

Transportation of Dangerous Goods (TDG)

Transportation of Dangerous Goods (TDG) - Means of Containment (Road)

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What is a “means of containment” (MOC)?

The TDG Act defines a “means of containment” (MOC) as “a container or packaging, or any part of a means of transport that is or can be used to contain goods”.

The TDG Regulations define two main types of MOCs:

- Small means of containment (Small MOC) whose capacity is 450 L or less
- Large means of containment (Large MOC) whose capacity is more than 450 L

Note: The information below is provided as guidance only. Means of containment are outlined in [Part 5](#) of the TDG Regulations Always check with Transport Canada and the [TDG Act and Regulations](#) to ensure compliance.

- [TDG - Overview](#)
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What are examples of small and large MOCs?

Examples of small MOCs include jerricans, drums, cylinders, bags, boxes, combination containers (e.g., packages), composite containers, etc



Figure 1: Small means of containment

Examples of large MOCs include Intermediate Bulk Containers (IBCs), highway tankers, and railway tank cars.





Intermediate Bulk Container

Figure 2: Large means of containment

Do overpacks meet the definition for a means of containment?

No. The TDG Regulations define an “overpack” as “an enclosure that is used by a single consignor to consolidate one or more small means of containment for ease of handling but that is not a minimum required means of containment.” An example of an overpack is a pallet on which one or more small means of containment are stacked and secured by straps or shrink wrap.

An overpack is **never** considered to be a means of containment - it is an enclosure. Therefore, overpacks are not required to meet any of the MOC requirements of the TDG Regulations.

Can any type of MOC be used for the transportation of dangerous goods?

No. Unless there is a [special case or provision](#) (exemption), the MOC must meet the specific requirements in Part 5 of the TDG Regulations. Different MOCs are required depending on the container size, and the hazard class of the dangerous good.

Generally, for a MOC to be exempt from Part 5 of the TDG Regulations, the consignment of the dangerous good must be shipped under a “Special Case” exemption. These types of containers are referred to as non-standardized MOCs. For example, the “Special Case” for “Class 3, Flammable Liquids: General Exemption” specifies the following requirement:

“...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”

What is the purpose of a standardized means of containment (MOC)?

When a means of containment is manufactured to a specified standard (as adopted by the TDG Act and regulations), it is referred to as a standardized means of containment (MOC). Standardized MOCs that are built to a particular standard will bear a “compliance mark”.

Standardized MOCs undergo numerous performance tests such as leak tests, drop tests, stacking test, vibration test, and hydrostatic test. These performance tests depend on the type of dangerous good, and the dangerous good’s classification and packing group. The dangerous good’s packing group sets the requirements for the strength of the MOC (i.e., packaging) which are:

- Packing Group I – Requires the strongest strength
- Packing Group II – Requires moderate strength
- Packing Group III – Requires least strength

A MOC must also meet other criteria such as compatibility between the dangerous good and the structural material of the MOC, packing or filler material, etc.

To remain in standard, some MOCs must be periodically inspected, tested, and marked at intervals specified by the standard or regulations. These marks describe what, when, and by whom the inspections and tests were performed.

What is a compliance mark?

A compliance mark is any symbol, device, letter, word, number, or abbreviation that is displayed on a MOC or means of transport to indicate compliance with a safety standard.

A compliance mark on a MOC indicates:

- that the MOC meets a specific performance level
- the age of the MOC
- whether the MOC has been inspected for integrity

Are there requirements for non-standardized MOCs?

The TDG Regulations require both standardized and non-standardized containers to be designed, constructed, filled, closed, secured, and maintained so that under normal conditions of transport, including handling, there will be no accidental release of dangerous goods that could endanger public safety. TDG Regulation cites standards such as TP14850 and CAN/CGSB-43.146 for both standardized and non-standardized means of containment.

What is the difference between UN standardized, TC certified, and DOT certified MOCs?

Most MOC standards in Canada are based on the United Nations (UN) Recommendations. UN standardized MOC are internationally recognized and can be used anywhere in the world and by any mode of transport. A UN Standardized MOC will display the “UN” marking.

A UN packaging is any bag, box, barrel, drum or jerrican that is marked to indicate that it has met specific performance tests developed by the United Nations Committee of Experts on the Transport of Dangerous Goods. The tests relate to the container’s ability to withstand transportation conditions such as impact, stacking, and internal pressure.

Each packaging is marked with a code that indicates the type of packaging and the Packing Group, which dangerous good form (liquid or solid) can be used, gross weight or relative density, etc.

Some MOC standards are specific to Canada. Cylinders, tubes, highway tanks, some portable tanks are examples of such MOCs. MOCs that are only compliant with Canada’s standards will display “TC” (for Transport Canada) marking. Similarly, MOCs manufactured in the United States will bear the “DOT” (for Department of Transportation) certification safety mark.

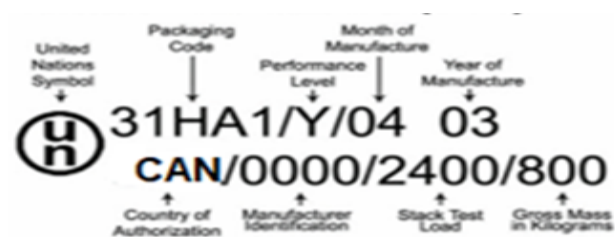
Means of Containments manufactured as per other standards (e.g., [DOT](#)) are accepted for use in Canada through the reciprocity provisions in Part 5 of the TDG Regulations or in standards referenced in the TDG Regulations. However, exceptions may apply, and reciprocity may not always be permissible.

How do I identify a UN standardized small MOC?

A UN standardized small container will have a UN marking displayed on its outer surface that meets the marking requirements set out in chapter 5 of [TP 14850](#) standard or 6.1 of the UN Recommendations. The UN markings for packages to be used for infectious substances are specified in the [CAN/CGSB-43.125](#) standard.

Note: Markings may vary on cylinders or tubes. Please see the Transport Canada document [“FAQs on Cylinders and Tubes”](#) for more information.

The UN markings are reported in a specific order. They are:



a / b / c / d / e / f / h

where

a = The UN symbol

b = The packaging code (e.g., 4GV), and when applicable the letter “V”, “T”, or “W”. See the table below for codes of commonly used packages

c = The package performance level/standard is represented with the letters “X”, “Y”, or “Z” followed by the maximum gross mass for solids or specific gravity for liquids

d = The letter “S” for solids or the internal test pressure for liquids

e = The year of manufacture

f = “CAN” Note: Denotes Canada as the country authorizing the use of the UN marking.

g = The name or symbol of the manufacturer

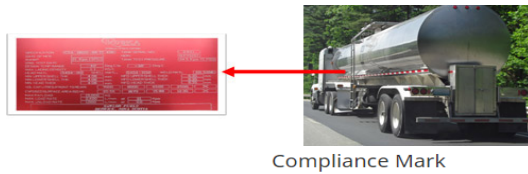
h = The Design Registration Number

Table 1: References for determining UN packing code

References for determining the UN package code			
Type	Material	Category	Performance Level / Standard
1 – Drums 2 – Reserved 3 – Jerricans 4 – Boxes 5 – Bags 6 – Composite packaging	A – Steel B – Aluminum C – Natural Wood D – Plywood F – Reconstituted Wood G – Fibre / fibreboard H – Plastic L – Textile M – Paper N – Metal other than Steel or Aluminum P – Glass Porcelain, Stoneware T – Salvage container V – Special container W – Container manufactured to a different specification that is considered to be equivalent to the standard	A, B, or H Drums – Jerricans 1 – Non-Removable Head 2 – Removable Head A or B Boxes 1 – Ordinary A or B 2 – A or B with liner or coatings C Boxes 1 – Ordinary 2 – With sift proof wall H Boxes 1 – Expanded Plastic 2 – Solid Plastic L Bags 1 – without inner liner or coatings 2 – Sift Proof 3 – Water Resistant M Bags 1 – Multiwall 2 – Multiwall, Water Resistant	X – PG I, II, III Y – PG II, III Z – PG III

How do I identify a UN standardized large MOC?

All tanks used in the service of transporting dangerous goods must have a plate attached to the shell or an integral part of the structure of the tank. It must be located on the left side of the tank near the front and contain the required information. The plate must be constructed of a metal that will not corrode.



A container's certification safety marks convey important information such as:

- the container type
- the standard to which it was constructed and by whom
- the date it was last requalified and by whom
- limits on how the container can be used

For example, each tank must be marked on the side near the metal identification plate with the following letters, as applicable, to show that the periodic tests have been carried out. The date the tests were carried out will be shown as: Date, Test Type, Last 4 digits of the facility registration number. For example:

02/09 V I K P 1234

shows that in February 2009, visual, internal, leak and pressure tests were carried out. The digits “1234” represent the last four digits in the Transport Canada registration number of the test facility.

NOTE: A new tank requires the initial test information on the manufacturer’s plate only.

Table 2: UN Large MOC markings

Letter	Test or Inspection
V	Visual (External) Inspection
I	Internal Inspection
P	Pressure Test
T	Thickness Test
L	Lining Inspection
K	Leakage Test
UC	Upper Coupler Area Inspection
WF	Wet Fluorescent Magnetic Particle Inspection
C	For TC 341 tanks only if a Cold Vacuum Retention test has been carried out instead of an internal (alternative testing).
S	Structural Inspection

Can any company manufacture, requalify, retest, or inspect the MOC?

No. Only facilities registered by Transport Canada can manufacture, assemble, retest or repair TDG containers. Note for some [container types](#) the standards require functions like design review or in-plant inspection to be done by persons or agencies registered by Transport Canada.

Transport Canada has compiled a [database](#) of registered companies that can manufacture, inspect, or design MOCs.

What are the responsibilities of the consignor, carrier, and consignee with regards to the MOC?

Consignor: When shipping, the consignor or importer is responsible for the selection of the appropriate MOC.

Carrier: Carrier responsibilities for MOCs are not directly specified in Part 5 of the TDG Regulations. However, as a handler of dangerous goods, the carrier should make sure the MOC meets the TDG regulatory requirements. The carrier also should follow their employer's safe operating procedures for loading dangerous goods.

For example, before loading dangerous goods, the carrier should:

- Check, before loading the dangerous good, the MOC (e.g., tank, cylinders) has the appropriate certification marks for expiry, requalification, inspection, etc.
- Not take possession of a dangerous good unless it is packaged and labelled according to the TDG Regulations.
- The MOC is not damaged or leaking.
- Make sure the cargo space is suitable for loading. For example, it should be free of nails and other sharp objects.
- Make sure the vehicle is suitable for the dangerous good to be loaded. It must also be in compliance with any applicable Traffic Acts.
- Have a segregation procedure or plan for before and after loading for:
 - incompatible dangerous goods
 - leaking packages, and
 - damaged packages
- Make sure the MOC is loaded securely.

Consignee: Consignee's responsibilities are not directly specified in Part 5 of the TDG Regulations. However, as a handler of dangerous goods, the consignee should make sure the MOC meets the TDG regulatory requirements. The consignee should follow safe operating procedures such as:

- Follow the employer's safe operating procedures for receiving packages. Procedures should include:
 - To make sure the items in the dangerous goods shipment are correctly identified, labelled, and match the dangerous goods descriptions on the shipping paper.
 - To thoroughly inspect the MOC for any damage.
 - Having a segregation procedure for the unloading of:
 - incompatible dangerous goods
 - leaking packages
 - damaged packages
 - Prepare safe operating procedures for incidents (e.g., spills) at the property that involve the dangerous goods.
 - Prepare a policy on what to do with damaged or leaking packages. Note, unless the dangerous good is forbidden to be returned by TDG Regulations or other specific regulations (e.g., nuclear/radioactive substances), the consignee has a right to refuse damaged or leaking packages.

- Gross mass of all dangerous goods is 150 kg or less (Section 1.15), as long as the consignor is a retailer
- 500 kg Gross Mass Exemption (Section 1.16)
- Class 2, Gases, in Small Means of Containment Exemption for five small MOC Gross mass – 500 kg or less (Section 1.32.3)

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