must have a TDG training certificate.

Class 3 – Flammable Liquids Placard

Red background with a white flame and a white number 3

Small Means of Containment

Product	Volume	Container	Applicable Standard	Alternate Container
Diesel	450 L or less	Non-specification	N/A	N/A
Gasoline	30 L or less	Non-specification if conditions for limited quantity exemption are met	N/A	N/A
	30 L to 60 L	Jerri can or Drum	TP14850	None
	60 L to 450 L	Drum or UN Standard IBC UN31A or UN31B	TP14850 CGSB 43.146	TC57 Tank
Methanol	1 L or less	Non-specification if conditions for limited quantity exemption are met	N/A	N/A
	Greater than 1 L to 60 L	Drum	TP14850	None
	60 L to 450 L	Drum or UN Standard IBC built to standard for PG II	TP14850 CGSB 43.146	None

Large Means of Containment

Product	Volume	Container	Applicable Standard	Alternate Container
Diesel	450 L to 3000 L	UN Standard IBC or TC306/406 Tank	CGSB 43.146 CSA B620	Code 31A and 31B IBC, TC 57
	Greater than 3000 L	TC 306/406 Tank	CSA B620	N/A
Gasoline	450 L to 3000 L	UN Standard IBC or TC 306/406 Tank	CGSB 43.146 CSA B620	Code 31A and 31B IBC, TC 57
	Greater than 3000 L	TC 306/406 Tank	CSA B620	N/A
Methanol	450 L to 3000 L	UN Standard IBC or TC 306/406 Tank	CGSB 43.146 CSA B620	Code 31A and 31B IBC, TC 57 built before 2003
	Greater than 3000 L	TC 306/406 Tank	CSA B620	None

I.B.C. – Intermediate Bulk Container
 C.S.A. – Canadian Standards Association
 C.G.S.B. – Canadian General Standards Board
 U.L.C. – Underwriters Laboratory Canada

Summary of Initial Periodic Inspection and Testing

Type of Means of Containment	Applicable Standard	Initial Inspection and Testing	Periodic Inspection and Testing
UN Standard IBC greater than 450 L	CGSB 43.146	As manufactured	Internal and external visual testing every 60 months, Appendix C of CGSB 43.146
Alternate Mobile IBC greater than 450 L		CGSB 43.146 Appendix C in last 60 months	
Specification Highway Tank	CSA B620	As manufactured	Clause 8 of CSA B620 Standard (V) External Visual 1 year (K) Leak Test 1 year (I) Internal Visual 5 years (if the tank has a manway) (P) Pressure Test 34.5 kPa (5 psi) 5 years

Agricultural Exemption: 1 500 Gross Mass Farm Vehicle Exemption (Section 1.21)

Part 3 (Documentation), Part 4 (Dangerous Goods Safety Marks), Part 5 (Means of Containment) and Part 6 (Training), do not apply when handling, offering for transport or transporting dangerous goods on a road vehicle licensed as a farm vehicle if

- a) the dangerous goods are in one or more means of containment designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of the dangerous goods that could endanger public safety;
- b) the gross mass of all dangerous goods on the road vehicle is less than or equal to 1500 kg;
- c) the dangerous goods are to be or have been used by a farmer for farming purposes;
- d) the dangerous goods are transported solely on land and the distance on public roads is less than or equal to 100 km; and
- e) the dangerous goods do not include
 - i) Class 1, Explosives, other than explosives included in Class 1.4S,
 - ii) Class 2.1, Flammable Gases, in a cylinder with a capacity greater than 46 L,
 - iii) Class 2.3, Toxic Gases
 - iv) Class 6.2, Infectious Substances, or
 - v) Class 7, Radioactive Materials.

When an Emergency Response Assistance Plan (ERAP) is required under Part 7, Emergency Response Assistance Plan, the dangerous goods for which the plan is required must be accompanied by a shipping document.

Agricultural Exemption: 3 000 kg Gross Mass Farm Retail Exemption (Section 1.22)

Part 3 (Documentation), Part 4 (Dangerous Goods Safety Marks), Part 5 (Means of Containment) and Part 6 (Training), do not apply when handling, offering for transport or transporting dangerous goods on a road vehicle if

- a. dangerous goods are in one or more means of containment designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of the dangerous goods that could endanger public safety;
- b. the dangerous goods are transported solely on land between a retail place of purchase and place of destination and the distance on public roads is less than or equal to 100 km;
- c. the gross mass of all dangerous goods on the road vehicle is less than or equal to 3000 kg;
- d. the dangerous goods are to be or have been used by a farmer for farming purposes;
- e. the dangerous goods do not include
 - i) Class 1, Explosives, other than explosives included in Class 1.4S,
 - ii) Class 2.1, Flammable Gases, in a cylinder with a capacity greater than 46 L,
 - iii) Class 2.3, Toxic Gases
 - iv) Class 6.2, Infectious Substances, or
 - v) Class 7, Radioactive Materials.

When an Emergency Response Assistance Plan (ERAP) is required under Part 7, Emergency Response Assistance Plan, the dangerous goods for which the plan is required must be accompanied by a shipping document.