Shippers of Dangerous Goods by Road

TRAINING MANUAL

DANGEROUS GOODS MANAGEMENT LIMITED

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Introduction to Shipping Dangerous Goods by Road

Course Objective

The objective of this course is to provide participants with a general understanding of the requirements for transporting dangerous goods by road transport. On completion of this course students should be able to display knowledge of the following dangerous goods transportation principles:

- Definition of dangerous goods
- Applicable legislation
- Responsibilities
- Classification and identification of dangerous goods
- Marking, labelling and packaging requirements
- Applicable documentation
- Handling procedures

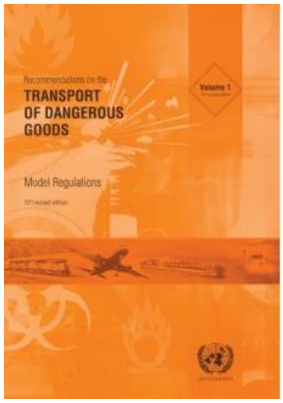
Definition

Dangerous Goods are articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in the road transport operating manual NZS 5433 or classified as dangerous under the Land Transport Rule: Dangerous Goods.

Legislation

Basis of the Legislation

The United Nations develops recommendations for the safe transport of dangerous goods. The **UN Sub-Committee of Experts** publishes the ***Recommendations on the Transport of Dangerous Goods – Model Regulations***. This provides the technical information that forms the basis of international and domestic regulations across all modes of transport.



The International Atomic Energy Agency (IAEA) develops recommended procedures for the transport of radioactive material. These are published in the ***Regulations for the Safe Transport of Radioactive Material (IAEA TS-R-1)*** and are incorporated into the UN Recommendations.

The New Zealand Transport Agency is responsible for developing and maintaining legislation that covers the transport of dangerous goods by land. This is achieved through the ***Land Transport Rule: Dangerous Goods 2005*** which is enforced by the New Zealand Police Commercial Vehicle Safety Team. This manual summarises the Rule as it applies to shipments of dangerous goods that are being transported for direct hire or reward.

Standards New Zealand develops industry standards based on the Land Transport Rule which are contained in their manual NZS 5433. The current version was issued in 2012.

This manual is a training guide only, and the current NZS 5433, and the relevant NZ legislation, should always be referred to when transporting Dangerous Goods.

Compliance Regime

United Nations Recommendations on the Transport of Dangerous Goods			
Mode	Air	Sea	**Land**
International Legislation	International Civil Aviation Organisation (ICAO)	International Maritime Organisation	**N/A**
Publication	ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air	International Maritime Dangerous Goods Code	**N/A**
Domestic Legislation	NZ Civil Aviation Authority Rule Part 92	Maritime Transport Act 1994 - Part 24A	**Land Transport Rule: Dangerous Goods 2005**
Industry Regulator	International Air Transport Association	Maritime New Zealand	**New Zealand Transport Agency**
Code of Practice	IATA Dangerous Goods Regulations	N/A	**Standards New Zealand NZS 5433: 2012**
Enforcement Agencies	New Zealand Civil Aviation Authority	Maritime New Zealand	**NZ Police Commercial Vehicle Safety Team**

Responsibilities

Shipper
The shipper is responsible for correctly classifying, identifying, packaging (including marking and labelling) and providing documentation for dangerous goods consignments.

Loader
If present at the time of loading, the driver takes responsibility for the correct loading of their vehicle, including checking packages for damage and segregation of dangerous goods. In situations where the driver is not present others will have to assume this responsibility.

Driver
The driver's responsibilities include checking that consignments are in good condition and ensuring that the correct documentation is accompanying the consignment.

Cargo Agent / Freight Forwarder
Is responsible for presenting the shipment ready for carriage to the operator (driver). This includes checking documentation and package marks and labels.

Penalties

There are a number of penalties for offences relating to the "Land Transport Rule: Dangerous Goods 2005". These offences are broken down into sections relating to the function responsibility at any phase of transportation of dangerous goods by road. Here we will focus on the penalties for the "Shipper or Consignor"

Provision	Brief Description	Maximum Penalty on Summary Conviction For an **Individual**	Maximum Penalty on Summary Conviction for **Body Corporate**	Infringement Fee for **Individual**	Infringement Fee for **Body Corporate**
Section 10.2 (a)	*Consignor of dangerous goods for transport must ensure that dangerous goods are properly packaged.*	*$ 5,000*	*$ 25,000*	*$ 1,000*	*$ 5,000*
Section 10.2(b)(i)	*Consignor of dangerous goods for transport must display labels and marks to identify the goods as dangerous goods.*	*10,000*	*50,000*	*2,000*	*10,000*
Section 10.2(b)(ii)	*Consignor of dangerous goods for transport must ensure that packages of dangerous goods display the correct labels & marks.*	*5,000*	*25,000*	*1,000*	*5,000*
Section 10.2(c) (i)	*Consignor of dangerous goods for transport must ensure that the required documentation is provided.*	*10,000*	*50,000*	*2,000*	*10,000*
Section 10.2(c)(ii)	*Consignor of dangerous goods for transport must ensure that required dangerous goods documentation contains the correct information*	*5,000*	*25,000*	*1,000*	*5,000*
Section 10.2(d)	*Consignor of dangerous goods must ensure that required emergency response information is supplied.*	*5,000*	*25,000*	*1,000*	*5,000*
Section 10.2(e)	*Consignor of dangerous goods for transport must ensure dangerous goods documentation is passed to the next person responsible for the transport or handling of the dangerous goods.*	*7,500*	*37,500*	*1,500*	*7,500*

Classification of Dangerous Goods

Dangerous Goods are divided into 9 classes according to the hazard they present. Some of these classes are further separated into Divisions. Some dangerous goods might have more than one dangerous quality and therefore fit into more than one Class. In this case the more-significant risk is referred to as the Primary Risk and the other is the Subsidiary Risk.

The shipper must correctly classify the goods and, for some of the Classes, the shipper must also indicate the degree of danger the goods represent. e.g. how flammable or how toxic the substance is. This determines the standard of packaging to be used and the amount of the substance permitted in each package.

The degree of danger is indicated through Packing Groups:

Packing Group I	**High Danger**
Packing Group II	**Medium Danger**
Packing Group III	**Low Danger**

The packing group system is also a key element to the classification process. If a substance does not meet the packing group criteria for any of the classes or divisions it is not considered to be dangerous for transport.

Not all of the classes or divisions use the packing group system; explosives, gases, infectious substances and radioactive material have their own specialised types of packaging.

The nine different Classes and their sub-divisions are:

Class 1 EXPLOSIVES

Explosive substances and articles are classified by the competent authority in the state (country) of origin, and are assigned to one of six different divisions depending on the type of hazard they pose. They are further assigned one of 13 Compatibility Groups, to identify explosives which are deemed to be compatible for transportation. The Compatibility Group is indicated by a letter suffix e.g. Division 1.4, Compatibility Group S, (which is the most common for transportation as they pose a low level of danger) and includes items such as small arms ammunition, some fireworks, and toy caps.

Class 2 GASES

A gas is a substance that has a vapour pressure greater than 300 kPa or is completely gaseous at a standard pressure of 101.3 kPa. Class 2 is divided into three Divisions according to the risk:

Division 2.1	Flammable Gas	e.g. LPG Cylinders, Aerosol Propellants
Division 2.2	Non-Flammable Gas	Dive Tanks, Liquid Nitrogen
Division 2.3	Toxic Gas	Chlorine, Methyl Bromide

Class 3 FLAMMABLE LIQUIDS

Defined as "any liquid with a flash point less than or equal to (≤) 60° C". Flammable liquids are assigned a Packing Group based on their flash point and initial boiling point, and includes: Petrol, Paint (Enamel), Alcohol, Acetone and Adhesives.

Assignment of Packing Groups for Flammable Liquids		
	Flash Point °C	Boiling Point °C
Packing Group I		≤ 35
Packing Group II	< 23	> 35
Packing Group III	≥ 23 to ≤ 60	

Class 4 FLAMMABLE SOLIDS

These are solid substances that are readily combustible, spontaneously combustible, or that emit flammable gases when in contact with water ("Dangerous when wet")

Class 4 is divided into:

Division 4.1	Flammable Solid	e.g. Matches, Firelighters, Magnesium
Division 4.2	Spontaneously Combustible	Phosphorous
Division 4.3	Dangerous When Wet	Potassium, Lithium

Class 5 OXIDIZING SUBSTANCES

Divided into:

Division 5.1: Oxidisers can cause or contribute to the combustion of other materials because they produce oxygen (e.g. swimming pool chlorine, oxygen generators); and

Division 5.2: Organic Peroxides, which are chemically unstable and may be liable to explosive decomposition, or rapid, intense burning. e.g. Methyl ethyl ketone peroxide.

Class 6 TOXIC & INFECTIOUS SUBSTANCES

Division 6.1 Toxic Substances:

Substances which are liable to cause death or serious injury when swallowed, inhaled or come into contact with skin. They are assigned Packing Groups based on their oral, dermal (absorbed through skin) or inhalation toxicity. Examples are: Arsenic, Cyanide & Pesticides.

Assignment of Packing Groups for Toxic Substances			
	Oral Toxicity $LD_{50\ (mg/kg)}$	Dermal Toxicity $LD_{50\ (mg/kg)}$	Inhalation Toxicity $LC_{50\ (mg/L)}$
Packing Group I	≤ 5.0	≤ 50	≤ 0.2
Packing Group II	> 5.0 but ≤ 50	> 50 but ≤ 200	> 0.2 but ≤ 2.0
Packing Group III	> 50 but ≤ 300	> 200 but ≤ 1000	> 2.0 but ≤ 4.0

Division 6.2 Infectious Substances:

Substances from humans or animals which are known (or can reasonably be expected to) contain pathogens, including any associated medical or clinical waste. A number of exceptions apply, including routine diagnostic specimens and blood for transfusion.

Class 7 RADIOACTIVE MATERIAL

Used for medical or industrial purposes. The degree of danger is categorised as follows:

White I Low radioactive levels

Yellow II Medium radioactive levels

Yellow III High radioactive levels

Class 8 CORROSIVES

These are substances which, by chemical action, will cause severe damage to skin, or will destroy other goods such as metal. They are assigned a Packing Group based on the destruction they cause in a certain time period. Examples are: Sulphuric acid (in car batteries), Mercury, industrial cleaning products (Alkali /Bases), and Sodium Hydroxide (Caustic soda).

Assignment of Packing Groups for Corrosives			
	Exposure Time	Observation Time	Effect
Packing Group I	≤ 3 min	≤ 60 min	Full thickness destruction of intact skin
Packing Group II	> 3 min ≤ 60 min	≤ 14 days	Full thickness destruction of intact skin
Packing Group III	> 60 min ≤ 4 hours	≤ 14 days	Full thickness destruction of intact skin
Packing Group III	-	-	*Corrosion rate on steel / aluminium > 6.25 mm a year*

Class 9 MISCELLANEOUS

These are articles and substances that are dangerous to transport but are not covered by any other classes.

Examples are: Dry Ice, Diesel and other Environmentally Hazardous Substances, Lithium Batteries, Pesticides and Vehicles.

Lithium Batteries

Batteries and cells containing lithium metal or lithium ion are classified as Class 9. Different shipping rules apply depending on if the batteries are being shipped on their own, fitted into the device they will provide power for ("contained in equipment"), or packed in the same outer case as the device they power ("packed with equipment"). Manufacturers of lithium cells and batteries must ensure the items meet the requirements of the UN Manual of Tests and Criteria, Part III, Subsection 38.3.

EXERCISE 1:	Class or Division Name
	
	
	
	Class or Division Name and Number
Substances which, in contact with water, emit flammable gases	
A gas which is toxic to humans	
Substances that are dangerous for transport but not covered by other classes	
A substance that can contribute to fire by producing oxygen	
A liquid that will cause damage to living tissue or metal	
A liquid with a flash point 60^{o} C or lower	
A liquid with a flash point higher than 60^{o} C	

EXERCISE 2:		
	Class or Division Number	Packing Group
Full thickness destruction of skin tissue within an observation time of 2 days and an exposure time of 12 minutes		
Solid having a LD_{50} value (oral toxicity) of 40 mg/kg		
Liquid with a closed cup flash point of 25^{o} C and a boiling point of 36^{o} C		

Identification

The UN Committee of Experts has established a system to individually identify articles and substances that have been classified as dangerous for transport. This is in the form of a list that indicates a Proper Shipping Names ("PSN") and a corresponding 4-digit UN number for all dangerous goods.

Proper Shipping Name

There are 3500+ Proper Shipping Names that have been created by the Committee of Experts. These are found in the Dangerous Goods List. The shipper must choose the most appropriate entry. NZS5433 shows proper shipping names in capital letters; some of these have additional descriptive information in lower case which does not form part of the PSN. If a specific name is not available there are a number of generic hazard names that can be used. For example:

UN1223 KEROSENE

UN1090 ACETONE

UN1993 FLAMMABLE LIQUID N.O.S. ("Not Otherwise Specified") followed by the technical name of the product e.g. FLAMMABLE LIQUID N.O.S. 2-ethylfuran.

UN Number

A number is allocated to each proper shipping name to simplify identification, particularly in cases where the name is difficult to pronounce. For example:

Cyclotetramethylenetetranitramine, desensitized or UN 0484.

Safety Data Sheet (SDS)

This document is issued by manufacturers and provides an array of information including dangerous goods classification (if applicable) and the proper shipping name for transportation purposes. Other information that must be on the SDS includes:

1. Company Identification/ Statement of hazardous nature
2. Hazard Identification
3. Composition/information on ingredients
4. First aid measures
5. Fire fighting measures
6. Accidental release measures
7. Handling and storage requirements
8. Exposure controls / personal protection
9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport information
15. Regulatory information
16. Other information

The Dangerous Goods List

The following pages show sections of the dangerous goods list that appears in Volume 2 of New Zealand Standard NZS 5433.

UN no.	Name and description	Class or division	Sub-sidiary risk	UN packing group	Special provisions	Limited quantities and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers		Hazchem code	HSNO approval no.	Properties and observations
						Limited quantities	Excepted quantities	Packing instruction	Special packing provisions	Instructions	Special provisions			
[1]	[2]	[3]	[4]	[5]	[6]	[7a]	[7b]	[8]	[9]	[10]	[11]	[12]	[13]	[14]
1261	NITROMETHANE	3		II	26	1 L	E2	P001				2Y	001206	Colourless. Immiscible with water. Harmful if swallowed, by vapour inhalation or skin contact. Moderate fire and explosion hazard if package is ruptured. Firefighting: wear self-contained breathing apparatus and complete protective clothing. SHALL NOT BE TRANSPORTED IN BULK.
1262	OCTANES	3		II		1 L	E2	P001 IBC02		T4	TP1	3YE		
1263	PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning or reducing compound)	3		I	163	500 ml	E3	P001		T11	TP1 TP8 TP27	3YE		PAINT, (ZINC RICH KIT) (two pack) A two component paint system. One component is a flammable liquid which may be miscible with water. The second component is a non-pyrophoric grade of zinc dust. Inner packagings of capacity not exceeding 5 L and maximum net mass not exceeding 10 kg, containing the two components in correct mixing proportions, may be packed together in the one outer packaging and marked as a package of paint of Class 3. Inner packagings shall be selected and marked individually as required by this Standard for each component. Where the inner packagings exceed the capacities specified above, they shall not be packed together in the same outer packaging.
		3		II	163	5 L	E2	P001 IBC02	PP1	T4	TP1 TP8 TP28	3YE		
		3		III	163 223	5 L	E1	P001 IBC03 LP01	PP1	T2	TP1 TP29	3Y		
1264	PARALDEHYDE	3		III		5 L	E1	P001 IBC03 LP01		T2	TP1	2Y	001209	Colourless liquid, with an agreeable odour. Miscible with water. A polymer (trimer) of acetaldehyde.
1265	PENTANES, liquid	3		I		0	E3	P001		T11	TP2	3YE		Low boiling point colourless liquid. Vapour heavier than air. Immiscible with water.
		3		II		1 L	E2	P001 IBC02	B8	T4	TP1	3Y		Flash point depends on nature of solvent. Immiscible or miscible with water, depending upon nature of solvent.

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Table 1 – Numerical list of dangerous goods (continued)

UN no.	Name and description	Class or division	Sub-sidiary risk	UN packing group	Special provisions	Limited quantities and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers		Hazchem code	HSNO approval no.	Properties and observations
						Limited quantities	Excepted quantities	Packing instruction	Special packing provisions	Instructions	Special provisions			
[1]	[2]	[3]	[4]	[5]	[6]	[7a]	[7b]	[8]	[9]	[10]	[11]	[12]	[13]	[14]
1585	COPPER ACETOARSENITE	6.1	(P)	II		500 g	E4	P002 IBC08	B2, B4	T3	TP33	2Z		Green powder. Toxic if swallowed or by dust inhalation.
1586	COPPER ARSENITE	6.1	(P)	II		500 g	E4	P002 IBC08	B2, B4	T3	TP33	2Z		Yellowish green powder. Toxic if swallowed or by dust inhalation.
1587	COPPER CYANIDE	6.1	(P)	II		500 g	E4	P002 IBC08	B2, B4	T3	TP33	2X	006722	Green powder. On contact with acid, acid fumes, water or steam, will produce hydrogen cyanide which is a highly toxic and flammable gas. Toxic if swallowed, by skin contact or dust inhalation.
1588	CYANIDES, INORGANIC, SOLID, N.O.S.	6.1	(P)	I	47 274	0	E5	P002 IBC07	B1	T6	TP33	2X		Solids. On contact with acid, acid fumes, water or steam, will produce hydrogen cyanide which is a highly toxic and flammable gas. Toxic if swallowed, by skin contact or dust inhalation. Alkaline thiocyanates and ammonium thiocyanate are not subject to the provisions of this Standard.
		6.1		II	47 274	500 g	E4	P002 IBC08	B2, B4	T3	TP33	2X		
		6.1		III	47 223 274	5 kg	E1	P002 IBC08 LP02	B3	T1	TP33	2X		
1589	CYANOGEN CHLORIDE, STABILIZED	2.3	8 (P)			0	E0	(*)				2XE		Non-flammable gas. Lachrymatory with a perceptible odour (irritating). On contact with water or steam, reacts violently to give off highly toxic and corrosive fumes. Gas much denser than air (2.1). Boiling point: 13°C. Toxic by skin contact or inhalation. Refer to HSNO regulations for requirements for cylinders and other containers for gases.
1590	DICHLOROANILINES, LIQUID	6.1	(P)	II	279	100 ml	E4	P001 IBC02		T7	TP2	2X		Colourless liquids with a penetrating odour. Liquid mixtures of various isomers of dichloroanilines, some of which in the pure state may be solid. Toxic if swallowed, by skin contact or inhalation.
1591	o-DICHLOROBENZENE	6.1		III	279	5 L	E1	P001 IBC03 LP01		T4	TP1	2Z	002954	Volatile liquid. Melting point: approximately -17°C. Melting point for meta isomer approximately -25°C. Harmful if swallowed, by skin contact or inhalation.
1593	DICHLOROMETHANE	6.1		III		5 L	E1	P001 IBC03 LP01	B8	T7	TP2	2Z	001540	Colourless, volatile liquid with heavy vapours. Boiling point: 40°C. Non-flammable. When involved in a fire may evolve extremely toxic fumes (phosgene). Harmful if swallowed.

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Special Provisions

Always check **column 6** for any special provisions indicated for a specific substance or article. Often these will describe situations where the rules are less restrictive or, as in the case with lithium batteries, provide detailed information.

Dangerous Goods in Limited Quantities

Small amounts of some dangerous goods may be transported without using UN specification packaging, as indicated in **column 7a**. Special Provision 277 allows aerosols (except Division 2.3) to be transported as Limited Quantities if they have a capacity of 1 litre or less. Packages will have to meet the general packing requirements described in section 4 of NZS5433. The assembled package must not exceed a total gross weight of 30kg.

Dangerous Goods in Excepted Quantities

Even smaller amounts of certain classes of dangerous goods may be consigned as Excepted Quantities. They are exempt from many requirements including documentation, UN specification packaging and segregation. The package limitations are indicated by a code in **column 7b** which relates to quantity limits for inner and outer packaging:

Code	Maximum quantity per inner packaging	Maximum quantity per outer packaging
E0	Not permitted as excepted quantity	
E1	30g / 30ml	1kg / 1 litre
E2	30g / 30ml	500g / 500ml
E3	30g / 30ml	500g / 300 ml
E4	1g / 1ml	500g / 500ml
E5	1g / 1ml	300g / 300ml

Packing Instructions

Packing instructions are listed in **column 8**. These will generally require the use of UN specification packaging as described in Volume 1 of NZS5433. The most common of these are **P001** (for liquids) and **P002** (for solids) which will allow a wide variety of combination or single packaging options and indicate maximum quantity allowances. This, and subsequent columns, provide instructions for large packages, IBC's, portable and bulk tanks.

Particular Packing Requirements

Columns 9 and 11 may indicate a special packing provision with additional requirements for individual UN numbers. These will be found at the end of each packing instruction.

Hazchem Code

Column 12 will indicate a Hazchem code for each proper shipping name. These are used in a variety of transport or storage situations and their purpose is to provide emergency services with response information relating to extinguishing media, breathing apparatus etc.

Additional Information - Special Provisions

SP188

This provision refers to the carriage of lithium batteries and indicates they are not subject to the regulations under certain circumstances. The provision is quite detailed but a summary of key points is as follows:

- Lithium metal cells must not exceed 1g and lithium ion cells must not exceed 20wh.
- Lithium metal batteries must not exceed 2g and lithium ion batteries must not exceed 100wh.

Except for packages with no more than 4 cells or 2 batteries installed in equipment, packages must be marked with safety information as indicated in the provision. This is normally achieved through the application of the lithium battery handling mark.

Except where batteries are installed or packed with equipment, packages shall not exceed 30kg gross mass.

SP274

This provision refers to additional requirements needed in addition with the Proper Shipping Name. For the purposes of documentation and package marking, the proper shipping name shall be supplemented with the technical name.

EXERCISE:

Refer to the DG List extract in this manual; for **UN1586** provide:

1. The Proper Shipping Name ……
2. Class or Division, and Packing Group? ……
3. Is it a marine pollutant? …….
4. Excepted Quantity Code ……
5. Excepted Quantity package limits: Inner……. Outer…….
6. Limited Quantity package limits: Inner……. Outer…….
7. Packing Instruction number & Hazchem Code ……..

P001	PACKING INSTRUCTION (LIQUIDS)			P001
The following packagings are authorised provided that the general provisions of 4.1.1 and 4.1.3 are met:				
		Maximum capacity/Net mass (see 4.1.3.3)		
		Packing group I	**Packing group II**	**Packing group III**
Combination packagings				
Inner packagings	**Outer packagings**			
glass 10 L	**Drums**			
plastics 30 L	steel (1A2)	250 kg	400 kg	400 kg
metal 40 L	aluminium (1B2)	250 kg	400 kg	400 kg
	other metal (1N2)	250 kg	400 kg	400 kg
	plastics (1H2)	250 kg	400 kg	400 kg
	plywood (1D)	150 kg	400 kg	400 kg
	fibre (1G)	75 kg	400 kg	400 kg
	Boxes			
	steel (4A)	250 kg	400 kg	400 kg
	aluminium (4B)	250 kg	400 kg	400 kg
	natural wood (4C1, 4C2)	150 kg	400 kg	400 kg
	plywood (4D)	150 kg	400 kg	400 kg
	reconstituted wood (4F)	75 kg	400 kg	400 kg
	fibreboard (4G)	75 kg	400 kg	400 kg
	expanded plastics (4H1)	60 kg	60 kg	60 kg
	solid plastics (4H2)	150 kg	400 kg	400 kg
	Jerricans			
	steel (3A2)	120 kg	120 kg	120 kg
	aluminium (3B2)	120 kg	120 kg	120 kg
	plastics (3H2)	120 kg	120 kg	120 kg

P001	PACKING INSTRUCTION (LIQUIDS) (continued)		P001
The following packagings are authorised provided that the general provisions of 4.1.1 and 4.1.3 are met:			
	Maximum capacity/Net mass (see 4.1.3.3)		
	Packing group I	**Packing group II**	**Packing group III**
Single packagings			
Drums			
steel, non-removable head (1A1)	250 L	450 L	450 L
steel, removable head (1A2)	250 L[a]	450 L	450 L
aluminium, non-removable head (1B1)	250 L	450 L	450 L
aluminium, removable head (1B2)	250 L[a]	450 L	450 L
other metal, non-removable head (1N1)	250 L	450 L	450 L
other metal, removable head (1N2)	250 L[a]	450 L	450 L
plastics, non-removable head (1H1)	250 L	450 L	450 L
plastics, removable head (1H2)	250 L[a]	450 L	450 L
Jerricans			
steel, non-removable head (3A1)	60 L	60 L	60 L
steel, removable head (3A2)	60 L[a]	60 L	60 L
aluminium, non-removable head (3B1)	60 L	60 L	60 L
aluminium, removable head (3B2)	60 L[a]	60 L	60 L
plastics, non-removable head (3H1)	60 L	60 L	60 L
plastics, removable head (3H2)	60 L[a]	60 L	60 L

Packaging

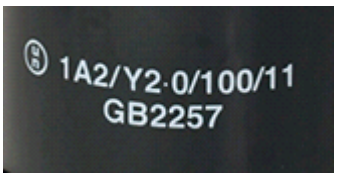
General Packing Requirements

Dangerous goods must be contained in appropriate packagings i.e. compatible with their contents and robust enough to maintain their integrity throughout transportation.

UN Specification Packaging

These packagings undergo tests to ensure their suitability for the type and quantity of dangerous goods they are designed for. There are two types of specification packages; single and combination. Both of these are marked to show the standard to which they have been tested, so the shipper can select the appropriate packaging. For example, to show which packing group substance the packaging can be used for, where PG I, II or III is represented on the packaging by the letters X, Y or Z respectively.

Single Package Marking for Liquids



Combination Package Marking

Intermediate Bulk Containers (IBC's)

IBC's for dangerous goods, must be marked with the stacking test load in kgs (if the IBC is not stackable a "0" must be shown), and the maximum permissible gross mass. IBC's containing more than 450L must have the markings on two opposite sides.

31HA1/Y/02 17/ NZ/
DGM1234/ 5500/ 1200

Special Packing Provisions (Column 9) may allow use of non-UN Specification packagings:

Special packing provisions:

PP1 For UN nos. 1133, 1210, 1263 and 1866 and for adhesives, printing inks, printing ink related materials, paints, paint related materials and resin solutions which are assigned to UN 3082, metal or plastics packagings for substances of Packing Groups II and III in quantities of 5 litres or less per packaging are not required to meet the performance tests in Chapter 6.1 of the UNRTDG when transported:

(a) In palletised loads, a pallet box or unit load device, e.g. individual packagings placed or stacked and secured by strapping, shrink or stretch-wrapping or other suitable means to a pallet. For sea transport, the palletised loads, pallet boxes or unit load devices shall be firmly packed and secured in closed cargo transport units; or

(b) As an inner packaging of a combination packaging with a maximum net mass of 40 kg.

Specification markings are indicated as follows:

(a) UN symbol
(b) Specification code for the package
(c) Design type tested for packing group standard:
    1) X Packing Group I
    2) Y Packing Group II
    3) Z Packing Group III
(d) Volume & weight
    1) For single packagings intended to contain liquids, a relative density (1.4)
    2) For combination packagings (or solids) a maximum gross weight (15)
(e) Pressure & design
    1) For single packagings intended to contain liquids, a test pressure
    2) For combination packagings (or solids) the letter S
(f) The year of manufacture
(g) The authorizing state
(h) The identification mark allocated by the authorizing state

EXERCISE:

Decode the following UN specification mark for a single packaging designed to contain liquids:

1.  ----------
2. 1A1 ----------
3. X ----------
4. 1.4 ----------
5. 300 ----------
6. 18 ----------
7. AU ----------
8. NEC/Z2567-AU ----------

Limited Quantity Packaging

Non UN Specification packaging may be used when small amounts of dangerous goods are being shipped. The inner package limits are specified for each substance in column **7(a)** of the Dangerous Goods list in NZS 5433. Where the number "**0**" is indicated in column 7(a) this substance is not permitted to be transported in Limited Quantities.

Limited quantity packages must be of good quality, strong enough to withstand the shocks and loadings normally encountered during transport. The total gross weight of each limited quantity package shall not exceed **30kg** (20 kgs for shrink-wrapped trays). Different classes of dangerous goods are only permitted to be packed in the same outer package when they do not require segregation.

Package Marking and Labelling

All packages containing dangerous goods must be marked and labelled to identify the hazard they present, in order that they may be handled safely during transport. Except as specified below, packages must be marked with the proper shipping name and the UN number and should have the shipper and consignee's name and address displayed.

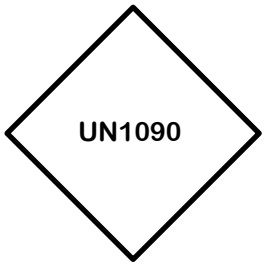
Label(s) must be affixed to every package, identifying all the hazards within the package. These should be affixed as close as practical to the proper shipping name and UN number. Some packages also require handling labels to be attached such as the package orientation label ("This Way Up"). Dangerous goods in Limited Quantities or Excepted Quantities do not require Class labels.

Overpacks

If a shipper chooses to place multiple, completed dangerous goods packages into an outer enclosure for convenience of handling, each package must be appropriately marked and labelled. If the overpack (e.g. shrink wrapping) obscures any marks or labels, they must be reproduced on the outside of the overpack, which must also be marked with the word "OVERPACK". UN Specification marks must not be reproduced.

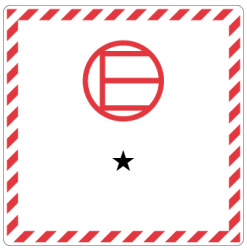
Limited Quantity Package Marking and Labelling

Packages of dangerous goods transported as Limited Quantity do not require a hazard label. They must however be marked with the blank diamond as shown below, or a diamond with the UN number inside.



Excepted Quantity Marking

Packages containing excepted quantities of dangerous goods must be marked as shown below. The primary hazard class or division number must be written on the mark (★), as well as the name of either the shipper or consignee if it is not already on the package.



Lithium Battery Marking

When Lithium batteries are being shipped under Special Provision 188, they may need to be marked with an indication of the hazard and a contact phone number. This can be achieved by applying the lithium battery handling mark or label.

EXERCISE:

1. Refer to the DG List extract in this manual; for **UN1261** indicate the required hazard marks and labels on the diagram of the fibreboard box below -
   (Note: the package has the required UN Specification Marks)

2. Indicate the required marks or labels on the diagram of the fibreboard box below, for a shipment of PAINT in Limited Quantities:

Documentation

Dangerous goods that are being transported for hire or reward must be accompanied by documentation identifying the goods and the hazard they present to any person, to property or to the environment. A Declaration is not required for dangerous goods carried under the small packages provisions or in excepted quantities. Dangerous goods consigned by sea or air will have to travel by road. The required maritime or air transport shipper's declaration is acceptable for the road transport portion of a journey if it is incident to carriage by other modes of transportation.

Road Transport

There is no specific format for the road transport declaration, only that it has the diagonal borders or has the heading "Dangerous Goods Declaration". The declaration must, however, state the following:

- The United Nations (UN) number
- The proper shipping name
- The class and division (and subsidiary risk if assigned)
- The packing group (if applicable)
- Additional technical or emergency information
- The number and type of packages
- The total net quantity of dangerous goods
- The consignor's name and address
- The consignee's name and address
- The consignor's statement (declaration), date and signature

The document must contain a declaration, signed by the shipper, that the consignment is fully compliant with the Dangerous Goods Rule.

If a load of dangerous goods is delivered to or collected from more than one location, a Dangerous Goods Declaration must be carried, but the quantity information may be in the form of a Schedule of Quantities on a separate page or pages.

When the declaration is completed for **Limited Quantities** it must have "Dangerous Goods in Limited Quantities" or "DGLQ" or "LTD QTY" written in at the top of the declaration form:

NEW ZEALAND HAZARDOUS SUBSTANCES

DGLQ **DANGEROUS GOODS DECLARATION**

PROPER SHIPPING NAME:	HAZARD CLASS	UN NO
Petrol	3	UN1203
	HAZCHEM	PACKING GROUP
DGLQ		II
NUMBER AND TYPE OF PACKGES	GROSS WEIGHT	FLASHPOINT
1 x Fibreboard Box	6kg	

NEW ZEALAND

DANGEROUS GOODS DECLARATION

PROPER SHIPPING NAME:	HAZARD CLASS	UN NO
Selenium Oxychloride	**8 (6.1)**	**UN2879**
Additional information:	**HAZCHEM**	**PACKING GROUP**
Store in a cool, dry place.	**4WE**	**I**
NUMBER AND TYPE OF PACKGES	**GROSS WEIGHT**	**FLASHPOINT**
1 x Fibreboard Box x 10 litres	**16kg**	

Shipper:

XXX Chemicals Ltd, 10 King St, Taupo

Consignee:

Dangerous Goods Management Ltd, 39 Richard Pearse Dr, Auckland

TRANSPORT DETAILS

CARRIED BY	FROM	TO
Taupo Transport	Taupo	Auckland

EMERGENCY INFORMATION

In case of an emergency please contact:

09 275 5559

Name/ Title of Signatory

John Doe, Storeman

Place & Date

Taupo 31/12/2019

Signature

John Doe

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled, and are in all respects in proper condition for transport according to the applicable international and national rules, regulations and legislation

In an emergency dial 111 - Fire or Police

Immediate Action -

* Keep unnecessary people away. Mark road and warn road users
* Isolate Hazard area
* Send messenger to inform police and fire brigade. Tell them substance involved
* Keep upwind. Avoid breathing vapours. Avoid contact with skin or eyes
* Shut off engine and any electrical equipment. No smoking. No naked lights
* Avoid moving vehicle if movement could cause or increase spillage.

QUESTION:
Fill out the Dangerous Goods Declaration on the following page using the provided information:

- UN1588 (refer to the dangerous goods list shown in your workbook, page 12)
- Packing Group II
- 12 steel drums, each containing 20 kgs, overpacked on a shrink-wrapped pallet, with a gross weight of 300 kg and volume of 1.2m ^{3}.
- Shipper – DGM Ltd, 39 Richard Pearse Dr, Airport Oaks, Airport 2022.
- Consignee – ABC Manufacturing, 125 George St, Te Rapa, Hamilton 2506.

Container or Vehicle Packing Certificate

A person who loads a vehicle or freight container used to transport dangerous goods must ensure loading complies with the Dangerous Goods Rule. This includes:

- The vehicle or container was clean, dry and fit to receive the shipment;
- The condition of the packaging, labelling and marking is checked for obvious defects, and only compliant packages have been loaded;
- The load is secure;
- Any special loading instructions given in the dangerous goods documentation are complied with;
- A dangerous goods transport document has been received for each dangerous goods consignment loaded;
- Packages requiring segregation have not been packed together; and
- If the dangerous goods are in a closed, prepacked freight container or vehicle, a Container Packing Certificate or Vehicle Packing Certificate, as appropriate, must be carried and the certificate must attest that the loading has been carried out in accordance with the Rule.

The certificate must include the details of the person who is responsible for the loading, and may be incorporated into a single document with the Dangerous Goods Declaration. In this situation, care must be taken to only sign the section you are taking responsibility for.

Load plan

A line-haul vehicle must have a load plan showing the location of all dangerous goods on the vehicle and of any other goods from which they must be segregated. Line-haul vehicle is defined under the Rule as:

(a) having more than three axles and a combined gross vehicle mass of more than 20 t; and

(b) transporting dangerous goods on a journey that includes travel outside a radius of 100 km from any point at which dangerous goods were loaded.

STANDARDS NEW ZEALAND PAEREWA AOTEAROA

DANGEROUS GOODS DECLARATION AND PACKING DECLARATION

UN number	(a)			Proper shipping name	(a)				
	(b)				(b)				
	(c)				(c)				
Class	(a)			Subsidiary risk	(a)			Packing group	(a)
	(b)				(b)				(b)
	(c)				(c)				(c)
Marine pollutant *(Optional for land transport)*	(a)	Yes	No	Flash point	(a)	°C		Hazchem code (optional)	(a)
	(b)	Yes	No		(b)	°C			(b)
	(c)	Yes	No		(c)	°C			(c)
Number and type of packages	(a)			Gross weight	(a)	kg		Volume	(a) m^3
	(b)				(b)	kg			(b) m^3
	(c)				(c)	kg			(c) m^3

Additional information

Shipper/Consignor
Name and address

Phone Fax

Receiver/Consignee
Name and address

Phone Fax

24 hour EMERGENCY
Telephone no.

Carrier

Dangerous goods declaration

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked, and labelled, and are in proper condition for transport according to the applicable international and national rules, and legislation.

Name

Title

Company/Location

Signature Date / /

Container or vehicle packing certificate and load plan

☐ Rail ☐ Road ☐ Sea

Container/ Tank no. _____

Wagon no. (*if rail*) _____

Sailing *(if sea)* Date

Time

Cargo transport unit ☐ Container ☐ Tank ☐ IBC

Type of containment ☐ Open ☐ Closed

Load plan. Write the class number of the dangerous goods in the position they are loaded in the container or vehicle.

Railway wagon/container

Cab

Truck / Semi / B train / Truck and trailer

Packing declaration

I hereby declare that the goods have been loaded into the

vehicle/container ID no. _____

in accordance with the provisions of:

* Section 5 of Land Transport Rule:Dangerous Goods 2005; or
* Chapter 5.4 of the IMDG Code.

The segregation of dangerous goods complies with land*/sea*/land and sea*.

[**Delete whichever is not applicable*]

Name

Title

Company/Location

Signature Date / /

In an emergency dial 111 – Fire or Police

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Segregation

Different Dangerous Goods Shipped Together

The Dangerous Goods Rule states that, during transport, dangerous goods must be segregated from other dangerous goods with which they might react dangerously, and from foods items they might contaminate. This applies to items being shipped together as part of one consignment, as well as different consignments of dangerous goods being transported in one vehicle or container.

The segregation chart (Table 34 from NZS 5433, and reproduced at the end of this book) indicates which classes or divisions require segregation. The Rule, NZS:5433 and the SDS should also be checked as they may indicate the goods need segregation, even within the same class (e.g. acids and alkalis). Both the primary risk and the subsidiary risk must be taken into account.

Responsibilities of the Shipper

When considering packing different dangerous goods into the same package or overpack, the shipper must not pack items that have been determined to be incompatible; however some exceptions apply e.g. aerosols may be transported without segregation under some circumstances. Refer to the Rule for further information.

Responsibilities of the Loader

Table 34 indicates the degree of segregation required for certain classes or divisions. When loading containers or vehicles with different dangerous goods the loader must ensure comply with these requirements as well as any other instructions indicated on the Declaration. Exceptions apply, such as Dangerous goods transported in Limited Quantities. Refer to the Rule for further information.

Container or vehicle segregation

There are three levels of segregation:

a) Must not be transported in the same vehicle or container (Column B);
b) Can be transported on the same vehicle, but must be separated by 3 metres horizontally (Column C);

In some instances these restrictions may be overcome (as shown in Column D):

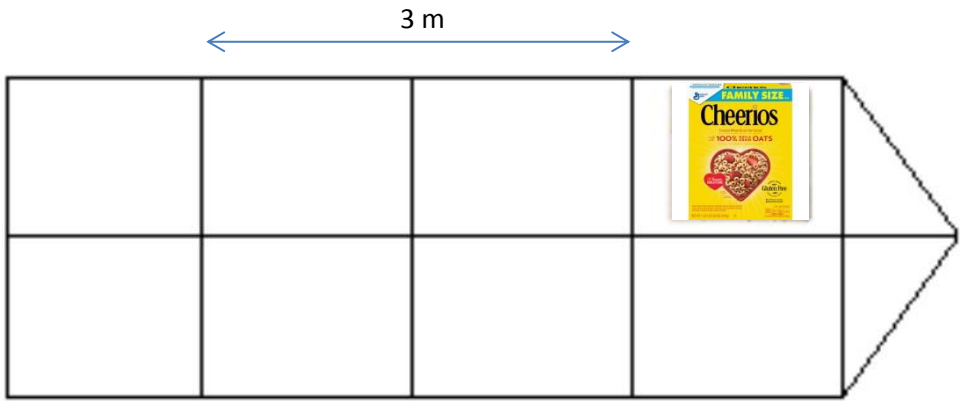
c) Can be transported on the same vehicle or in the same freight container but only in approved segregation devices. (This only applies to Packing Groups II and III; segregation devices cannot be used for Packing Group I substances).

Segregation Exercises:

1. Three different dangerous goods, correctly packed for transportation, are to be loaded into the same vehicle. Indicate which of these are able to be loaded into the vehicle and how they might need to be segregated.

   Note: Class 8 is contained within a Segregation Device.

PG II PG III PG II



2. Four different dangerous goods to be loaded into one package for transportation. Which of these are allowed to be packed into the one package?

Emergency Response

It is the responsibility of any organisation transporting or warehousing dangerous goods to have an action plan that describes the response required in the event of an incident or accident. This plan should describe the following:

- The responsibilities of various personnel
- Who to notify in the event of an emergency
- The response required for various incidents
- Where information can be found for the dangerous goods involved
- Emergency evacuation plans
- Identification of trained emergency personnel (first aid & spill control)
- Location of emergency equipment (fire extinguishers, spill kits, first aid kits etc)
- Location of Personal Protective Equipment (PPE)
- Disposal plans
- Training

Organisations should, where possible, have information available to staff that will identify and provide safety and handling information for substances where an incident has occurred. The main source of this information is the Safety Data Sheet. When confronted with an incident involving dangerous goods the SDS will provide the information needed to safely manage the situation.

EXERCISE:
Using the Supplied Safety Data Sheet, state three first aid actions to be taken in the event of the substance coming into contact with skin:

Spill Management

For any incident involving spilled or leaking dangerous goods, remember:

STOP > LOOK > ASSESS> MANAGE.

Emergency response in the event of a spill involving dangerous goods is an important part of a company's safety and health program. In the event of a spill, well-prepared companies are ready with a plan of action, trained staff and the appropriate clean-up supplies. An action plan should include:

1. Assess the situation.

Resist the urge to rush into a dangerous situation. Notify the people in your organisation responsible for managing these incidents.

2. Evacuate personnel from the immediate area of the spill.

Secure the scene.

3. Extinguish or disconnect all sources of ignition.

Including mechanical and electrical equipment that could cause sparks.

4. Identify the spilled material and contact the fire department if the chemical is flammable.

Obtain the SDS or Shipper's Declaration, observe hazard labels or placards, or other relevant safety data.

5. Notify the spill response team.

6. Don the appropriate personal protective equipment.

Consult the SDS to ensure you have the correct equipment.

7. Barricade drains to prevent chemicals entering the environment and ventilate areas if practical.

8. Contain the spill using equipment from your spill kit.

9. Clean up the spill.

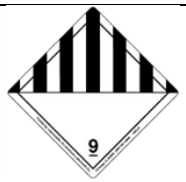
10. Dispose of the spill material in accordance with local and national regulations.

11. Replenish all equipment used in the spill procedure.

12. Review the incident and implement changes to the procedure where identified.

Emergency Response Information

Class	Class Name	Hazard Description	Immediate Action
For all classes: **Isolate the area (or the item, if safe to do so). Minimise leakage and contact with other cargo**			
1.1 to 1.6		Possible hazards include: Fire & risk of mass explosion or projection of fragments; Fire, but no other significant hazard	**Notify Emergency Services** **Guard against fire** **Evacuate area**
1.4S		Small fire hazard	
2.1		Damaged or leaking cylinders may burst. Many gases are heavier than air and will collect in low or confined areas Will easily ignite Fire risk if damaged or leaking	**Notify Emergency Services** **Guard against fire** **Ventilate area**
2.2		Risk of asphyxiation Cryogenic Liquids: risk of thermal burns from extremely cold liquid ("frostbite") Consider any subsidiary risk e.g. Oxidisers	**Keep away, stay upwind**
2.3		May be fatal if inhaled	
3		Gives off flammable vapour Many vapours are heavier than air and will collect in low or confined areas Containers may explode if heated	**Notify Emergency Services** **Guard against fire** **Keep away, stay upwind** **Avoid contact with spilled material**
4.1		May be ignited by friction, heat, or sources of fire, spark or flame. Combustible, contributes to fire	**Notify Emergency Services** **Guard against fire** **Keep away, stay upwind**
4.2		Ignites in contact with air	
4.3		Produces flammable gases when in contact with water.	**Do not use water to extinguish fire**

5.1 5.2		May explode from heating or friction May react violently with other dangerous goods Ignites combustibles (wood, paper etc) on contact Reacts violently with other substances or on contact with water	**Notify Emergency Services** **Guard against fire** **Keep away, stay upwind** **Do not move cargo if it has been exposed to heat or water** **Do not use water to extinguish fire**
6.1 6.2		Harmful if swallowed, inhaled or in contact with skin Inhalation or contact may cause disease or death in humans and/ or animals	**Notify Emergency Services** **Do NOT touch, avoid contact** **Remove contaminated clothing, wash contaminated skin** **Isolate area, keep away, stay upwind (Minimum 25m)**
7		Prolonged exposure can result in illness, injury or death Hazard may not be immediately evident Effects of contact may be delayed	**Notify Emergency Services & National Radiation Laboratory** **Avoid contact, limit exposure time, keep away**
8		Will damage skin and metal	**Notify Fire Department** **Guard against fire** **Avoid contact with skin** **Avoid breathing vapours**
9	 Polymeric Beads Carbon Dioxide, Solid (Dry Ice)	Polymerisation produces heat and pressure Air-tight containers may burst. Asphyxiant. Risk of frostbite.	**Consult relevant Safety Data Sheet** **Avoid contact with skin**

DANGEROUS GOODS MANAGEMENT LIMITED

Land Transport Segregation Wheel

This **wheel** is designed to display safe segregation information during land transport for hazardous substances under the NZS 5433 Dangerous Goods Regulations in a compact and handy design

$45.00 excl gst

If your company requires the segregation wheel please email orders@dgm.co.nz

39 Richard Pearse Dr, Airport Oaks, Auckland
DDI +64 9 255 1716 | **FAX** +64 9 275 6188

TABLE 34 – SEGREGATION OF PACKAGES OF DANGEROUS GOODS FOR ROAD TRANSPORT

This table is a graphical representation of Schedule 3 in the Land Transport Rule: Dangerous Goods and is to be used strictly in accordance with section 6.3 of the Rule.

COLUMN A Class or division and name of dangerous goods	COLUMN B Must not be loaded in the same freight container or on the same vehicle with:	COLUMN C Must not be loaded in the same freight container; and on the same vehicle must be separated horizontally by at least 3 metres unless all but one are packed in separate freight containers	COLUMN D Goods of Packing Group II or III may be loaded in the same freight container or on the same vehicle if transported in segregation devices
Class 1 EXPLOSIVES	FLAMMABLE GAS 2; NON-FLAMMABLE NON-TOXIC GAS 2; TOXIC GAS 2; FLAMMABLE LIQUID 3; FLAMMABLE SOLID 4; SPONTANEOUSLY COMBUSTIBLE 4; DANGEROUS WHEN WET 4; OXIDIZING SUBSTANCES 5.1; ORGANIC PEROXIDE 5.2; TOXIC 6; INFECTIOUS SUBSTANCE 6; RADIOACTIVE 7; CORROSIVE 8; MISCELLANEOUS DANGEROUS GOODS 9		
Class 2.1 FLAMMABLE GASES	EXPLOSIVE 1; FLAMMABLE LIQUID 3; SPONTANEOUSLY COMBUSTIBLE 4; OXIDIZING SUBSTANCES 5.1; ORGANIC PEROXIDE 5.2; RADIOACTIVE 7	FLAMMABLE SOLID 4	
Class 2.2 NON-FLAMMABLE NON-TOXIC GASES	EXPLOSIVE 1	SPONTANEOUSLY COMBUSTIBLE 4; ORGANIC PEROXIDE 5.2	
Class 2.3 TOXIC GASES	EXPLOSIVE 1; FLAMMABLE LIQUID 3; SPONTANEOUSLY COMBUSTIBLE 4; ORGANIC PEROXIDE 5.2; Food items		
Class 3 FLAMMABLE LIQUIDS	EXPLOSIVE 1; FLAMMABLE GAS 2; TOXIC GAS 2; SPONTANEOUSLY COMBUSTIBLE 4; OXIDIZING SUBSTANCES 5.1; ORGANIC PEROXIDE 5.2; RADIOACTIVE 7	DANGEROUS WHEN WET 4	SPONTANEOUSLY COMBUSTIBLE 4; DANGEROUS WHEN WET 4; OXIDIZING SUBSTANCES 5.1; ORGANIC PEROXIDE 5.2
Class 4.1 FLAMMABLE SOLIDS	EXPLOSIVE 1; ORGANIC PEROXIDE 5.2; RADIOACTIVE 7	FLAMMABLE GAS 2; SPONTANEOUSLY COMBUSTIBLE 4; OXIDIZING SUBSTANCES 5.1	SPONTANEOUSLY COMBUSTIBLE 4; OXIDIZING SUBSTANCES 5.1; ORGANIC PEROXIDE 5.2
Class 4.2 SPONTANEOUSLY COMBUSTIBLE	EXPLOSIVE 1; FLAMMABLE GAS 2; TOXIC GAS 2; FLAMMABLE LIQUID 3; OXIDIZING SUBSTANCES 5.1; ORGANIC PEROXIDE 5.2; RADIOACTIVE 7	NON-FLAMMABLE NON-TOXIC GAS 2; FLAMMABLE SOLID 4	FLAMMABLE LIQUID 3; FLAMMABLE SOLID 4; OXIDIZING SUBSTANCES 5.1; ORGANIC PEROXIDE 5.2
Class 4.3 DANGEROUS WHEN WET	EXPLOSIVE 1; OXIDIZING SUBSTANCES 5.1; ORGANIC PEROXIDE 5.2; RADIOACTIVE 7	FLAMMABLE LIQUID 3; CORROSIVE 8	FLAMMABLE LIQUID 3; OXIDIZING SUBSTANCES 5.1; ORGANIC PEROXIDE 5.2; CORROSIVE 8
Class 5.1 OXIDIZING SUBSTANCES	EXPLOSIVE 1; FLAMMABLE GAS 2; FLAMMABLE LIQUID 3; SPONTANEOUSLY COMBUSTIBLE 4; DANGEROUS WHEN WET 4; ORGANIC PEROXIDE 5.2; INFECTIOUS SUBSTANCE 6; CORROSIVE 8	FLAMMABLE SOLID 4; TOXIC 6; RADIOACTIVE 7	FLAMMABLE LIQUID 3; FLAMMABLE SOLID 4; SPONTANEOUSLY COMBUSTIBLE 4; DANGEROUS WHEN WET 4; ORGANIC PEROXIDE 5.2; TOXIC 6; INFECTIOUS SUBSTANCE 6; CORROSIVE 8
Class 5.2 ORGANIC PEROXIDES	EXPLOSIVE 1; FLAMMABLE GAS 2; TOXIC GAS 2; FLAMMABLE LIQUID 3; FLAMMABLE SOLID 4; SPONTANEOUSLY COMBUSTIBLE 4; DANGEROUS WHEN WET 4; OXIDIZING SUBSTANCES 5.1; INFECTIOUS SUBSTANCE 6; RADIOACTIVE 7; CORROSIVE 8	NON-FLAMMABLE NON-TOXIC GAS 2; TOXIC 6	FLAMMABLE LIQUID 3; FLAMMABLE SOLID 4; SPONTANEOUSLY COMBUSTIBLE 4; DANGEROUS WHEN WET 4; OXIDIZING SUBSTANCES 5.1; TOXIC 6; INFECTIOUS SUBSTANCE 6; CORROSIVE 8
Class 6.1 TOXIC SUBSTANCES	EXPLOSIVE 1; Food items; Note 1	OXIDIZING SUBSTANCES 5.1; ORGANIC PEROXIDE 5.2	OXIDIZING SUBSTANCES 5.1; ORGANIC PEROXIDE 5.2; Food items
Class 6.2 INFECTIOUS SUBSTANCES	EXPLOSIVE 1; OXIDIZING SUBSTANCES 5.1; ORGANIC PEROXIDE 5.2; Food items		OXIDIZING SUBSTANCES 5.1; ORGANIC PEROXIDE 5.2; Food items
Class 7 RADIOACTIVE MATERIALS	EXPLOSIVE 1; FLAMMABLE GAS 2; FLAMMABLE LIQUID 3; FLAMMABLE SOLID 4; SPONTANEOUSLY COMBUSTIBLE 4; DANGEROUS WHEN WET 4; ORGANIC PEROXIDE 5.2; CORROSIVE 8	OXIDIZING SUBSTANCES 5.1	
Class 8 CORROSIVES	EXPLOSIVE 1; OXIDIZING SUBSTANCES 5.1; ORGANIC PEROXIDE 5.2; RADIOACTIVE 7; Food items; Note 1 and 2	DANGEROUS WHEN WET 4	DANGEROUS WHEN WET 4; OXIDIZING SUBSTANCES 5.1; ORGANIC PEROXIDE 5.2; Food items
Class 9 MISCELLANEOUS SUBSTANCES	EXPLOSIVE 1; Note 4		Note 3

NOTE –

(1) Cyanides (Class 6.1) must not be loaded in the same freight container or on the same vehicle with acids (Class 8).

(2) Strong acids must not be loaded in the same freight container or on the same vehicle with strong alkalis. Packing Group I and II acids and alkalis should be considered strong (see 8.1.5 of Part 1 of NZS 5433).

(3) Segregation devices may be used as specified in 6.4(2)(b) of the Rule.

(4) Class 9 dangerous goods that contain organic matter must not be loaded in the same bulk container or tankwagon with dangerous goods of Division 5.1, unless the Class 9 and Division 5.1 dangerous goods are in separate compartments of a bulk container or tankwagon.

(5) See 8.1.7 of Part 1 of NZS 5433 for segregation exceptions that apply to some classes or products, e.g. dangerous goods in limited quantities, including aerosols.

(6) Segregation requirements are based on primary and subsidiary risks.

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