Transportation of Dangerous Goods (TDG) – Classification Fact Sheet

WHAT IS A CLASSIFICATION?

Classification is defined in Part 1 of the TDG Regulations as: “classification means, for dangerous goods, as applicable, the shipping name, the primary class, the compatibility group, the subsidiary class, the UN number, the packing group, and the infectious substance category.”

Note: This document is a general overview of the TDG classification requirements. For detailed information, please see Part 2 of TDG Regulations. If the dangerous good is an explosive or radioactive material, it must be classified as required by other regulatory authorities.

Note: The information below is provided as guidance only. Always check the TDG Act and Regulations to ensure compliance.

Please also see the following documents in this series:

- TDG – Overview
- TDG – Training
- TDG – Nine Classes
- TDG – “Special Case” and “Special Provision” Exemptions

Who is responsible for classifying a dangerous good?

The consignor is responsible for determining the classification of dangerous goods. However, if the dangerous goods are explosive, the consignor must use the classification determined by Regulators. If the dangerous goods are radioactive, the consignor must use the classification determined by Regulators. If the dangerous goods are biohazardous substances (Class 6.2), the consignor may use the classification determined by Regulators.

Who can classify my dangerous good?

Classification can be done by a consultant or a competent employee who has been trained in TDG classification. Classification is normally done by (or in consultation with):

- a person capable of understanding the nature of the dangerous good (e.g., manufacturer’s professional employees such as a chemical engineer, chemist,

scientist, etc.);
- a person who formulates, blends or otherwise prepares mixtures or solutions of goods (e.g., chemist); or
- in the case of infectious substances, a doctor, scientist, veterinarian, epidemiologist, genetic engineer, pathologist, nurse, coroner, or laboratory technologist or technician.

How does the consignor determine the classification for a dangerous good?

If you are the manufacturer of the product, the product must be tested according to Part 2 of TDG Regulations. If the product has already been classified, the consignor may use the TDG classification of the manufacturer or a previous consignor. Although a consignor may also use the classification of the manufacturer or a previous consignor, the consignor is still responsible for making sure the classification is correct, and for making a proof of classification available to the Minister.

What is proof of classification?

A proof of classification is a document that the consignor must provide, upon request, to the federal Minister of Transport. This document may be:

- a test report,
- a lab report, or
- a document that explains how the dangerous goods were classified.

The proof of classification must include the following information:

- the date on which the dangerous goods were classified,
- if applicable, the technical name of the dangerous goods,
- the classification of the dangerous goods, and
- if applicable, the classification method used under Part 2 of the TDG Regulations or under Chapter 2 of the UN Recommendations.

Where can I get my product analyzed for classification?

The TDG Directorate keeps a list of laboratories that provide dangerous goods analysis and classification. Note that the TDG Directorate has not examined or certified any of the laboratories. Being on this list does not mean Transport Canada or the TDG Directorate endorses or approves their services. However, it would be prudent to hire a laboratory with appropriate accreditations.

What information is needed for classification?

Based on the definition for classification, a competent person must determine the following before a classification can be assigned to a dangerous good:

- Shipping name
- Hazard class (the primary class and possible subsidiary class/es)
- Identification number (the UN number)
- Packing group, compatibility group, or the infectious substance category for biohazardous substances
- and, if applicable,
    - the compatibility group letter;
    - the subsidiary class(es)

Where or how do I find the above information?

Use all three schedules as listed in the TDG Regulations.

1. Determine the shipping name: Check if the product name is listed in Schedule 1 or Schedule 3. If the product's name is listed only in Schedule 3, use the UN number from Column 3 in this schedule to look up the product in Schedule 1. Use the descriptive text written in lower case letters following a shipping name (see the example for UN1337 below) to determine the shipping name that most precisely describes the dangerous goods.
2. Determine the other classification elements (i.e., hazard class, packing group, etc.)

If the product's name is listed in Schedule 1 or you located it by using the listed UN Number in Schedule 3, use the shipping name and its corresponding data (UN number, class, packing group/category) from that row. The data below is an example showing UN1203, GASOLINE.

Col.1 UN Number	Col.2 Shipping Name and Description	Col.3 Class	Col.4 Packing Group / Category	Col.5 Special Provisions	Col.6a Explosive Limit and Limited Quantity Index	Col.6b Excepted Quantities	Col.7 ERAP Index	Col.8 Passenger Carrying Ship Index	Col.9 Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index
UN1203	GASOLINE; MOTOR SPIRIT; or PETROL	3	II	17 88 91 98 150	30 L	E2		100 L	5 L
UN1337	NITROSTARCH, WETTED with not less than 20% water, by mass	4.1	I	38, 62	0	E0	75	Forbidden	1 kg

For example, based on the above information from Schedule 1 we have the following information for UN1203:

- SHIPPING NAME (in Column 2 of Schedule 1): GASOLINE; MOTOR SPIRIT; or PETROL (when selecting the shipping name you can use one of the three listed names such as "gasoline")
- Hazard Class (in Column 3 of Schedule 1): 3
- Identification Number (in Column 1 of Schedule 1): UN1203
- Packing Group (in Column 4 of Schedule 1): II
- Schedules 1 and 3 will also indicate if any shipping routes are forbidden. Examples of such products are:
- UN1096 SIGNALS, SMOKE which is not allowed to be transported on a ship
- CHLORINE DIOXIDE is an example of a product that is forbidden by all routes of transportation as indicated in Schedule 3 with an entry of Forbidden in Column 2 – Hazard Class. Note that these types of products do not have a UN Number.

3. If the product is not listed by specific name in Schedule 1 or 3, check if it meets any of the criteria for the hazard classes in Part 2 – Classification. Laboratory tests are required for pure substances, solutions, and mixtures. When test results and the hazard class criteria are compared, there are three possible conclusions:

a) The laboratory test results show the product does not meet any of the criteria for the hazard classes. In this case, the product is not TDG

regulated and the product does not need to comply with the TDG Regulations.

b) The laboratory test results show the product falls into one class and one packing group. See Section 2.4. Consult Schedule 3 for the shipping name that most precisely describes the dangerous goods. Use the shipping name and its corresponding data (UN number, class, packing group/category) in Schedule 1 to assign the classification to the dangerous good. For example: UN1993, FLAMMABLE LIQUID, N.O.S. Class 3 Packing Group III.

c) The laboratory test results show the product falls into more than one class or packing group. See Section 2.5. Determine the primary class, subsidiary class(es) and packing group by using section 2.8 – Precedence of Classes in Part 2, Classification. Consult Schedule 3 for the shipping name that most precisely describes the dangerous goods. Use the shipping name and its corresponding data (UN number, class, packing group/category) in Schedule 1 to assign the classification to the dangerous good. For example: UN3086, TOXIC SOLID, OXIDIZING, N.O.S. Class 6.1 (5.1) Packing Group I.

d) Note: when there are several options for a shipping name, the shipping name should be assigned in a hierarchical order (described further below).

How do I determine the shipping name when there are several possible shipping names?

Shipping name is the name of the dangerous good as it appears in column 2 of Schedule 1. There may be occasions when several different shipping names can be used. Generally, the shipping name should be selected in the following hierarchical order:

1. Specific chemical name (e.g., acetone, sulfuric acid, etc.)
2. Chemical family name (e.g., alcohol, ketone, etc.)
3. Product usage (e.g., pesticide, adhesive, fuel, etc.)
4. Generic risk (e.g., flammable, toxic, etc.)

When the shipping name is not a specific name such as a family name, then these shipping names are followed by N.O.S. N.O.S. means Not Otherwise Specified. It is used for dangerous goods that do not have a specific entry by name in Schedule 1. For example, both gasoline and diesel are listed by their name in Schedule 1. However, if these two substances were mixed, the resulting mixture of these two products would still be regulated as a dangerous good. However, the mixture could no longer be described as “Gasoline” or “Diesel” since it would no longer have a specific name in Schedule 1. As such, the mixture would be assigned the shipping name “FLAMMABLE LIQUID, N.O.S.”.

Product mixture that consists of multiple dangerous goods: If the shipping name is not a specific name, then the technical name of the most dangerous substance needs to be provided in brackets as required in Special Provision 16 in Schedule 2. Special provisions are specified in Column 5 of Schedule 1. For example, the shipping name for a mixture that consists of 80% gasoline and 20% diesel will be: FLAMMABLE LIQUID, N.O.S. (gasoline)

Solutions or Mixtures: When a solution or a mixture consists of one dangerous good mixed with non-dangerous goods (e.g., water) and the properties for the solution are the same as for the pure substance, the shipping name is followed by the word “solution” or “mixture” as applicable. The concentration of the solution or mixture may be included. Example: ETHANOL SOLUTION with more than 24% ethanol, by volume (UN1170).

Definition for a mixture – a product that contains two or more ingredients.

Definition for a solution – When the ingredients in a mixture are completely dissolved. For example: the mixture is liquid and homogeneous and the ingredients will not separate (e.g., no visible solids or two different phases such as you would observe when oil and water are mixed).

Wastes: If the product is a waste, then the shipping name is either preceded or followed by the word “waste”. Examples: COTTON WASTE, OILY (UN1364), or REGULATED MEDICAL WASTE, N.O.S. (UN3291)

How do I determine the hazard class?

If the product’s name (e.g., chemical name) is listed in Schedule 1 or 3, the primary hazard class is listed in Column 3 of Schedule 1 as well as in Column 2 of Schedule 3 for that shipping name.

However, if the product’s name is not listed in Schedule 1 or 3, then the product must be tested at a laboratory. Once the material has been tested at a laboratory, the test results are compared to the classification criteria in Part 2. Your product may meet the criteria for one or more of the of the following nine TDG hazard classes:

- Class 1 Explosives
- Class 2 Gases
- Class 3 Flammable Liquids
- Class 4 Substances/Products include: Flammable Solids; Substances Liable to Spontaneous Combustion; Substances That on Contact with Water Emit Flammable Gases (Water-reactive Substances)
- Class 5 Oxidizing Substances, including Organic Peroxides
- Class 6 Toxic and Infectious Substances
- Class 7 Radioactive Materials
- Class 8 Corrosive Substances
- Class 9 Miscellaneous Products, Substances or Organisms

If your product meets the criteria for several hazard classes, the primary class must be determined. The primary class of dangerous goods is the hazard class that poses the highest hazard and takes precedence over any other class posing a lower hazard. It is determined according to the specification in section 2.8 and the “Precedence of Classes Table” which is provided in Part 2.

The class posing a lower hazard will be identified as a subsidiary class. More than one subsidiary class is possible. Subsidiary classes are provided in brackets and are only listed in Column 3 of Schedule 1 (not Schedule 3). For example, “UN3518 ADSORBED GAS, TOXIC, OXIDIZING, CORROSIVE, N.O.S.” has three hazard classes assigned to it in Column 3 of Schedule 1. These are the primary class 2.3 and two subsidiary hazard classes 5.1 and 8.

SCHEDULE 1

Col.1 UN Number	Col.2 Shipping Name and Description	Col.3 Class	Col.4 Packing Group / Category	Col.5 Special Provisions	Col.6a Explosive Limit and Limited Quantity Index	Col.6b Excepted Quantities	Col.7 ERAP Index	Col.8 Passenger Carrying Ship Index	Col.9 Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index

UN3518	ADSORBED GAS, TOXIC, OXIDIZING, CORROSIVE, N.O.S	2.3 (5.1) (8)		16 23 38	0	E0	25	Forbidden	Forbidden

How do I determine the identification number / UN Number?

Once you have determined the shipping name for the dangerous good then the UN number is listed in Column 1 of Schedule 1 (see above). If the product's name (e.g., chemical name) is listed in Schedule 1 or 3 then the primary hazard class is in Column 3 of Schedule 1 and in Column 2 of Schedule 3 for that shipping name.

However, if the product's name is not listed in Schedule 1 or 3, then the product must be tested at a laboratory.

Can I use a UN number that is not included in the Canadian TDG Regulations?

Yes. Subsection 2.2(4) and Parts 9 and 10 of the TDG Regulations authorize you to use the classification from the:

- International Civil Aviation Organization (ICAO) Technical Instructions for the transport of dangerous goods by air,
- International Maritime Dangerous Goods (IMDG) Code for the transport of dangerous goods by ship, or
- Code of Federal Regulations (49 CFR) (U.S. Regulations) for the transportation of dangerous goods by road. Note: The NA numbers in the 49 CFR are not permitted in Canada.

How do I determine the packing group?

Many substances in Schedule 1 are assigned one or more packing groups. See Column 4 in Schedule 1. The packing group for a dangerous good is determined by using the laboratory test data and comparing it to the criteria in Part 2. For example, if you have a product for which you determined that the shipping name will be "FLAMMABLE LIQUID, N.O.S. (gasoline)" and the laboratory provided the following test result:

- Initial boiling point is greater than 35°C at an absolute pressure of 101.3 kPa
- Flash point less than 23°C

Using this data and comparing it to that in Section 2.19, it is determined that this dangerous good needs to be assigned to Packing Group II.

How do I determine the compatibility group?

The compatibility group is only assigned for explosives. Consequently, the compatibility group will be already assigned by the Regulators. Information on compatibility groups is provided in Appendix 2 of Part 2 in the TDG Regulations.

How do I assign Categories A and B for the infectious substances?

Information on how to do the assignment is provided in Section 2.36 of Part 2. Meanwhile the actual assigned category is obtained from Appendix 3 in Part 2.

How do I report the classification or shipping description on a shipping document?

The classification or shipping description is reported in the following order as per Part 3.5:

(i) the UN number,

(ii) the shipping name and, immediately after the shipping name unless it is already part of it,

(a) for dangerous goods that are subject to special provision 16, the technical name, in parentheses, of at least one of the most dangerous substances that predominantly contributes to the hazard or hazards posed by the dangerous goods, and

(b) for a liquefied petroleum gas that has not been odorized, the words “Not Odourized” or “Not Odorized” or “Sans odorisant”,

(iii) the primary class, which may be shown as a number only or under the heading “Class” or “Classe” or following the word “Class” or “Classe”,

(iv) for dangerous goods with a primary class of Class 1, Explosives, the compatibility group letter following the primary class,

(v) the subsidiary class or classes, in parentheses, which may be shown as a number only or under the heading “subsidiary class” or “classe subsidiaire” or following the words “subsidiary class” or “classe subsidiaire”, except that, for transport by aircraft or by ship, the subsidiary class or classes may be shown after the information required by this paragraph,

(vi) the packing group roman numeral, which may be shown under the heading “PG” or “GE” or following the letters “PG” or “GE” or following the words “Packing Group” or “Groupe d’emballage”, and

(vii) for dangerous goods that are subject to special provision 23, the words “toxic by inhalation” or “toxic – inhalation hazard” or “toxique par inhalation” or “toxicité par inhalation”;

Examples of classification descriptions of dangerous goods are:

UN1203, GASOLINE, 3, II

UN1203, GASOLINE, Class 3, PG II

UN1214, ISOBUTYLAMINE, Class 3, Subsidiary Class (8), II

UN1214, ISOBUTYLAMINE, Class 3(8), Packing Group II

UN3381, TOXIC BY INHALATION LIQUID, N.O.S., Class 6.1 PG I

UN 1075 LIQUEFIED PETROLEUM GASES (propane); Not odourized, Class 2.1

Are the classifications for other modes or international shipments the same?

As per subsection 11.1(1) of the TDG Regulations, the IMDG Code must be consulted for international transport by ship.

For transport from the United States into Canada by road vehicle or railway vehicle, the shipping name used must be one that is recognized in Schedule 1 of the TDG Regulations or in the UN Recommendations.

The ICAO Technical Instructions, as well as Part 12, Air, of the TDG Regulations must be consulted for all shipments by air.