Transportation of Welding Gases

September 2018

A Technical Publication from ALBERTA EDGE (ENVIRONMENTAL AND DANGEROUS GOODS EMERGENCIES)
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, offers 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.

Alberta EDGE
(Environmental and Dangerous Goods Emergencies)

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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).
Several gases used for welding and related purposes are exempt from documentation and dangerous goods training requirements of the Transportation of Dangerous Goods (TDG) Regulations when being transported by road. The operator does not require a dangerous goods shipping document or a dangerous goods training certificate if:

- the dangerous goods are contained in **not more than five small means of containment (cylinders)**;
- the gross mass of the dangerous goods is less than or equal to **500 kg**; and
- the **Dangerous Goods labels on the cylinders can be seen from outside** the road vehicle.

This exemption applies only to:

- UN 1001, ACETYLENE, DISSOLVED;
- UN 1002, AIR, COMPRESSED;
- UN 1006, ARGON, COMPRESSED;
- UN 1013, CARBON DIOXIDE;
- UN 1060, METHYLACETYLENE AND PROPADIENE MIXTURE, STABILIZED;
- UN 1066, NITROGEN, COMPRESSED;
- UN 1072, OXYGEN, COMPRESSED; or
- UN 1978, PROPANE.

More than 500 kg gross mass of dangerous goods and not more than five small means of containment/cylinders of the above gases cannot use this exemption.
OTHER EXEMPTIONS

Some welding and service trucks may carry cylinders of gases not included in Section 1.32.3 of the TDG Regulations (see Page 3 of this bulletin) but may meet the requirements for the following exemptions:

**500 kg Gross Mass Exemption (Section 1.16)**

This section provides a partial exemption from the documentation, dangerous goods safety marks and means of containment in standard requirements of the TDG Regulations. This exemption applies if the gross mass of the gases onboard is less than or equal to 500 Kg and are contained in small means of containment in compliance with the requirements of Part 5, Means of Containment, of the TDG Regulations for transporting gases. In the case of Class 2.1, Flammable Gases, the cylinder must not exceed a capacity of 46 L. You must, however, comply with the TDG Regulations for training. The driver must have a valid dangerous goods training certificate issued by his employer.

A simplified shipping document must accompany the shipment and must contain the primary class of the dangerous goods and the total number of means of containment on which a dangerous goods safety mark is required to be displayed.

For example:  

Class 2.2, number of means of containment, 6  

Class 2.1, number of means of containment, 3

Dangerous goods in quantities that require an Emergency Response Assistance Plan (ERAP), Class 2.1 Flammable Gases in a cylinder that has a capacity greater than 46 L and Class 2.3 Toxic Gases are not included in the exemption.

**SHIPPING DOCUMENT**

A shipping document is required for a dangerous goods shipment unless there is an exemption under the TDG Regulations. If documentation is needed the consignor must provide the person transporting the dangerous goods with a shipping document. The consignor must also ensure that all containers of dangerous goods have proper safety marks. When you pick up a shipment of dangerous goods, the consignor handles the responsibilities of classification, documentation and safety marks.

According to Section 1.4 of the Transportation of Dangerous Goods Regulations, the definition of the shipping document must be in paper format, electronic format is not acceptable.
# Shipping Document Requirements

The following is the minimum required information that must appear on a shipping document:

<table>
<thead>
<tr>
<th><strong>Shipping Document Information</strong></th>
<th><strong>When Required</strong></th>
<th><strong>Where in The Regulations</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Always</td>
<td>3.5(1)(b)</td>
</tr>
<tr>
<td>Name and address of consignor</td>
<td>Always</td>
<td>3.5(1)(a)</td>
</tr>
<tr>
<td>Description of goods in the following order</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. UN number</td>
<td>Always</td>
<td>3.5(1)(c)(i)</td>
</tr>
<tr>
<td>b. Shipping name</td>
<td>Always</td>
<td>3.5(1)(c)(ii)</td>
</tr>
<tr>
<td>c. The technical name of the most dangerous substance related to the primary classification</td>
<td>If Provision 16 of Schedule 2 applies</td>
<td>3.5(1)(c)(ii)(A)</td>
</tr>
<tr>
<td>d. The words “Not Odorized”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Primary classification</td>
<td>Always</td>
<td>3.5(1)(c)(iii)</td>
</tr>
<tr>
<td>f. Compatibility group</td>
<td>For Class 1</td>
<td>3.5(1)(c)(iv)</td>
</tr>
<tr>
<td>g. Subsidiary classifications</td>
<td>If Any</td>
<td>3.5(1)(c)(v)</td>
</tr>
<tr>
<td>h. Packing group</td>
<td>If Any</td>
<td>3.5(1)(c)(vi)</td>
</tr>
<tr>
<td>The words ‘Toxic by inhalation’ or toxic – inhalation hazard'</td>
<td>If Provision 23 of Schedule 2 applies</td>
<td>3.5(1)(c)(vii)</td>
</tr>
<tr>
<td>The quantity in the International System of Units (SI) for each shipping name ¹.²</td>
<td>Always</td>
<td>3.5(1)(d)</td>
</tr>
<tr>
<td>The net explosive quantity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The number of containers²</td>
<td></td>
<td>3.5(1)(e)</td>
</tr>
<tr>
<td>The words “24-Hour Number” followed by a telephone number where the consignor can easily be reached³</td>
<td>Always</td>
<td>3.5(1)(f)</td>
</tr>
<tr>
<td>Consignor’s Certification⁴</td>
<td>Always</td>
<td>3.6.1</td>
</tr>
<tr>
<td>Emergency Response Assistance Plan</td>
<td>If Required</td>
<td>3.6(1)</td>
</tr>
</tbody>
</table>
1. If the quantity of dangerous goods is less than 10% of the maximum fill limit of the container then the words “Residue – Last Contained” followed by the shipping name of the dangerous goods last contained in the container can be used to describe the quantity. This does not apply to Class 2 gases in small means of containment and Class 7 radioactive substances [Section 3.5(4)].

2. Multiple Deliveries: If the quantity of dangerous goods or the number of small means of containment changes during transport, the carrier must show the change on the shipping document or on a document attached to the shipping document. [Section 3.5(5)].

3. The telephone number of someone who is not the consignor, but who is competent to give technical information on the shipment, such as CANUTEC, may be used instead. To use CANUTEC’s phone number, the consignor must receive permission, in writing, from CANUTEC. A consignor who uses the telephone number of an organization or agency other than CANUTEC must ensure that the organization or agency has current, accurate information on the dangerous goods the consignor offers for transport and, if the organization or agency is located outside Canada, the telephone number must include the country code and, if required, the city code [Section 3.5 (2)].

4. Consignor’s Certification: “I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks affixed or displayed on them, and are in all respects in proper condition for transport according to the Transportation of Dangerous Goods Regulations.” (Section 3.6.1)

5. Additional requirements can be found in “Packaging and Transport of Nuclear Substances Regulation”
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 (less than or equal to 450 L capacity) display the appropriate label for that hazard class of dangerous good. A small container must display the dangerous goods labels for the primary and subsidiary hazard class(es), the shipping name and the UN number of the product [Sections 4.10 to 4.12]. The label is 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 a Small Container

In this case the product is

PROPANE, Class 2.1, UN1978

Class 2.1 safety label is red with a small white flame

Special Requirement for Oxidizing Gases

When dangerous goods in Class 2, Gases, are oxidizing gases, the oxidizing gas label [Section 4.10(1)(b)] must be displayed. This applies only to the following dangerous goods:

- UN1072, OXYGEN, COMPRESSED;
- UN1073, OXYGEN, REFRIGERATED LIQUID;
- UN3156, COMPRESSED GAS, OXIDIZING, N.O.S.; and
- UN3157, LIQUEFIED GAS, OXIDIZING, N.O.S.
EXAMPLES OF DG HAZARD LABELS FOR WELDING TRUCKS

The examples below show some of the labels that can be used for welding gases transported according to Section 1.32.3 of the TDG Regulations.

**Acetylene** alone, **Propane** alone, **Acetylene** and **Propane** together, require one Class 2.1 flammable (red) label.

![Red Background White Flame](image1.png)

**Acetylene** and **Oxygen** together, requires one Class 2.1 flammable (red) label and one oxidizing gas (yellow) label.

![White Flame](image2.png)

![Red Background](image3.png)

![Yellow Background](image4.png)
**Oxygen** alone requires one oxidizing gas label.

**Compressed air** alone requires one class 2.2 non-flammable, non-toxic gas label.

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**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; this could create a rocket out of an ordinary cylinder. The TDG Regulations [Section 5.4] say that the cylinders/containers shall be loaded safely and securely stowed during transport. There is no direction as to how it should be secured. In addition, CSA Standard B340 [referred to in Section 5.10(1)(a)(i)] requires that any gas with a liquid phase (for example, propane which is liquefied, or acetylene, which is dissolved in acetone), must be transported upright so that the safety valves are in contact with the vapour space and not the liquid.
TRAINING

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

The employer issues a training certificate when he/she has reasonable grounds to believe that an employee possesses adequate training. Self-employed people can issue training certificates for themselves. The employer must keep a record of the training that the employee has received and a copy of his/her training certificate [Section 6.6]. The training certificate must be immediately presented to an inspector who requests it [Section 6.8]. The training certificate may be in paper or electronic format.

RELEASES OF DANGEROUS GOODS

In the event of a release or anticipated release of Class 2 gases (herein referred to as an event), the person in possession of the dangerous goods at the time of the event must make an Emergency Report to the local authorities as soon as possible. An emergency report is required when any quantity of dangerous goods that was released or for any potential release. For more information on reporting requirements, request Alberta EDGE’s information bulletin entitled Reporting an Accidental Release of Dangerous Goods.

A local authority is any organization which may be responsible for emergency response at the location of the release or anticipated release. In Alberta, these include:

- the local police or RCMP, and
- Alberta EDGE (Environmental and Dangerous Goods Emergencies)

**ENVIRONMENTAL AND DANGEROUS GOODS EMERGENCIES**

**DANGEROUS GOODS & RAIL SAFETY**

24 hour toll free service, call

1-800-272-9600

Edmonton area: 780-422-9600

Alberta Government
The person making the Emergency Report must also make a Release or Anticipated Release Report as per Section 8.4 to CANUTEC (1-888-226-8832 or 613-996-6666) if:

- a fatality occurred;
- there were any injuries caused by exposure to the dangerous goods which required medical treatment by a health care provider;
- an evacuation occurred or people sheltered in place;
- a loading or unloading facility, road, main rail line or main waterway was closed;
- the container became damaged enough to compromise its integrity; or
- the centre sill or stub sill of a tank car was broken or there is a crack in the metal equal to or greater than 15 cm (6 in.)

If a report is required to CANUTEC, the person must also report the incident to the consignor of the dangerous goods.

The information that must be included in the Emergency or Release or Anticipated Release Report is:

- the name and contact information of the person making the report;
- the date, time and location of the event;
- the mode of transport used (including a description of the container);
- the shipping name or UN number of the dangerous goods;
- the quantity of dangerous goods initially in the container;
- the quantity of dangerous goods released (if applicable);
- the type of incident leading to the event (for example: collision, roll-over, derailment, overfill, fire, explosion or load-shift);
- the name and geographic location of any road, main railway or main waterway that was closed (if applicable);
- the number of people evacuated or sheltered in place (if applicable); and
- the number of fatalities or injures (if applicable).

A report can also include other information not required by the regulations (for example, any cleanup arrangements, or involvement of other emergency response agencies like the police, fire department, Alberta Environment and Parks or the Alberta Energy Regulator).

After submitting a Release or Anticipated Release report to CANUTEC, the person or employer of the person who made the report must submit a 30-day follow-up report to the Dangerous Goods Directorate of Transport Canada [Section 8.8]. The 30-Day Follow-up Report must include the following information:

- name and contact information of the person submitting the report;
- date, time and location of the event;
- names and contact information of the consignor, carrier and consignee;
- the mode of transport;
- classification of the dangerous goods;
- quantity of dangerous goods in the container before the event occurred;
• the quantity of dangerous goods released (if applicable)
• a description of the container involved and a description of the failure or damage including how the event occurred;
• information about the conditions leading to the event;
• information on any fire or explosion (if applicable);
• the name and location of any facility that was closed, and the duration of the closure;
• the name and location of any road, main railway line or main waterway that was closed, and the duration of the closure
• number of deaths and injuries (if applicable);
• an estimate of the number of people evacuated, if any; and
• the ERAP reference number (if applicable);
• the date the initial verbal report was made; and
• an estimate of the financial loss as a result of the release/anticipated release and any associated, emergency response or remediation.

A 30-day report must be kept for two years after the day which it was made. They must make the report available to an inspector within 15 days after the day on which the person receives a written request from the inspector.

**Attachment:** Sample Dangerous Goods Shipping Document for Road Transport
Dangerous Goods Shipping Document for Road Transport

<table>
<thead>
<tr>
<th>CONSIGNOR</th>
<th>DESTINATION (City-Town)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name:</td>
<td>Name:</td>
</tr>
<tr>
<td>Address:</td>
<td>Address:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of Carrier</th>
<th>Prepaid</th>
<th>Collect</th>
<th>Transport Unit Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Point of Origin</th>
<th>Shipping Date</th>
<th>Shipper’s No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

### REGULATED DANGEROUS GOODS

<table>
<thead>
<tr>
<th>UN Number</th>
<th>Shipping Name</th>
<th>Primary Class</th>
<th>Subsidiary Class</th>
<th>Packing Group</th>
<th>Quantity</th>
<th>Packages Requiring Labels</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

24-Hour Number: ___________________

ERAP Reference ___________________ and Telephone Number ___________________

**Consignor's Certification**

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Name of Consignor: ___________________

**Special Instructions**

### NON-REGULATED GOODS

<table>
<thead>
<tr>
<th>Packages</th>
<th>Description of Articles</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Received in apparent good order

Cconsignee’s 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 practice.