

Advisory Circular

AC92-2

Carriage of Dangerous Goods

Revision 5
5 April 2025

General

Civil Aviation Authority advisory circulars (ACs) contain information about standards, practices, and procedures that the Director has found to be an **acceptable means of compliance** with the associated rule.

Consideration will be given to other methods of compliance that may be presented to the Director. When new standards, practices, or procedures are found to be acceptable they will be added to the appropriate AC.

Purpose

This AC describes an acceptable means of compliance with the dangerous goods (DG) carriage requirements prescribed under Civil Aviation Rules Part 92 *Carriage of Dangerous Goods*, particularly for **smaller operators and private pilots**.

Related Rules

This AC relates specifically to Part 92. In addition, it also relates to Part 133 *Helicopter External Load Operations*.

Change notice

Revision 5 updates the references to the Civil Aviation Act 2023 (the CA Act 2023), notably the definition of 'Dangerous Goods'.

Version history

Outlined in the table below:

AC Revision No.	Effective Date	Summary of Changes
AC92-2, Rev 0	07 Sept 1995	Initial Issue
AC92-2, Rev 1	27 April 2007	Reformatted and renumbered the AC.
AC92-2, Rev 2	2 June 2022	Complete rewrite of AC to include guidance on: <ul style="list-style-type: none">• 92.11(a) Carriage of DG by Police• 92.11(b) Carriage of Class 1 DG• 92.11(c) Carriage of DG for recreational use of passengers• Carriage of DG for medical aid in flight• 92.13 Carriage of DG by passengers and crew• Carriage of DG by helicopters operating in remote areas• Carriage of DG by underslung load• List of commonly carried items of DG• Segregation requirements

		<ul style="list-style-type: none"> • Aircraft emergency response drills • Carriage of DG in general
AC92-2, Rev 3	23 January 2024	<ul style="list-style-type: none"> • In Appendix A, updated the UN Number and PSN for most of the items. • In Appendix A, made minor changes to 1080, <i>Diesel/Kerosene/ Jet Fuel</i> sections, and added new section, <i>Diesel</i>. • Updated Appendix C, <i>Aircraft Emergency Response Drills</i>, to align with the ICAO DOC 9481 2023-24 edition, replacing the table in full. <p>Updated some of the items in Table 7.1, <i>Carriage of DG by Passengers and Crew</i>, replacing the table in full.</p>
AC92-2, Rev 4	20 August 2024	<p>Added five new sections:</p> <ul style="list-style-type: none"> • Section 3: Carriage of DG for the airworthiness and operational requirements, and company material • Section 8: Carriage of DG for Search and Rescue (SAR) • Section 9: Carriage of DG during Part 115 flights • Section 10: Carriage of DG during Part 137 flights, and • Section 14: Loading of DG cargo. <p>Amended the notes section in Table 6.1, <i>Ammunition</i>, by deleting the maximum quantity per passenger weight</p> <p>Note: <i>As part of these changes, some section numbers within the AC have also changed.</i></p> <p>Note: <i>On 15 October 2024, typos were corrected on pages 22 and 23 of this AC, and Table 11.1 was adjusted to fix page breaks.</i></p>
AC92-2, Rev 5	5 April 2024	<p>Updates references to the CA Act 2023, notably the definition of 'Dangerous Goods'.</p>

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1. Introduction

Part 92 prescribes rules governing the carriage of DG by air, and requires that DG carriage by air be conducted in accordance with the International Civil Aviation Organisation Doc 9284 Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO TIs) under most circumstances.

ICAO TIs are regularly updated, usually every two years. For the purposes of this AC, we have used the most current edition of the ICAO TIs available at the time of publication. CAA will endeavour to keep the information in this AC current, but participants are also encouraged to check the latest ICAO TIs when needed.

Rule 92.11 provides three exceptions for specific circumstances. The intent of this AC is to provide guidance on those three exceptions, and in addition:

- a) To provide guidance on the carriage of DG for medical aid in flight
- b) To provide guidance on the carriage of DG for SAR
- c) To provide guidance on the carriage of DG during Part 115 flights
- d) To provide guidance on the carriage of DG during Part 137 flights
- e) To provide guidance on the carriage of DG by passengers and crew
- f) To detail procedures applicable to carriage of DG in remote areas by helicopter
- g) To provide guidance on the carriage of DG by underslung load
- h) To provide guidance on the loading of DG cargo
- i) To provide an easy reference for commonly carried items of DG
- j) To provide an easy reference table for segregation of DG
- k) To provide an easy reference to aircraft emergency response drills
- l) To provide a brief summary of the key information required for carrying DG.

This guidance is aimed at small operators and private pilots who carry DG infrequently, or only carry a small number of DG items. An operator who is a regular carrier of DG and who accepts DG of all types will need to have access to and to understand the ICAO TIs. An operator's DG manual should specify the level of DG carriage. For example, is the operator a 'will-carry' or 'will-not-carry' operator, and do they accept the full spectrum of DG or only a limited number of items?

The requirements for the carriage of DG are applicable to all operators, irrespective of whether the operation is being conducted for hire or reward, or by a certificated operator, or private pilot.

Some items of DG are forbidden for transport by air and nothing in this AC is intended to allow these items to be carried.

The International Air Transport Association (IATA) produce the Dangerous Goods Regulations (DGR), based on the ICAO TIs. An operator may elect to use the IATA DGR as their primary reference for the carriage of DG, and it is accepted that compliance with the IATA DGR meets all of the requirements of the ICAO TIs.

There is more detailed advice on training in AC92-1, *Dangerous goods training*. It is a requirement for all personnel involved in the carriage of DG to be trained to the extent appropriate to their role and the DG that they interact with, in the environment that they operate in. Generic DG awareness training does not meet this requirement, so it is a responsibility of all operators to ensure that their personnel are trained appropriately for their role and to a level commensurate with their duties. An operator must ensure the competency of their staff, with a competency demonstration being conducted either as part of, or immediately following, DG initial or recurrent training.

Note: *It is important to bear in mind that other rule parts, notably Part 12, Accidents, Incidents and Statistics, also apply to the carriage of DG, so operators should be aware of their obligations under these rule parts.*

2. Definitions, Abbreviations, and Symbols

Definitions	
Approval	An authorisation granted by CAA to carry DG that is otherwise forbidden, where the ICAO TIs state that an approval may be granted.
Baggage	Personal property of a passenger or crew member carried on an aircraft with that person.
Cargo	Any property carried on an aircraft other than mail and baggage.
Certified Handler	A person who holds a compliance certificate as a certified handler issued under the Health and Safety at Work (Hazardous Substances) Regulations 2017.
Competency-based Training	Training and assessment characterised by the defining and setting of performance standards, development of training to meet those standards, and training and assessment against those standards.
Dangerous Goods (DG)	Articles or substances which are capable of posing a hazard to health, safety, property, or the environment and which are shown in the list of DG in the ICAO TIs, or which are classified according to the ICAO TIs. <i>Note: This definition is from the ICAO TIs and aligns more closely to the CA Act 2023 than the 1990 Act.</i>
Dangerous Goods Declaration (DGD)	The IATA Dangerous Goods Transport Document.
Exception	A provision contained within the ICAO TIs which excludes a specific item of DG from the requirements normally applicable to that item.
Exemption	An authorisation, other than an approval, granted by CAA providing relief from the requirements of the ICAO TIs ¹ .
Handling agent	An agency which performs on behalf of an operator some or all of the operator's functions including receiving, loading, unloading, transferring, or other processing of passengers or cargo.
IATA DGR	IATA's Dangerous Goods Regulations
ICAO Technical Instructions (TIs)	ICAO's Document 9284: TIs for the Safe Transport of Dangerous Goods by Air. <i>Note: For full definition, refer to the TIs.</i>
No-carry	IATA definition of an operator who does not carry DG as cargo (synonymous with a will-not-carry operator).
Notification to Captain (NOTOC)	The document that advises the pilot in command (PIC) of DG loaded in the aircraft, including emergency response codes.
Will-carry	An operator who carries DG as cargo.
Will-not-carry	An operator who elects not to carry DG as cargo. A will-not-carry operator may still carry DG under other provisions such as DG carried by passengers and crew.

¹ An exemption is provided for in section 322 of the CA Act 2023. An exemption is also provided for in the ICAO Technical Instructions, but any request for a DG exemption will be considered as a section 322 exemption.

Abbreviations	
AC	Advisory circular
a/c	Aircraft
CAA	Civil Aviation Authority
CAO	Cargo Aircraft Only
CAR	Civil Aviation Rules
COMAT	company material
DG	Dangerous Goods
DGD	Dangerous Goods Declaration
DGR	Dangerous Goods Regulations
Doc	Document
EQ	Excepted quantity
ERG	Emergency response guidance
g	Gram
G	Gross mass
IATA	International Airline Transport Association
ICAO	International Civil Aviation Organisation
kg	Kilogram
L	Litre
Max	Maximum
mg	Milligram
mL	Millilitre
N/A	Not applicable
n.o.s	Not otherwise specified
NOTOC	Notification to Captain
PED	Portable Electronic Device
PI	Packing Instruction
PIC	Pilot-in-command
Pkg	Package
PG	Packing Group
PSN	Proper Shipping Name
Qty	Quantity
SAR	Search and rescue
SMS	Safety Management System
SOPs	Standard operating procedures
S.P.	Special Provision
TIs	Technical Instructions
UN	United Nations
v	Volt
Wh	Watt-hour

3. Carriage of DG for airworthiness and operational requirements, and company material.

Rule 92.1(b)(2)

Rule 92.1(b)(2) allows for the carriage of DG that is required to be aboard an aircraft in accordance with the airworthiness or operational requirements of applicable Civil Aviation Rules.

This provision applies to items that are **required** by the rules, not items that a pilot or operator elects to carry for any other reason. Items that are required by the airworthiness rules include:

- Aircraft batteries
- Fire extinguishers
- First aid kits
- ELTs.

Items that may be required by the operational rules include:

- Life rafts
- Life jackets
- Portable oxygen systems for high altitude flight in non-pressurised aircraft.

Fuel required for flight falls into the first category and is also allowed for in an exception in the ICAO TIs, however, this only applies to the fuel carried in the aircraft fuel system for use on that flight. It does not apply to fuel carried in jerry cans for use on a later flight, which must be shipped and carried as DG.

Replacement items and aircraft spare parts, that are in themselves DG items (such as a spare battery or a spare aircraft fuel pump), are not covered by rule 92.1(b)(2) and must be shipped and carried as DG.

The DG rules apply to company material (COMAT). There is no general exception or exemption for any items or substances that are the property of the aircraft operator or pilot. If such items or substances are DG, then they must be shipped and carried as DG. Operators should consider what items or substances they carry on a regular basis as part of an aircraft husbandry kit (aerosol cleaners, fly spray, etc) or an aircraft survival kit (gas cookers, matches, etc) which may be DG. These cannot be carried under rule 92.1(b)(2). It is possible that certain items may be carried under other rules, such as rule 92.13, *Carriage of DG by passengers and crew*. But if they are not carried under the auspices of other rules, they have to be shipped and carried as DG.

4. Carriage of DG by a Member of the Police

Rule 92.11(a)

Rule 92.11(a) allows a member of the police to carry DG in an aircraft in the course of that person's duties without complying with Part 92, if that aircraft is being used solely for police purposes. A certificated operator who intends to make use of this provision should include, in their operations manual or exposition, appropriate procedures to address the potential safety implications of carrying police with DG. It is expected that a certificated operator will use their Safety Management System (SMS) to conduct a risk analysis, and create appropriate operating procedures based on that risk analysis. A non-certificated operator who uses this provision should also conduct a safety risk assessment and apply appropriate safety measures.

The following list is indicative of DG that police personnel may wish to carry. This list is not exclusive: other DG may be presented for carriage by air. It may be necessary to do a more detailed risk analysis, or consult the ICAO TIs for unexpected cases.

Table 4.1 Common items of DG carried by Police Personnel

Common Name	UN #	Class or division	Proper Shipping Name (PSN)	Notes
Alcohol hand sanitiser	1170	3	Ethanol, or Ethanol solution	
Alcohol hand sanitiser	1219	3	Isopropanol	
Alcohol wipes	3175	4.1	Solids containing flammable liquids	75% alcohol disinfectant wipes
Ammunition	0012	1.4S	Cartridges, small arms	Ammunition consisting of a centre fire or rim fire primer and containing both a propelling charge and solid projectile, calibre less than 19.1mm. Includes shotgun cartridges of any calibre.
Batteries and Lithium batteries	2800 2794 2795 3171 3171 3480 3481 3481 3090 3091 3091	8 8 8 9 9 9 9 9 9 9 9	Batteries, wet, non-spillable Batteries, wet, filled with acid Batteries, wet, filled with alkali Battery powered equipment Battery powered vehicle Lithium ion batteries Lithium ion batteries contained within equipment Lithium ion batteries packed with equipment Lithium metal batteries Lithium metal batteries contained within equipment Lithium metal batteries packed with equipment	Contained within: Radios; GPS receivers; Computers; Photography equipment; Drones; Power tools; EPIRBs; Sonar; Radio repeaters. Includes spare batteries.
Cylinders	1956	2.2	Compressed gas, n.o.s	Diving cylinders
Detonators	0360	1.1B	Detonator assemblies, non-electric, for blasting	
Distraction device	0410	1.4D	Fuses, detonating	
Explosive charges	0065	1.4D 1.1D	Cord, detonating	
Explosive charges	0084	1.1D	Explosive, blasting, type D	
Explosive charges	0288	1.1D	Charges, shaped, flexible, linear	

First aid kit	3316	9	First aid kit	May contain one or more compatible items of DG used for medical purposes
Fuel	1223	3	Kerosene	Fuel for camp stoves, generators, powered tools, etc
Fuel	1299	3	Turpentine	Fuel for camp stoves, generators, powered tools, etc
Fuel	1300	3	Turpentine substitute	White spirits: fuel for camp stoves
Fuel	1203	3	Gasoline	Fuel for camp stoves, generators, powered tools, etc
Fuel	1203	3	Petrol	Fuel for camp stoves, generators, powered tools, etc
Fuel	1203	3	Motor spirit	Fuel for camp stoves, generators, powered tools, etc
Gas cannisters	1954	2.1	Compressed gas, flammable, n.o.s	Gas cannisters for camp stoves
Gas cannisters	2037	2.1	Receptacles, small, containing gas	Flammable gas, without a release device, non-refillable
Generator	3528	3	Machinery, internal combustion, flammable liquid powered	
Grenades	0301	1.4G (6.1,8)	Ammunition, tear producing	
Oxygen	1072	2.2 (5.1)	Oxygen, compressed	Medical oxygen Oxygen for ultra-thermic cutting lance
Pepper spray	1950	2.2	Aerosols, non-flammable	
Portable Electronic Devices (PEDs)	See batteries above			
Smoke grenade	0303	1.4G	Ammunition, smoke	
Stun grenade	0431	1.4G	Articles, pyrotechnic	
Tasers	1066	2.2	Nitrogen, compressed	

5. Carriage of Class 1 DG

Rule 92.11(b)

Rule 92.11(b) allows for the offer and acceptance of Class 1 DG without complying with all Part 92 requirements and prescribes several conditions for that carriage to happen. Class 1 DG comprises explosive substances, explosive articles, and substances and articles which are manufactured with a view to producing a practical explosive or pyrotechnic effect. The practical application of this provision is to allow for operations such as the dropping of explosives from helicopters for avalanche control. The minimum requirements of the rule are as follows:

Rule 92.11(b)(1) *Carriage is approved by a certified handler².*

A certified handler must hold a current compliance certificate appropriate to the explosive being used, issued in accordance with the Health and Safety at Work (Hazardous Substances) Regulations 2017. The compliance certificate should be viewed by the operator and a copy kept on file.

Rule 92.11(b)(2) *The DG are carried (i) under the supervision of a certified handler, or (ii) in accordance with the instructions given by a certified handler and that certified handler is readily contactable to provide assistance at all times whilst the DG is being carried.*

It is expected that the certified handler would be carried in the aircraft with the explosives and always remain in charge of their carriage and use. If option (ii) is used, it should be possible to communicate with the certified handler at all times in flight and on the ground and if operations are from a remote site adequate facility for this communication must be available.

Rule 92.11(b)(3) *Safety and emergency procedures are established for the carriage of the goods.* Written procedures for the safety of the operation and actions in the event of an emergency should be included in the operator's exposition or standard operating procedures (SOPs). These procedures should be reviewed prior to each individual flight or series of flights as part of the pre-flight planning process, and a briefing held with all applicable personnel prior to the operation commencing.

Rule 92.11(b)(4) *The goods are (i) in a proper condition for carriage by air and (ii) stowed and secured for safe carriage.*

The goods should be carried in their original manufacturer's packaging, or, if it is intended for the goods to be dropped from the aircraft, be packed safely for the duration of any transit flights. They must be stowed and secured to prevent any movement.

Rule 92.11(b)(5) *The aircraft does not carry any passenger other than a passenger who is essential for the purpose of the flight.*

It is expected that the only passenger being carried would be the certified handler.

Rule 92.11(b)(6) *The flight is conducted clear of any congested area of a city, town, or settlement.* Sufficient clearance from congested areas must be planned, to ensure that:

- an emergency landing can be conducted at any time during flight without hazarding persons or property on the surface, and

² Reference in this section to a Certified Handler has the same meaning and intent as the Approved Handler referred to in Part 92. Introduction of the Health and Safety at Work (Hazardous Substances) Regulations 2017 replaced the term Approved with Certified.

- if an inadvertent release of the explosives occurs, they fall into a safe area.

In all cases, a certificated operator who intends to make use of the applicable provisions should include in their operations manual or exposition appropriate procedures to address the potential safety implications. It is expected that a certificated operator will use their SMS to conduct a risk analysis, and create appropriate operating procedures based on that risk analysis.

A non-certificated operator who uses these provisions should also conduct a safety risk assessment and apply appropriate safety measures.

6. Carriage of DG for the Recreational Use of a Passenger

Rule 92.11(c)

Rule 92.11(c) allows for the offer and acceptance of DG for carriage by air without complying with Part 92 if the DG are for the recreational use of a passenger. This rule prescribes several conditions for that carriage to occur. The intention of this provision is to allow for the carriage of small quantities of common items used by people undertaking recreational activities in the outdoors. This provision cannot be used to carry DG for persons who are travelling for work purposes, such as government department staff or contractors (e.g. for the Department of Conservation or regional councils) or any other workers travelling to remote worksites by helicopter.

It is recommended that the requirements of the ICAO TIs be applied with regard to identification, packaging, packing, quantity limits, stowing, and segregation of DG carried under this provision.

The minimum requirements to meet the conditions of this rule are:

Rule 92.11(c)(1) *The DG are carried in an unpressurised aircraft that (i) has a MCTOW of 5700kg or less, and (ii) is on a domestic VFR flight.*

It is not acceptable to use this rule for larger aircraft or during IFR operations.

Rule 92.11(c)(2) *The DG are not listed in the Dangerous Goods List in the TIs as being forbidden for carriage by air in an aircraft that carries passengers.*

An operator who uses this rule should include in their DG manual a list of DG that they accept for carriage. A list of common recreational items is provided below, with summarised information taken from the ICAO TIs and the IATA DGR. It may be used for reference. If items that are not on this list are presented for carriage, an operator needs to be sure that the item is not forbidden by the ICAO TIs, and should have a procedure in their manual for assessing such items for carriage.

Rule 92.11(c)(3) *Safety and emergency procedures for the carriage of the dangerous goods are established.*

Written procedures for the safety of the operation and actions in the event of an emergency should be included in the operator's DG manual or SOPs. These procedures should be reviewed prior to each individual flight, or series of flights, as part of the pre-flight planning and a briefing held with all applicable personnel, including the passengers, prior to the operation commencing.

Rule 92.11(c)(4) *Each item of dangerous goods is identified.*

Passengers must be briefed on the carriage of DG and should be required to present any and all DG to the operator or pilot for inspection prior to flight.

Rule 92.11(c)(5) *The PIC is informed of the hazardous nature of the goods.*

The PIC must be fully aware of the dangers presented by the DG and how the DG can be carried safely. While this rule allows for carriage of DG without applying the ICAO TIs, this document and ICAO Doc 9481, *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods*, provide the applicable technical and safety information. If an item of DG is presented for carriage that the operator or PIC is not familiar with, they should refer to a person who is familiar with the ICAO TIs for guidance.

Rule 92.11(c)(6)(i) *The dangerous goods are in a proper condition for carriage by air.*

Individual items, packages, and containers must be free from damage and there must be no visible leakage. Metal containers must not show any signs of corrosion. The testing dates of any compressed gas cylinders or diving tanks must be valid, and valves checked for leakage and security.

Rule 92.11(c)(6)(ii) *The dangerous goods are segregated if they are likely to react dangerously together.*

The ICAO TIs contain advice on what items of DG are required to be segregated from other items of DG. The items listed in Table 6.1 below are not subject to segregation requirements. If a passenger wishes to carry other items of DG that fall into other classes or divisions than the ones listed, reference to the ICAO TIs will be required to determine any segregation requirements. For ease of reference a segregation table is attached as Appendix B.

Rule 92.11(c)(6)(iii) *The dangerous goods are stowed, secured, and if necessary packed, to prevent leakage or damage in flight.*

Whilst the ICAO TIs contain packing instructions for each item, this rule allows for some flexibility in the type of packing material. However, DG should be carried in containers or receptacles that are specifically designed for that purpose. For example, petrol must be carried in a jerry can designed for petrol, not in glass or plastic bottles. Another example is ammunition which should be carried in undamaged original packaging, or securely carried in an ammunition belt or magazine so that it cannot move or fall out. DG should be stowed and secured to prevent movement and prevent any damage occurring to the package or container during flight.

Rule 92.11(c)(7) *The only passengers carried aboard the aircraft are passengers who are associated with the dangerous goods.*

This requirement means that any passengers onboard the aircraft must be part of the same group of persons, such as a group of hunters from one hunting party. For example, it is not permissible to carry some hunters with DG, at the same time as carrying other passengers for a scenic flight.

In all, cases, a certificated operator who intends to make use of the applicable provisions should include in their operations manual or exposition appropriate procedures to address the potential safety implications. It is expected that a certificated operator will use their SMS to conduct a risk analysis, and create appropriate operating procedures based on that risk analysis.

A non-certificated operator who uses these provisions should also conduct a safety risk assessment and apply appropriate safety measures.

To comply with these provisions, it is necessary to be familiar with the DG being carried and the requirements of the ICAO TIs. For this reason, a list of common DG items is provided in Table 6.1 with the allowable quantities and any specific requirements taken from the ICAO TIs. If an item of DG that is not included in the list is presented for carriage, the operator should refer to the ICAO TIs as a starting point to determine correct and safe provisions for the carriage of that item.

Table 6.1: List of common DG carried for recreational purposes by passengers

Common Name	PSN Name	UN Number	Class	Hazard Label	Max Quantity per package	Notes
Ammunition	Cartridges, Small Arms	0012	1.4(s)	Explosive 1.4	25 kg	Cartridge case fitted with centre-fire or rim-fire primer, and a propelling charge and projectile. Includes shotgun cartridges.
Camping gas cannisters	Receptacles, small, containing gas (<i>flammable, without a release device, non-refillable</i>)	2037	2.1	Flammable Gas	1 kg	Small camping gas cannisters. 500 g maximum per canister, 1 kg maximum per package. Cannister must be new (unpunctured) or of a style that self-seals when the burner is removed from the cannister. The burner must be removed from the cannister prior to carriage by air. Must be butane, or a butane mixture having similar properties. Pure propane or isobutane cannisters are not permitted.
Diesel	Diesel fuel	1202	3	Flammable Liquid	60 L	
Fire lighters	Firelighters, solid with <i>flammable liquid</i>	2623	4.1	Flammable solid	25 kg	

Fly Spray	Aerosols, flammable	1950	2.1	Flammable Gas	75 kg	Each non-refillable metal container must not exceed 1 L capacity. Each non-refillable plastic aerosol must not exceed 120 mL capacity. Aerosols containing engine starting fluid are forbidden. The release valve must be protected from inadvertent release. Waste aerosols are not permitted.
Kerosene	Kerosene	1223	3	Flammable liquid	60 L	
Matches	Matches, safety	1944	4.1	Flammable solid	25 kg	Strike anywhere matches are not permitted. Must be tightly and securely packed to prevent movement within the package.
Personal Locator Beacon	Lithium ion batteries contained in equipment.	3481	9	Miscellaneous	5 kg	Refer to table 11.1 for limitations.
Petrol	Petrol	1203	3	Flammable liquid	5 L	
White Spirits	Turpentine Substitute	1300	3	Flammable Liquid	5 L	

7. Carriage of DG for Medical Aid In-Flight

Rule 92.1

Rule 92.1(b)(1) states that Part 92 does not apply to articles or substances that are specifically excluded under Part One in the TIs.

The ICAO TIs paragraph 1.1.5.1 states:

...these instructions do not apply to dangerous goods carried by an aircraft where the dangerous goods are (a) to provide, during flight, medical aid to a patient or to preserve tissues or organs intended for use in transplantation when these dangerous goods:

- 1) Have been placed on board with the approval of the operator; or*
- 2) Form part of the permanent equipment of the aircraft when it has been adapted for specialised use;*

Providing that:

- 1) Gas cylinders have been manufactured specifically for the purpose of containing and transporting that particular gas;*
- 2) Equipment containing wet-cell batteries is kept and, when necessary, secured in an upright position to prevent spillage of the electrolyte;*
- 3) Lithium metal or lithium ion cells or batteries meet the provision of 2;9.3³ and spare lithium batteries are individually protected so as to prevent short circuits when not in use.*

A certificated operator who intends to make use of this provision should include in their operations manual or exposition appropriate procedures to address the potential safety implications of carrying DG for medical use in flight without complying with the ICAO TIs. It is expected that a certificated operator will use their SMS to conduct a risk analysis, and create appropriate operating procedures based on that risk analysis.

A non-certificated operator who uses this provision should also conduct a safety risk assessment and apply appropriate safety measures.

The ICAO TIs place other requirements on the use of this exception:

- Provision must be made to stow and secure DG during take-off and landing and at all other times when deemed necessary by the PIC;
- The DG must be under the control of trained personnel during the time when they are in use on the aircraft;
- DG transported under this exception may be carried on a flight made by the same aircraft before or after a flight for the purposes identified above, when it is impracticable to load or unload the DG immediately before or after the flight, subject to the following conditions:

³ 2;9.3 lists the requirements for the carriage of lithium batteries.

- a) The DG must be capable of withstanding the normal conditions of transport;
 - b) The DG must be appropriately identified (e.g. by marking or labelling);
 - c) The DG may only be carried with the approval of the operator;
 - d) The DG must be inspected for damage or leakage prior to loading;
 - e) Loading must be supervised by the operator;
 - f) The DG must be stowed and secured in the aircraft in a manner that will prevent any movement in flight which would change their orientation;
 - g) The PIC must be notified of the DG loaded on board the aircraft and their loading location. In the event of a crew-change, this information must be passed to the next crew;
 - h) All personnel must be trained commensurate with the functions for which they are responsible;
 - i) The provisions of 7;4.2⁴ and 7;4.4⁵ in the TIs apply.
- DG transported under this exception may be carried on flights made by the same aircraft for other purposes (e.g. training or positioning flights before or after maintenance) subject to the conditions in a)-i) above.

To help operators, table 7.1 indicates DG that medical personnel may wish to carry. This list is not exclusive: other DG may be presented for carriage by air. It may be necessary to do a more detailed risk analysis, or consult the ICAO TIs for unexpected cases.

⁴ 7;4.2 details the requirements for information provided to employees.

⁵ 7;4.2 details the reporting of DG accidents and incidents.

Table 7.1: Common items of DG carried by Medical Personnel

Common Name	UN #	Class or division	PSN	Notes
Compressed air	1002	2.2	Air, compressed	Other gases may be carried
Alcohol hand sanitiser	1170	3	Ethanol, or Ethanol solution	
Alcohol hand sanitiser	1219	3	Isopropanol	
Alcohol wipes	3175	4.1	Solids containing flammable liquids	75% alcohol disinfectant wipes
Batteries and Lithium batteries	3171	9	Battery powered equipment	Contained within medical equipment such as: <ul style="list-style-type: none"> • Monitors • Ventilators • Suction devices • Syringe drivers • PEDs • Defibrillators Includes spare batteries both lithium and non-lithium
	3480		Lithium ion batteries	
	3481	9	Lithium ion batteries contained within equipment	
	3481	9	Lithium ion batteries packed with equipment	
	3090	9	Lithium metal batteries	
	3091	9	Lithium metal batteries contained within equipment	
	3091	9	Lithium metal batteries packed with equipment	
Cylinders	1956	2.2	Compressed gas, n.o.s	
First aid kit	3316	9	First aid kit	May contain one or more compatible items of DG used for medical purposes. May also be described as: <ul style="list-style-type: none"> • Thomas Pack • Aeromedical Pack • Flight Doctor Kit • Flight Nurse Kit
Nitrous oxide	2201	2.2(5.1)	Refrigerated liquid	
Oxygen	1072	2.2(5.1)	Oxygen, compressed	Medical oxygen
Portable electronic devices	See batteries above			

8. Carriage of DG for Search and Rescue (SAR)

Rule 92.1

Rule 92.1(b)(1) states that Part 92 does not apply to articles or substances that are specifically excluded under Part One in the TIs.

The ICAO TIs paragraph 1.1.5.1 states:

...these instructions do not apply to dangerous goods carried by an aircraft where the dangerous goods are (e) to provide, during flight, or related to the flight, aid in connection with search and rescue activities.

A certificated operator who intends to make use of this provision should include in their operations manual or exposition appropriate procedures to address the potential safety implications of carrying DG for SAR use without complying with the normal requirements of the ICAO TIs. It is expected that a certificated operator will use their SMS to conduct a risk analysis, and create appropriate operating procedures based on that risk analysis.

A non-certificated operator who uses this provision should also conduct a safety risk assessment and apply appropriate safety measures.

The ICAO TIs place other requirements on the use of this exception:

- Provision must be made to stow and secure DG during take-off and landing and at all other times when deemed necessary by the PIC
- The DG must be under the control of trained personnel during the time when they are in use on the aircraft
- DG transported under this exception may be carried on a flight made by the same aircraft before or after a flight for the purposes identified above, when it is impractical to load or unload the DG immediately before or after the flight, subject to the following conditions:
 - a) The DG must be capable of withstanding the normal conditions of transport
 - b) The DG must be appropriately identified (e.g. by marking or labelling)
 - c) The DG may only be carried with the approval of the operator
 - d) The DG must be inspected for damage or leakage prior to loading
 - e) Loading must be supervised by the operator
 - f) The DG must be stowed and secured in the aircraft in a manner that will prevent any movement in flight which would change their orientation
 - g) The PIC must be notified of the DG loaded on board the aircraft and their loading location. In the event of a crew-change, this information must be passed to the next crew
 - h) All personnel must be trained commensurate with the functions for which they are responsible

- i) The provisions of 7;4.2⁶ and 7;4.4⁷ in the TIs apply.
- DG transported under this exception may be carried on flights made by the same aircraft for other purposes (e.g. training or positioning flights before or after maintenance) subject to the conditions in a)-i) above.

It is expected that the primary use of this provision is for the carriage of ground SAR teams who are operating in remote areas. As such, the list of DG in Table 6.1 indicates DG that SAR personnel may wish to carry. This list is not exclusive: other DG may be presented for carriage by air. It may be necessary to do a more detailed risk analysis, or consult the ICAO TIs for unexpected cases.

SAR operations often involve the carriage of radios and radio repeater equipment. The carriage of such items during an SAR operation is covered by the SAR provisions of the ICAO TIs. However, routine logistical flights such as replacement or inspection of radio repeater batteries, not as part of an SAR operation, do not. If the equipment contains lithium batteries that are less than 160 Wh, they may be carried in accordance with the guidance for the carriage of DG by passengers and crew (section 11 of this AC). If the batteries are larger than 160 Wh, an operator must assess whether they can be carried under the provisions for carriage of DG by police (section 4 of this AC), otherwise they must be shipped and carried as DG cargo.

⁶ 7;4.2 details the requirements for information provided to employees.

⁷ 7;4.2 details the reporting of DG accidents and incidents.

9. Carriage of DG during Part 115 flights

Rule 115.229

Rule 115.229 states that a person may not offer or accept DG for carriage during an adventure aviation operation (i.e. a Part 115 operation). This means that no DG cargo may be carried, nor may DG be carried under the exceptions contained in Part 92 or the ICAO TIs.

However, it is accepted that DG may be carried under two provisions:

- DG carried under rule 92.1(b)(2): DG that is required to be aboard an aircraft in accordance with the airworthiness or operational requirements of the Civil Aviation Rules. This includes items such as ELTs (containing lithium batteries), aircraft batteries, the fuel required for flight, and if required by applicable rules, items such as lifejackets or oxygen systems. This does not include aircraft spare parts or replacement items, which must be shipped and carried as DG cargo (regardless of if they are aircraft spare parts).
- DG carried under rule 92.13, *Carriage by passenger or crew member*.

A certificated operator who intends to make use of this provision should include in their operations manual or exposition appropriate procedures to address the potential safety implications of carrying DG for passengers and crew. It is expected that a certificated operator will use their SMS to conduct a risk analysis, and create appropriate operating procedures based on that risk analysis. This may include limiting the types of DG that are allowed to be carried by passengers and crew to a more consolidated list than in section 11 below.

10. Carriage of DG during Part 137 flights

Part 137

Part 137 is the operating rule for aircraft conducting agricultural aircraft operations. These operations can include the ability to carry cargo and personnel. As such, the carriage of DG may be required. There is no general exception or exemption for the carriage of DG in an agricultural aircraft operation other than DG that is carried in the aircraft application system ready for dispersal. As such, all other DG that is carried must be carried in accordance with Part 92. This specifically includes the carriage of jerry cans of fuel and agricultural chemicals for use on subsequent flights.

It is accepted that DG may be carried on a Part 137 flight under the following provisions:

- DG carried under rule 92.1(b)(2): DG that is required to be aboard an aircraft in accordance with the airworthiness or operational requirements of the rules. This includes items such as ELTs (containing lithium batteries), aircraft batteries, the fuel required for flight, and if required by the rules, items such as lifejackets or oxygen systems. This does not include aircraft spare parts or replacement items, which must be shipped and carried as DG cargo (regardless of if they are aircraft spare parts).
- DG carried under rule 92.13, *Carriage by passenger or crew member*. Refer to section 11 of this AC.
- DG shipped and carried as DG cargo.

A Part 137-certificated operator who intends to carry DG should include in their operations manual or exposition appropriate procedures to address the potential safety implications of the carriage of DG. It is expected that a certificated operator will use their SMS to conduct a risk analysis, and create appropriate operating procedures based on that risk analysis. This may include limiting the types of DG that are allowed to be carried by passengers and crew to a more consolidated list than that contained in section 11 below, and appropriate procedures for the carriage of DG as cargo.

11. Carriage of DG by Passengers and Crew

Rule 92.13

Rule 92.13 requires that DG may not be carried on an aircraft in checked baggage, carry-on baggage, or on a person unless permitted by the ICAO TIs. Part 8 of the ICAO TIs and Section 2 of the IATA DGR provide a detailed description of items that are permitted for carriage by passengers and crew, with notes on allowable quantities and packaging, etc. This section is applicable to all operators and pilots regardless of whether they are 'will-carry' or 'will-not-carry' operators, or are flying for hire or reward or privately. For example, it includes the provision for passengers and crew to carry PEDs, such as mobile phones.

As part of the requirements of the ICAO TIs:

- a) The goods must be carried in carry-on baggage, checked baggage, or on the person
- b) The goods must be permitted in the applicable table (ICAO TIs Part 8 Table 8-1, or IATA DGR Section 2.3 Table 2.3.A)
- c) The goods must be for personal use only, and
- d) The other provisions of the ICAO TIs (such as documentation, marking, labelling, packing) do not apply to goods carried under these provisions except that reporting requirements for DG incidents are still applicable.


The intent of this section of the AC is to provide an easy reference guide to the common items carried by passengers and crew. This information is taken from the ICAO TIs and the IATA DGR, and if clarification or more information is required, then reference to the latest version of those manuals is required. Table 11.1 is not an exhaustive list: there are other items, not commonly carried, in the list following Table 11.1 of items that are included in the ICAO TIs but not covered in this AC.


Note: While the requirements of the ICAO TIs are mandatory, the IATA DGR, in some cases, place additional requirements on certain items.


All certificated operators are required to include training on this provision in their DG training programme. Non-certificated operators and private pilots are also required to undertake similar training. For guidance on best practice for running training and recurrent training, and other training obligations, refer to AC92-1.


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Table 11.1: Provisions for Dangerous Goods Carried by Passengers and Crew


Batteries: spare/loose and Lithium batteries: spare/loose including power banks Includes lithium batteries, non-spillable batteries, nickel-metal hydride batteries, and dry batteries for portable electronic devices. Articles which have the primary purpose as a power source (power banks) are considered spare batteries.			
	Packaging	Quantity	Notes
	Must be individually protected to prevent short circuits.	Maximum 20 spare batteries per person. The operator may approve the carriage of more than 20 batteries.	Lithium metal batteries must not exceed 2 g of lithium content. Lithium ion batteries must not exceed 100 Wh. Non-spillable wet batteries must be capable of withstanding vibration and pressure tests, maximum 2 per person, not exceeding 12 v and 100 Wh, battery terminals protected.
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
No	No	Yes	No


Lithium batteries spare/loose			
	Packaging	Quantity	Notes
	Batteries must be individually protected to prevent short circuits.	Maximum 2 spare batteries.	Lithium ion batteries exceeding 100 Wh but not exceeding 160 Wh. For medical devices only, lithium metal batteries with lithium metal content exceeding 2 g but not exceeding 8 g. Batteries must meet UN test criteria
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
Yes	No	Yes	No


Lithium batteries: Portable electronic devices (PED) containing lithium metal or lithium ion cells or batteries Includes medical devices such as portable oxygen concentrators, and consumer electronics such as cameras, mobile phones, laptops, and tablets.			
	Packaging	Quantity	Notes
	Devices in checked baggage must be completely switched off and must be protected from damage.	Maximum 15 PED per person. The operator may approve the carriage of more than 15 PED.	Lithium metal content must not exceed 2 g. Lithium ion batteries must not exceed 100 Wh each
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
No	Yes	Yes	No


Lithium battery powered electronic devices Includes portable medical electronic devices, power tools, video cameras, laptops, etc.			
	Packaging	Quantity	Notes
	Devices in checked baggage must be completely switched off (not in hibernation or sleep mode). Must be protected from damage. Must be protected from inadvertent activation.	Maximum 15 PED per person.	Lithium ion batteries exceeding 100 Wh but not exceeding 160 Wh. For medical devices only, lithium metal batteries with lithium metal content exceeding 2 g but not exceeding 8 g. Batteries must meet UN testing criteria.
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
Yes	Yes	Yes	No

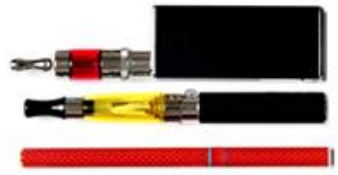
Alcoholic Beverages			
	Packaging	Quantity	Notes
	In retail packaging	Maximum per receptacle 5 L Total quantity per person 5 L	More than 24% but less than 70% alcohol by volume
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
No	Yes	Yes	No


Ammunition			
	Packaging	Quantity	Notes
	Securely packaged. Allowances for more than one person must not be combined into one or more packages.	Not exceeding 5 kg gross weight per person.	Division 1.4S only. For that person's own use only. Excludes ammunition with explosive or incendiary projectiles.
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
Yes	Yes	No	No


Avalanche rescue backpack			
	Packaging	Quantity	Notes
	Packed so that it cannot be inadvertently activated.	One per person.	Containing cartridges of division 2.2 compressed gas, may be fitted with trigger containing no more than 200 mg net of division 1.4S. Must be fitted with pressure relief valves.
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
Yes	Yes	Yes	No


Camping stoves and fuel containers that have contained flammable liquid fuel			
	Packaging	Quantity	Notes
	Cap securely fastened. Wrapped in absorbent material and placed in a sealed polyethylene or equivalent bag.	No limit	Must be completely drained and action taken to nullify the danger.
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
Yes	Yes	No	No


Dry Ice (solid carbon dioxide)			
	Packaging	Quantity	Notes
	Baggage must permit release of CO2 gas. Checked baggage must be marked 'dry-ice' or 'carbon-dioxide, solid'.	Maximum 2.5 kg per person, when used to pack perishables.	Net weight of dry ice marked on package, or an indication that there is less than 2.5 kg.
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
Yes	Yes	Yes	No


E-cigarettes (Includes e-cigars, e-pipes, personal vaporisers, electronic nicotine delivery systems).			
	Packaging	Quantity	Notes
	Measures must be taken to prevent unintentional activation of the heating element while on board the aircraft.	No limit	Re-charging on board aircraft is not permitted.
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
No	No	Yes	No


Gas cartridges, small non-flammable			
	Packaging	Quantity	Notes
	Personal safety device packed so that it cannot be inadvertently activated.	Maximum 2 small cartridges fitted to a self-inflating personal safety device such as a lifejacket. Not more than 2 devices per passenger and 2 spare cartridges per device. For other devices, max. 4 cartridges, capacity not exceeding 50 mL water (equivalent to a 28 g gas cartridge).	CO2 or other suitable gas in division 2.2 without subsidiary hazard. Must be for inflation purposes.
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
Yes	Yes	Yes	No


Gas cylinders: non-flammable, non-toxic, worn for the operation of mechanical limbs			
	Packaging	Quantity	Notes
	Worn with the limb.	As required by the limb.	Spare cylinders of a similar size are also allowed if required to ensure an adequate supply for the journey.
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
No	Yes	Yes	No


Hair styling equipment containing a hydrocarbon gas cartridge			
	Packaging	Quantity	Notes
	Safety cover must be securely fitted over the heating element.	1 per passenger or crew member.	Must not be used on board the aircraft at any time. Spare cartridges are not permitted in checked or carry-on baggage.
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
No	Yes	Yes	No


Internal combustion or fuel cell engines			
	Packaging	Quantity	Notes
	Flammable liquid powered internal combustion or fuel cell engines being carried separately or incorporated into a machine or other apparatus, without batteries or other DG, must comply with the conditions that: <ul style="list-style-type: none"> a) The engine is powered by a fuel that is not a DG; or b) The fuel tank has never contained any fuel, or the fuel has been flushed and the tank purged of vapours and adequate measures taken to nullify the hazard; and c) The passenger provides documentation that the flushing and purging procedure has been followed, and; d) The entire fuel system has no free liquid and all fuel lines are sealed or capped or securely connected. 		
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
No	Yes	No	No


Matches, safety, or small cigarette lighter			
	Packaging	Quantity	Notes
	One small packet, or one small lighter. Only if carried by an individual who intends to use the item. Lighter must not contain unabsorbed liquid fuel, other than liquified gas. Lighter fuel and lighter refills are not permitted. Strike anywhere matches, blue flame lighters, cigar lighters, are not permitted. Cigarette lighters should have two independent actions by the user to activate ignition. Cigarette lighters powered by lithium batteries without a safety cap or means of protection against inadvertent activation are not permitted.		
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
No	No	On one's person only	No


Mobility aids/wheelchairs with non-spillable wet batteries, nickel metal hydride batteries, or dry batteries			
	Packaging	Quantity	Notes
	<p>Mobility aid must be prepared to prevent inadvertent activation.</p> <p>Mobility aid secured and protected from damage.</p> <p>Any spare batteries, batteries that are removed must be carried in strong rigid packaging in cargo compartment.</p>	May carry one spare wet non-spillable battery, or two spare nickel-metal hydride or dry batteries.	<p>Non-spillable batteries must not contain any free or unabsorbed liquid.</p> <p>Batteries must be prepared to prevent short circuit and inadvertent activation.</p> <p>Non-spillable wet batteries must pass pressure and vibration tests.</p>
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
Yes	Yes	No	Yes


Mobility aids/wheelchairs with spillable batteries			
	Packaging	Quantity	Notes
	<p>Mobility aid must be prepared to prevent inadvertent activation.</p> <p>Mobility aid secured and protected from damage, battery securely attached and electrical circuits isolated, or, removed if the wheelchair is unable to be carried upright.</p> <p>If battery removed, packaging must be marked 'BATTERY-WET with WHEELCHAIR' and with corrosive and orientation labels.</p>	May carry one spare wet non-spillable battery, or two spare nickel-metal hydride or dry batteries.	<p>Battery terminals prevented from short circuit.</p> <p>Battery fitted with non-spillable vent caps.</p> <p>Battery must be carried upright.</p> <p>If battery is removed it must be carried in leak-proof, impervious packaging, secured, protected from short circuit, and surrounded by compatible absorbent material able to contain the entire liquid contents.</p>
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
Yes	Yes	No	Yes

Mobility/wheelchairs aids with lithium batteries			
	Packaging	Quantity	Notes
	Mobility aid must be prepared to prevent inadvertent activation. Mobility aid secured and protected from damage. Battery adequately protected from damage by the design of the mobility aid, and securely attached to the mobility aid, or removed from the mobility aid.	Passenger may carry one spare battery not exceeding 300 Wh or two spare batteries not exceeding 160 Wh.	Battery must meet UN test criteria. Battery terminals prevented from short circuit. Each battery removed from the mobility aid must not exceed 300 Wh. Any removed batteries or spare batteries must be carried in the passenger cabin and protected from damage.
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
Yes	Yes	No	Yes

Non-radioactive medicinal or toiletry articles (including aerosols)			
Including hairsprays, perfumes, colognes, medicines containing alcohol, and non-flammable non-toxic aerosols with no subsidiary hazard, for sporting or home use.			
	Packaging	Quantity	Notes
	Release valves on aerosols must be protected by a cap or other suitable means.	Total net quantity must not exceed 2 kg or 2 L. Net quantity of each article must not exceed 0.5 kg or 0.5 L.	
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
No	Yes	Yes	No

Oxygen or air, gas cylinders for medical use			
	Packaging	Quantity	Notes
	Cylinders valves and regulators must be protected from damage and inadvertent release.	Cylinder must not exceed 5 Kg gross weight.	Liquid oxygen is forbidden for transport.
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
Yes	Yes	Yes	Yes

Thermometer, medical or clinical which contain mercury.			
	Packaging	Quantity	Notes
	Packed in its protective case.	One per person for personal use.	
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
No	Yes	No	No

Thermometer or barometer, mercury filled			
Carried by a representative of a government weather bureau or similar official agency			
	Packaging	Quantity	Notes
	Packed in strong outer packaging, with a sealed inner liner, or bag of strong leak-proof and puncture-resistant material impervious to mercury.	One per person.	Packaging must prevent escape of mercury regardless of position of package.
Approval of operator required	Permitted as checked baggage	Permitted as carry-on baggage	PIC informed of location
Yes	No	Yes	Yes

Items in the ICAO TIs or IATA DGR not included above

The following items are included in the list of DG in the ICAO TIs and IATA DGR that may be carried by passengers and crew but are not included in the table above. If a passenger or crew member needs to carry any of the following items, they should refer to the ICAO TIs or IATA DGR:

- Baggage with installed lithium batteries
- Chemical agent monitoring equipment
- Disabling devices (such as mace, pepper spray)
- Electroshock weapons
- Fuel cells contained in portable electronic devices
- Fuel cell cartridges, spare
- Insulated packaging containing refrigerated liquid nitrogen
- Permeation devices
- Radio isotopic cardiac pacemakers
- Security type equipment (attaché cases, cash boxes, etc fitted with lithium batteries or pyrotechnics)
- Specimens, non-infectious, packed with small quantities of flammable liquid

12. Carriage of DG by Helicopters Operating in Remote Areas with very limited access to DG services

ICAO TIs and rules 92.53 to 92.173

The ICAO TIs allow CAA to prescribe specific procedures for the carriage of DG by helicopters. This provision recognises that for some helicopter operations the application of the full provisions of the ICAO TIs may not be appropriate or necessary, due to the operation involving unmanned sites, remote locations, mountainous areas, etc.

This section provides an acceptable means of compliance for helicopters operating within New Zealand or New Zealand territory, to carry DG, in circumstances and locations that make full compliance with the requirements of the ICAO TIs unduly difficult or impossible to achieve. It is not a blanket approval to ignore the ICAO TIs: it is an explanation of acceptable methods and processes that an operator may wish to use to provide relief from some of the requirements of the ICAO TIs. These methods or processes must be incorporated into an operator's DG Manual (part of the exposition), or, for a non-certificated operator, should be included in a written SOP.

The requirements of Part 92 can only be changed by a rule amendment. In addition, an operator can be exempted from certain requirements, if granting an exemption does not increase any risks to aviation safety. However, a helicopter operator may create and apply an applicable procedure that achieves a specific rule requirement but is a variation of the ICAO TIs, in accordance with the guidance below. Note that the following explanations do not cover all the requirements of Part 92 and that reference to Part 92, as well as this AC, will be required when creating procedures for the carriage of DG.

It is recognised that in remote areas it is not possible for clients or passengers to engage the services of a DG handling agent for packing and shipping DG, and that many will offer DG to an operator or pilot for carriage by air without being properly packed and shipped. In these circumstances, it is acceptable for an appropriately trained and qualified employee of the operator to act as the packer and shipper, as required. This is not, however, a blanket approval for helicopter operators to pack and ship DG (unless they are appropriately qualified and certified to do so), rather it is a provision that may be used in remote areas in circumstances as described above.

Attached as Appendix A is a list of items of DG that are commonly carried by helicopters in New Zealand, with the appropriate information for each item extracted from the ICAO TIs. This list is not a limitation on DG that can be carried, rather it is provided as a quick reference guide for use in situations where reference to the ICAO TIs or IATA DGR is not possible or practical.

Specific rule requirements

Rule 92.51 Packaging requirements.

DG must be packaged in packaging that is manufactured and tested in accordance with the requirements of the ICAO TIs.

Rule 92.55 Packing requirements.

DG must be packed in accordance with the ICAO TIs. This includes using the correct type of packaging material, applying the maximum quantity limits per package, and applying any specific packing methods required by the ICAO TIs.

Rule 92.57 & 92.59 Marking and Labelling requirements.

DG must be marked and labelled in accordance with the ICAO TIs.

Rule 92.103 Offer of Dangerous Goods.

Many of the clients or passengers who use helicopters in remote areas will not be able to complete the normal requirements of certification, packaging, marking, labelling, and documentation, as required by the ICAO TIs. Helicopter operators and pilots (who are suitably trained and qualified) may undertake this function on behalf of their clients or passengers. This includes the packaging, marking, labelling, and documentation carried out either in accordance with the ICAO TIs or in accordance with this section of this AC.

Rule 92.105 Dangerous Goods Transport Document.

The Dangerous Goods Transport Document that is commonly used is the IATA Dangerous Goods Declaration (DGD). This may not be appropriate for many helicopter operations; thus, it is acceptable for a helicopter operator to create a form that is more usable and applicable to their operation, or to use a suitable document provided by a client, using the following guidelines:

- a) The document must be in two copies (electronic copies are acceptable), with one kept at base and one travelling with the DG. The document must record, in the following order:
 - i. The PSN, primary hazard class, and if applicable the division and compatibility group
 - ii. If applicable the secondary hazard class and division
 - iii. UN number
 - iv. Where assigned, the packing group.
- b) The document must also record:
 - i. Name and address of shipper and consignee
 - ii. Quantity of DG, and number and type of packages
 - iii. If applicable the requirements from the ICAO TIs for:
 - I. Salvage packagings
 - II. Chemical oxygen generators
 - III. Self-reactive substances and organic peroxides
 - IV. Infectious substances and controlled substances
 - V. Firework classification reference
 - VI. Radioactive material information
 - VII. Specific actions or restrictions required by the operator
 - VIII. Emergency arrangements if appropriate
 - IX. Specific approvals
 - X. The packing instruction

- XI. Special provisions
 - XII. A statement indicating the shipment is acceptable for either passenger or cargo only aircraft
 - XIII. Special handling information
 - XIV. Overpacks
 - XV. 'Q' values.
- c) The document may be combined with and on the same form as the Notification to Captain (NOTOC) (see the sub-section below on rule 92.173), and other flight documentation such as a daily flight record or flight notification. If both dangerous and non-dangerous goods are listed in one document, the DG must be listed first.
- d) The document must bear the following 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 all respects in proper condition for transport according to applicable international and national governmental regulations. I declare that all of the applicable air transport requirements have been met.*
- e) The document must be signed and dated by the shipper.

Rule 92.153 Acceptance of Dangerous Goods.

Rule 92.153(1) requires that DG can only be accepted for carriage by air when offered with two copies of the DG transport document. The transport document requirements are listed above. Rule 92.153(2) requires that the DG have been inspected IAW Rule 92.163 and marked and labelled IAW rules 92.57 and 92.59.

Rule 92.155 Acceptance check.

An operator may elect to use the IATA acceptance checklists or create their own checklist for the acceptance of DG. As a minimum the acceptance checklist must include a review of the transport document for accuracy and completeness and an inspection of the DG package(s) for marking, labelling, and condition. An electronic form is acceptable.

Rule 92.157 Aircraft loading restrictions.

DG may not be carried in a helicopter cabin occupied by passengers or on the flight deck except that:

- a) A passenger or crew member may carry DG in checked or carry-on baggage, or on their person, if permitted by the ICAO TIs (see section 11 of this AC)
- b) A passenger may carry DG for their own use for recreational purposes (see section 6 of this AC)
- c) Radioactive material if it is an excepted package under the ICAO TIs
- d) DG of the following classes and divisions:
 - i. Class 1, Division 1.4(S), explosives of compatibility group S
 - ii. Class 2, Division 2.2, non-flammable, non-toxic gas

- iii. Class 3 flammable liquids, packing group III
- iv. Class 4, Division 4.1, flammable solids packing group III
- v. Class 5, division 5.1, oxidising substances, packing group III
- vi. Class 6, division 6.1, poisonous substances, packing group III
- vii. Class 7, radioactive material, loaded in accordance with separation requirements
- viii. Class 8, packing group III
- ix. Class 9 miscellaneous goods.

If DG does not fit into these categories, a helicopter operator must carry the DG in a separate baggage or cargo compartment, or an external cargo pod.

Rule 92.159 Incompatible dangerous goods, and

Rule 92.161 Separation, segregation, and security.

All DG must be protected from damage when being loaded and be secured to prevent any movement in flight which might cause the orientation of packages to change or cause any damage to the package. While it may not be possible to apply all the loading considerations from the ICAO TIs, helicopter operators should pay attention to:

- a) Loading packages containing poisons or infectious substances such that, in the event of a leak, spillage, or rupture of the package, the contents cannot contact any passenger or crew member
- b) Loading radioactive material separate from any persons, live animals, and undeveloped film.

The segregation tables included in the ICAO TIs and IATA DGR provide guidance on segregation. For ease of reference the following segregation requirements have been extracted from the tables:

- a) Class 1 DG (apart from 1.4(s)) must be segregated from all other DG
- b) Class 3 DG must be segregated from class 5.1.
- c) Class 4.2 DG must be segregated from class 5.1.
- d) Class 4.3 DG must be segregated from class 8.
- e) Class 9 DG (lithium batteries) must be segregated from classes 1, 2.1, 3, 4.1, and 5.1.

Division 1.4S, and classes 6, 7, and 9 (apart from lithium batteries) do not have segregation requirements.

Rule 92.173 Information to pilot-in-command.

The information to the PIC required by the ICAO TIs is normally in the form of a written NOTOC. It is acceptable to combine the NOTOC with the transport document or other flight documentation such as an operational flight plan. Regardless of the format, the information must be readily available to the pilot in flight and include the information regarding the DG from the transport document.

It is also necessary for the PIC to have immediate access to the emergency response information contained in ICAO Doc 9481 *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods*, or any other appropriate emergency response document. For ease of access the applicable table of emergency response codes is attached as Appendix C. In aircraft where access to documented information is not feasible while flying, the PIC should familiarise themselves with the emergency information prior to flight. (This does not replace the requirement to have the information available in the aircraft.)

13. Carriage of DG by Underslung Load

Part 133

Part 133 allows DG to be carried as an underslung load beneath a helicopter without complying with Part 92. However, there are several conditions that must be applied to comply with the rule. The rule is summarised below, followed by an explanation of the key requirements.

Rule 133.65 DG.

Under rule 133.65(a), Class 1 DG may be carried as an underslung load if:

- 1) The carriage is approved by a certified handler⁸; and
- 2) Safety and emergency procedures are established; and
- 3) The DG is:
 - i. In a proper condition for carriage by air; and
 - ii. Stowed and secured for safe carriage; and
- 4) The operation is performed clear of any congested area of a city, town, or settlement.

Under rule 133.65(b), Class 2 to 9 DG may be carried as an underslung load if:

- 1) The carriage of the DG is not forbidden by the ICAO TIs
- 2) Safety and emergency procedures are established, and
- 3) Each item of DG is identified, and
- 4) The PIC is informed of the hazardous nature of the DG, and
- 5) The DG is:
 - i. In a proper condition for carriage by air, and
 - ii. Segregated if they are likely to react dangerously together, and
 - iii. Stowed, secured, and if necessary packed, to prevent leakage or damage in flight.

A certificated operator who intends to make use of this provision should include in their operations manual or exposition appropriate procedures to address the potential safety implications of carrying DG as an underslung load. Safety and emergency procedures should be written down and available to the PIC at all times. A certificated operator should use their SMS to conduct a risk analysis, and create appropriate operating procedures based on that risk analysis.

⁸ Certified Handler has the same meaning and intent as the Approved Handler referred to in Part 92 and Part 133. Introduction of the Health and Safety at Work (Hazardous Substances) Regulations 2017 replaced the term Approved with Certified.

A non-certificated operator who uses this provision should also conduct a safety risk assessment and apply appropriate safety measures.

Rule 133.65(a)(1) Certified handler.

A certified handler must approve the carriage of Class 1 DG by underslung load. This approval should be in writing and a copy of this approval should be included with the flight documentation.

Rule 133.65(b)(1) Forbidden DG.

DG that is forbidden to be carried by air in the ICAO TIs is still forbidden to be carried by underslung load. This includes items or substances that are forbidden under any circumstances and items or substances that are normally forbidden but may be carried under an approval issued by CAA. If such items or substances need to be carried, then the approval of CAA must be obtained prior to the operation.

Rule 133.65(a)(2) & (b)(2) Safety and emergency procedures for the carriage of DG by underslung load.

Safety and emergency procedures for the carriage of DG by underslung load should be contained in the exposition or operating procedures. Consideration must be given to the possibility of static build-up and the reaction that this may create with the DG.

Rule 133.65(b)(3) Identification of DG.

Each item of DG should be clearly identified, and the appropriate DG marks and labels should be visible to all personnel involved in the operation.

Rule 133.65(b)(4) Notification to pilot.

The pilot must be informed that they are carrying DG as part of their underslung load and must be notified of the hazardous nature of the DG.

Rule 133.65(b)(5) Condition, segregation, and security.

The DG must be:

- i. In proper condition to be protected from the effects of wind and weather, and protected from any stress created by cargo nets, strops or other lifting equipment. It must be contained in a net or other cargo device, or attached to the cargo sling, such that any movement is prevented and there is no possibility of it becoming insecure or falling from the aircraft. Liquids and any other items that are marked with 'this-way-up' handling labels must be carried upright, including engines or equipment containing fuel and spillable batteries. If DG is marked with protect-from-heat or keep-away-from-sunlight labels, or other handling labels, these must be adhered to.
- ii. Segregated if they are likely to react dangerously together, using the segregation table at Appendix B.
- iii. Secured so that there is no possibility of leakage or damage occurring during flight. Damaged or leaking packages may not be carried.

14. Loading of DG cargo

Rule 92.9

Rule 92.9 requires that DG be carried in accordance with the ICAO TIs, or under the provisions of Part 92. Both the ICAO TIs and Part 92 have requirements for the loading of DG which can seem difficult to understand. Therefore, this section is an explanation of what the requirements are for DG cargo. Provisions for loading of DG carried by passengers and crew are contained in section 11 of this AC.

Rule 92.157(a) states that an operator must not carry DG in an aircraft cabin occupied by passengers or on the flight deck of an aircraft. However, rule 92.157(b) (3) allows exceptions: *if performing a domestic operation, an operator may carry certain listed DG in the cargo compartment of the passenger cabin, where the aircraft is not equipped with a class B cargo compartment.* The majority of aircraft used in Part 135 operations are not equipped with class B cargo compartments.

What is the 'cargo compartment of the passenger cabin'?

This depends on the design of the aircraft involved.

For example, an AS 350 helicopter has the ability to fold up or remove some or all of the rear seats, so that cargo can be carried. Therefore, it is the cargo compartment of the passenger cabin.

An R44 helicopter has the under-seat lockers: again those can be considered as the cargo compartment of the passenger cabin.

Likewise, a C172 and many other light airplane types have a cargo bay behind the rear seats, which is the cargo compartment of the passenger cabin.

This is the practical, sensible, useful application of rule 92.157(b)(3). The DG that may be carried is:

- i. Class 1, Division 1.4 Compatibility Group S explosives
- ii. Class 2, Division 2.2, non-flammable, non-toxic gas
- iii. Class 3, flammable liquids, Packing Group III
- iv. Class 4, Division 4.1, flammable solids, Packing Group III
- v. Class 5, Division 5.1, oxidising substances, Packing Group III
- vi. Class 6, Division 6.1, poisonous substances, Packing Group III
- vii. Class 7, radioactive materials loaded in compliance with the minimum separation distances
- viii. Class 8, Packing Group III substances
- ix. Class 9, miscellaneous goods.

When the DG is not included in that list it must be carried separate to the passenger cabin, so in the rear locker of the AS350 for example, or an external cargo pod. A common example is petrol (Class 3, flammable liquids, Packing Group II). It is still allowed to be carried with passengers, but must be loaded separate to the passenger cabin.

The next consideration is cargo that is only allowed to be carried on cargo-only aircraft (commonly known as Cargo Aircraft Only or CAO). Many items may be carried as CAO items in a larger quantity than is allowable for carriage with passengers. For example, petrol can be carried up to a maximum of 5l per package with passengers, but is allowed up to a maximum of 60l per package as a CAO item. Some DG items and substances are CAO regardless of quantity. Therefore, they can only be carried on a cargo flight, no passengers.

CAO items have additional restrictions on loading that must be applied in addition to the requirements of rule 92.157. There is only a small list of items which can be loaded internally, i.e., in a cargo compartment (not the cabin).

Generally, DG bearing the CAO label may only be carried as a helicopter external load. However, the following DG bearing a CAO label may be carried, bearing in mind the restrictions on loading locations above:

1. UN 3529, Engine, internal combustion, flammable gas powered or Engine, fuel cell, flammable gas powered or machinery, internal combustion, flammable gas powered or machinery, fuel cell, flammable gas powered
2. Flammable liquids (Class 3), Packing Group III, other than those with a subsidiary hazard of Class 8
3. UN 3528, Engine, internal combustion, flammable liquid powered or Engine, fuel cell, flammable liquid powered or machinery, internal combustion, flammable liquid powered or machinery, fuel cell, flammable liquid powered
4. Toxic substances (Division 6.1) with no subsidiary hazard other than Class 3
5. Infectious substances (Division 6.2)
6. Miscellaneous dangerous goods (Class 9).

Cargo that is CAO is required to have this label on it:



Appendix A: List of Commonly Carried Dangerous Goods Cargo Items and Substances

There are several items of DG that are commonly carried, that cannot be carried under the provisions for passengers and crew, rule 92.11, or other exceptions, and that therefore need to be carried as DG cargo. This appendix is designed to be a quick reference guide to those items.


The information in this section is taken from the ICAO TIs and IATA DGR and is a summary of the relevant information for each item. It is not a complete reference, and if more information is required for a particular item or package, reference to the ICAO TIs or IATA DGR may be required. The intention of this appendix is to provide enough information for use in situations where easy access to the ICAO TIs or IATA DGR is not possible, such as remote helicopter operations.

The packaging options that are listed for each item are the common types of packaging used in New Zealand. For most DG there are other packaging options available, which can be found in the ICAO TIs or IATA DGR.


Lithium batteries

Lithium batteries are not included in this list. Any operator who intends to carry lithium batteries as cargo, and any client who wishes to ship lithium batteries as cargo, needs to refer to the latest edition of the ICAO TIs or IATA DGR to determine the appropriate carriage requirements and limitations. In some cases, carrying lithium batteries up to specified capacity limits can take place using the provisions for carriage of DG by passengers and crew in accordance with section 11 of this AC.

1080

UN Number:				PSN		<div><p>WARNING 1080 POISON BAITS LAID HERE</p><p>DOMESTIC DOGS, PETS & ANIMALS MAY BE AFFECTED IF THEY EAT BAITS OR DEAD ANIMALS PROTECT BY RESTRAINING OR MUZZLING</p><p>BAITS LAID FOR: FOXES / WILD DOGS / FERAL PIGS</p><p>BAITS LAID ON</p><p>BAITS MAY BE PRESENT FROM THIS DATE CONTACT PHONE:</p></div>			
UN 2629				Sodium fluoroacetate					
Class/Division (Subsidiary Hazard)				6.1					
Hazard label(s)				Toxic					
Notes: Depending on the concentration level of sodium fluoroacetate the substance may be classified as UN 2902 Pesticide, liquid, toxic, n.o.s									
E	F	G	H	I	J	K	L	M	N
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg		
		PI	Max net Qty/Pkg						
I	E5	Forbidden		666	5 kg	673	50 kg	-	6L
Packing Instructions:									
<ul style="list-style-type: none">PI 666:<ul style="list-style-type: none">Single packaging not permitted. Maximum quantity per inner packaging: glass 0.5 kg, metal and plastic 1.0 kg.Permitted outer packagings include:<ul style="list-style-type: none">Steel drums 1A1, 1A2Plastic drums 1H1, 1H2Wooden boxes 4C1, 4C2 (must be fitted with a suitable liner)Plywood boxes 4D (must be fitted with a suitable liner)Fibreboard boxes 4G (must be fitted with a suitable liner)PI 673:<ul style="list-style-type: none">Single and combination packagings are permitted.If combination packagings are used:<ul style="list-style-type: none">Maximum quantity per inner packaging: fibre, glass, paper bag, plastic bag 1.0 kg, metal and plastic 2.5kgPermitted outer packagings include:<ul style="list-style-type: none">Steel drums 1A1, 1A2Plastic drums 1H1, 1H2Wooden boxes 4C1, 4C2 (must be fitted with a suitable liner)Plywood boxes 4D (must be fitted with a suitable liner)Fibreboard boxes 4G (must be fitted with a suitable liner)Acceptable single packaging includes:<ul style="list-style-type: none">Steel drums 1A1, 1A2Plastic drums 1H1, 1H2Steel jerry cans 3A1, 3A2Aluminium jerry cans 3B1, 3B2Plastic jerry cans 3H1, 3H2									


Batteries

UN number:				PSN:					
UN 2800				Batteries, wet, non-spillable					
Class/Division (Subsidiary Hazard)				8					
Hazard label(s)				Corrosive					
Notes:									
E	F	G	H	I	J	K	L	M	N
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg		
		PI	Max net Qty/Pkg						
-	E0	Forbidden		872	No limit	872	No limit	A48 A67 A164 A183	8L
Packing Instruction 872: <ul style="list-style-type: none">Batteries must be securely packed in strong outer packagings.If metal packagings are used, they must be corrosion resistant or with protection against corrosion. Special Provisions: <ul style="list-style-type: none">A48: Packaging tests are not considered necessary.A67: Describes vibration and pressure testing requirements to categorise a battery as non-spillable.A164: Battery must be prepared for transport to prevent short circuits and unintentional activation.A183: Waste batteries and batteries being shipped for recycling or disposal are forbidden from air transport unless approved by CAA.									


Notes:

- For UN 3293 Batteries containing sodium and UN 3028 Batteries containing potassium hydroxide, solid, refer to separate entries in the ICAO TIs.
- Batteries, dry, are not restricted (this applies to batteries not otherwise listed in the list of DG). These are sealed, non-vented batteries of the type used in flashlights or for the operation of small apparatus. They contain zinc salts and other solids or may be of the nickel-cadmium type or other combinations or metals. Such batteries must be packed in inner packagings to prevent unintentional activation, short circuits, and movement which could lead to short circuits. Examples are alkali-manganese, zinc-carbon, nickel-metal hydride and nickel-cadmium batteries.


Batteries

UN number:					PSN:									
UN 2794					Batteries, wet, filled with acid									
UN 2795					Batteries, wet, filled with alkali									
Class/Division (Subsidiary Hazard)					8									
Hazard label(s)					Corrosive									
Notes:														
E	F	G	H	I	J	K	L	M	N					
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code					
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg							
		PI	Max net Qty/Pkg											
-	E0	Forbidden		870	30 kg	870	No limit	A51 A164 A183 A802	8L					
Packing Instruction 870:														
<ul style="list-style-type: none">Substances must be compatible with their packagings.If metal packagings are used, they must be corrosion resistant or with protection against corrosion.Batteries must be packed in strong outer packaging, approved types include:<ul style="list-style-type: none">Steel box 4A,Aluminium box 4B,Plywood box 4D,Reconstituted wood box 4F,Fibreboard box 4G.Batteries must be securely cushioned in the package.Packaging must incorporate an acid/alkali-proof liner of sufficient strength and adequately sealed.Fill opening must remain upwards, be incapable of short circuiting, with orientation labels on the outside of the package.														
Special Provisions:														
<ul style="list-style-type: none">A51: Aircraft batteries may be carried on passenger aircraft up to 100kg per package.A164: Battery must be prepared for transport to prevent short circuits and unintentional activation.A183: Waste batteries and batteries being shipped for recycling or disposal are forbidden from air transport unless approved by CAA.A802: Packaging must meet packing group II performance standards.														

Diesel/Kerosene/Jet Fuel

UN Number:				PSN:					
UN 1202				Diesel Fuel					
UN 1223				Kerosene					
UN 1863				Fuel, aviation, turbine engine					
Class/Division (Subsidiary Hazard)				3					
Hazard label(s)				Flammable liquid					
Notes: <ul style="list-style-type: none">Sufficient ullage (outage) must be left to allow for expansion during transport (do not fill to maximum capacity).Must use packagings designed for carrying fuel.Jerry cans or other plastic containers must not be more than 5 years old.									
E	F	G	H	I	J	K	L	M	N
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg		
		PI	Max net Qty/Pkg						
III	E1	Y344	10L	355	60 L	366	220 L	A3 A324	3L
Packing Instructions: <ul style="list-style-type: none">PI Y344:<ul style="list-style-type: none">Single packagings are not permitted.Limited quantity packaging does not need to meet marking and testing requirements but must be well constructed of suitable material and withstand a 1.2 m drop test.Maximum net quantity per inner packaging: glass 2.5 L, metal and plastic 5 L.355:<ul style="list-style-type: none">Combination and single packagings are permitted.If combination packaging is used:<ul style="list-style-type: none">Maximum quantity per inner packaging: glass 2.5 L, metal and plastic 10 L.Acceptable outer packaging includes:<ul style="list-style-type: none">Wooden box 4C1, 4C2Plywood box 4DReconstituted wood box 4FFibreboard box 4GPlastic box 4H1, 4H2If single packaging is used acceptable packagings include:<ul style="list-style-type: none">Steel drums 1A1, 1A2Aluminium drums 1B1, 1B2Plastic drums 1H1, 1H2Steel jerry cans 3A1, 3A2Aluminium jerry cans 3B1, 3B2Plastic jerry cans 3H1, 3H2PI 366:<ul style="list-style-type: none">As for PI 355 above, except maximum quantity for inner packaging: glass 5.0 L, metal 25 L, plastic 10 L.									
Special Provisions: <ul style="list-style-type: none">A3: applies to fuel that is tested and proven to not have properties covered by this category.A324: applies to carriage of symbolic flames.									


Diesel


UN number:				PSN:					
UN 3082				Environmentally hazardous substance, liquid, n.o.s.					
Class/Division (Subsidiary Hazard)				9					
Hazard label(s)				Miscellaneous					
Notes:									
<ul style="list-style-type: none">The EPA has approved two types of diesel. UN3082 is diesel fuel such as automotive gas oil and marine diesel fuel: it is the most used in New Zealand. UN1202 is low flash-point diesel used in particular circumstances such as high-altitude ski-fields.Sufficient ullage (outage) must be left to allow for expansion during transport (do not fill to maximum capacity).Must use packagings designed for carrying fuel.Jerry cans or other plastic containers must not be more than 5 years old.									
E	F	G	H	I	J	K	L	M	N
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg		
		PI	Max net Qty/Pkg						
III	E1	Y964	30 kg G	964	450 L	964	450 L	A97 A158 A197 A215	3L
Packing Instructions:									
<ul style="list-style-type: none">PI Y964:<ul style="list-style-type: none">Single packagings are not permitted.Limited quantity packaging does not need to meet marking and testing requirements but must be well constructed of suitable material and withstand a 1.2 m drop test, a 24-hr stacking test, and the inner packagings must be capable of passing a pressure differential test.Maximum net quantity per inner packaging: glass, metal and plastic 5.0 L.964:<ul style="list-style-type: none">Combination and single packagings are permitted.If combination packaging is used:<ul style="list-style-type: none">Maximum quantity per inner packaging: glass 10 L, metal 40 L, plastic 30 L.Acceptable outer packaging includes:<ul style="list-style-type: none">Wooden box 4C1, 4C2Plywood box 4DReconstituted wood box 4FFibreboard box 4GPlastic box 4H1, 4H2If single packaging is used acceptable packagings include:<ul style="list-style-type: none">Steel drums 1A1, 1A2Aluminium drums 1B1, 1B2Plastic drums 1H1, 1H2Steel jerry cans 3A1, 3A2Aluminium jerry cans 3B1, 3B2Plastic jerry cans 3H1, 3H2									

Special Provisions:


- A97: explains the classification criteria.
- A158: applies to mixtures of solids.
- A197: allows for quantities of 5.0 L or less when in combination packaging of good quality, compatible, and with ullage applied to be carried without applying the other provisions of the Technical Instructions.
- A215: the technical name of the product may be shown after the 'n.o.s'.

Diving cylinder


UN number:				PSN:					
See notes below				See notes below					
Class/Division (Subsidiary Hazard)				2.2					
Hazard label(s)				Non-flammable gas					
Notes: May be filled with a number of gases including: <ul style="list-style-type: none">UN 1002 Air, compressedUN 1006 Argon, compressedUN 1046 Helium, compressedUN 1066 Nitrogen, compressedUN 1956 Compressed gas, n.o.s UN1956 (gases such as normoxic and hypoxic Heliox and Trimix)									
E	F	G	H	I	J	K	L	M	N
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg		
		PI	Max net Qty/Pkg						
	E1	Forbidden		200	75 kg	200	150 kg	A69 A202 A302	2L
Packing Instruction 200: <ul style="list-style-type: none">Cylinders must be UN marked and certified, or approved by CAA.Cylinders must be within their prescribed test period.Valves must be suitably protected or must be designed and constructed such that they are able to withstand damage without leakage.Cylinders must not be filled to more than two-thirds of the test pressure of the cylinder.Filling of cylinders must be carried out by qualified staff using appropriate equipment and procedures, including:<ul style="list-style-type: none">Conformity of the cylinders with ICAO TIs;Compatibility with contents;Absence of damage;Compliance with the degree or pressure of filling;Marks and identification									
Special Provisions: <ul style="list-style-type: none">A69: Applies to articles containing small quantities of inert gasesA202: Applies to radiation detectorsA302: Applies to cylinders used for providing life support to aquatic animals during transport									

UN number:		PSN:							
See notes below		See notes below							
Class/Division (Subsidiary Hazard)		2.2 (5.1)							
Hazard label(s)		Non-flammable gas Oxidiser							
Notes: Diving tanks may be filled with several gases including: <ul style="list-style-type: none">UN1072 Oxygen, compressedUN3156 Compressed gas, oxidising, n.o.s. (e.g. nitrox)									
E	F	G	H	I	J	K	L	M	N
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg		
		PI	Max net Qty/Pkg						
	E0	Forbidden		200	75 kg	200	150 kg	A175 A302	2X
Packing Instruction 200: <ul style="list-style-type: none">Cylinders must be UN marked and certified, or approved by CAA.Cylinders must be within their prescribed test period.Valves must be suitably protected or must be designed and constructed such that they are able to withstand damage without leakage.Cylinders must not be filled to more than two-thirds of the test pressure of the cylinder.Filling of cylinders must be carried out by qualified staff using appropriate equipment and procedures, including:<ul style="list-style-type: none">Conformity of the cylinders with ICAO TIs;Compatibility with contents;Absence of damage;Compliance with the degree or pressure of filling;Marks and identification									
Special Provisions: <ul style="list-style-type: none">A175: Applies to cylinders for emergency use fitted with actuating cartridgesA302: Applies to cylinders used for providing life support to aquatic animals during transport									


E-BIKES (AND OTHER BATTERY POWERED VEHICLES)

UN number:				PSN:					
UN 3171				Battery-powered vehicle					
Class/Division (Subsidiary Hazard)				9					
Hazard label(s)				Miscellaneous					
Notes: UN 3171 applies to vehicles and equipment powered by wet batteries and sodium batteries, and vehicles powered by lithium batteries, which are transported with those batteries installed. Examples of vehicles that can be carried under this provision are E-bikes, ride-on lawnmowers, wheelchairs and other mobility aids.									
E	F	G	H	I	J	K	L	M	N
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg		
		PI	Max net Qty/Pkg						
-	E0	Forbidden		952	No limit	952	No limit	A67 A87 A94 A154 A164 A214	9L:
Packing Instructions 952: <ul style="list-style-type: none">All batteries must be installed and securely fastened in the vehicle.Vehicle must be protected from inadvertent activation.Vehicle must be secured to remain upright. If this is not possible, vehicle must be secured in strong, rigid outer packaging of the type below, and restrained in the outer packaging to prevent any movement or damage during transport.Battery must be protected from damage and short circuits.All lithium batteries must be proven to meet the requirements of the UN Manual of Tests and Criteria.Any lithium batteries identified as being defective, damaged, or with the potential to cause a dangerous evolution of heat, fire, or short circuit are forbidden for transport.									
Special Provisions: <ul style="list-style-type: none">A67: Applies to the classification of wet cell batteries as spillable or non-spillable.A87: A vehicle that is not fully enclosed by packaging is not required to be marked and labelled.A94: Applies to sodium batteries only.A164: Must prevent short circuit and inadvertent activation.A154: Batteries which are damaged or defective must not be carried.A214: Applies to flammable liquid and flammable gas-powered vehicles only.									


Engines and machinery

UN number:				PSN:					
UN 3528				Engine, internal combustion, flammable liquid powered;					
UN 3528				Machinery, internal combustion, flammable liquid powered.					
Class/Division (Subsidiary Hazard)				3					
Hazard label(s)				Flammable liquid					
Notes: Includes lawnmowers, outboard motors, chainsaws, etc.									
E	F	G	H	I	J	K	L	M	N
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg		
		PI	Max net Qty/Pkg						
-	E0	Forbidden		378	No limit	378	No limit	A70 A87 A154 A208	3L
Packing Instruction 378: <ul style="list-style-type: none">• Engine or machinery must be oriented to prevent leakage and secured to prevent movement.• Fuel tanks drained and caps securely fitted.• If item can be handled in any position other than an upright position (such as an outboard motor), complete drainage of the fuel is required. If it is not possible to handle the item in any position other than upright, then it must be drained of fuel as much as possible and any remaining fuel must not exceed one-quarter of the tank capacity.• Batteries must be installed and securely fastened in the battery holder and protected to prevent damage and short circuits.• If spillable batteries are installed and it is possible to handle the item in any position other than an upright position, then the batteries must be removed and packed and shipped accordingly.• If lithium batteries are installed, they must meet all of the requirements of the ICAO TIs for the carriage of lithium batteries.									
Special Provisions: <ul style="list-style-type: none">• A70: Engines and machinery may not be subject to the DG regulations if:<ul style="list-style-type: none">○ The engine has been flushed and purged of vapours and adequate measures taken to nullify the hazard; and○ The shipper provides written or electronic documentation to state that the flushing and purging has been followed; and○ The entire fuel system contains no liquid fuel; and○ All fuel lines are sealed or capped or securely connected to the engine or machinery.• A87: Articles that are not fully enclosed by packaging and can be readily identified do not need to be marked or labelled.• A154: Batteries which are damaged or defective must not be carried.• A208: Clarifies the classification of engines and machinery based on fuel types.									

Human Waste


UN number:					PSN:					
UN 3373					Biological substance, Category B					
Class/Division (Subsidiary Hazard)					6.2					
Hazard label(s)										
Notes: <ul style="list-style-type: none">○ A Dangerous Goods Transport Document is not required.○ The UN3373 label must be visible, and the PSN “Biological Substance, Category B’ must be marked on the outer packaging next to the label.○ An itemised list of the contents must be enclosed between the secondary and outer packaging.										
E	F	G	H	I	J	K	L	M	N	
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code	
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg			
		PI	Max net Qty/Pkg							
-	E0	Forbidden		650	4 kg (solid) 4 L (liquid)	650	4 kg (solid) 4 L (liquid)		11L	
Packing Instruction 650: <ul style="list-style-type: none">• Packaging must include three components:<ul style="list-style-type: none">○ Primary receptacle(s)○ Secondary packaging○ Rigid outer packaging• Primary receptacle must be packed in secondary packagings so that they cannot break, be punctured, or leak. Secondary packaging must be secured in outer packaging with suitable cushioning material.• For liquid substances:<ul style="list-style-type: none">○ Primary receptacle maximum is 1 L.○ Secondary packaging must be leakproof.○ If multiple fragile primary receptacles are contained in a single secondary packaging they must be individually wrapped.○ Absorbent material or sufficient quantity to absorb entire contents must be placed between the primary receptacle and secondary packaging.○ Outer packaging must not contain more than 4 L.• For solid substances:<ul style="list-style-type: none">○ Primary receptacle must be sift-proof and must not exceed the outer packaging weight limit.○ Secondary packaging must be sift-proof.○ If multiple fragile primary receptacles are contained in a single secondary packaging they must be individually wrapped.○ Outer packaging must not contain more than 4 kg.○ If any residual liquid may be present in the primary receptacle, then packaging suitable for liquids, including absorbent material, must be used.										

LPG

UN number:				PSN:					
UN 1075				Petroleum Gases, liquified					
Class/Division (Subsidiary Hazard)				2.1					
Hazard label(s)				Flammable gas					
Notes:									
E	F	G	H	I	J	K	L	M	N
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code
	PI	Max net Qty/Pkg							
-	E0	Forbidden		Forbidden		200	150 kg	A1	10 L
Packing Instruction 200:									
<ul style="list-style-type: none">• Cylinders must be UN marked and certified or approved by CAA.• Cylinders must be within their prescribed test period.• Valves must be suitably protected or must be designed and constructed such that they are able to withstand damage without leakage.• Cylinders must not be filled to more than two-thirds of the test pressure of the cylinder.• Filling of cylinders must be carried out by qualified staff using appropriate equipment and procedures, including:<ul style="list-style-type: none">○ Conformity of the cylinders with ICAO TIs;○ Compatibility with contents;○ Absence of damage;○ Compliance with the degree or pressure of filling;○ Marks and identification									
Special Provisions:									
<ul style="list-style-type: none">• A1: May be transported on passenger aircraft with prior approval of the State.									

Paint and Paint Related Material

UN number:					PSN:				
UN 1263					Paint				
UN 1263					Paint related material				
Class/Division (Subsidiary Hazard)					3				
Hazard label(s)					Flammable liquid				
Notes: It is necessary to confirm which PG the paint falls into. Most paints in New Zealand will be PGIII, however the shipper must confirm this prior to carriage by air. Paint may also be corrosive. If this applies, reference to the ICAO TIs is required to determine the carriage requirements for UN3066 or UN3470. Paint related material includes paint thinning or reducing compounds. If these are carried the confirmation of which PG applies will be necessary.									



E	F	G	H	I	J	K	L	M	N
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg		
		PI	Max net Qty/Pkg						
I	E3	Forbidden		351	1 L	361	30 L	A3 A72 A192	3L
II	E2	Y341	1 L	353	5 L	364	60 L		
III	E1	Y344	10 L	355	60 L	366	220 L		

Packing Instructions:

PI Y341 & PI Y344:

Single packagings are not permitted.

Limited quantity packaging does not need to meet marking and testing requirements but must be well constructed of suitable material and withstand a 1.2 m drop test, a stacking test, and a pressure test.

Y 341 maximum net quantity per inner packaging: glass, metal and plastic 0.5 L, total net quantity per package 1 L.

Y 344 maximum net quantity per inner packaging: glass 2.5 L, metal and plastic 5 L, total net quantity per package 10 L.

PI 351: Single packagings not permitted. Maximum net quantity per inner packaging: glass 0.5 L, metal 1 L, total net qty per package 1 L. Acceptable outer packaging includes:

Steel drums 1A1, 1A2

Aluminium drums 1B1, 1B2

Plastic drums 1H1, 1H2

Wooden box 4C1, 4C2

Plywood box 4D

Reconstituted wood box 4F

Fibreboard box 4G


Plastic box 4H1, 4H2

PI 353: Single packagings not permitted. Maximum net quantity per inner packaging: glass 1.0 L, metal 5.0 L, plastic 5.0L; total net qty per package 5 L. Acceptable outer packaging as per PI 351 above.

PI 355:

- Combination and single packagings are permitted.
 - If combination packaging is used:
 - Maximum quantity per inner packaging: glass 2.5 L, metal and plastic 10 L.
 - Acceptable outer packaging as per PI 351 above.
 - If single packaging is used acceptable packagings include:
 - Steel drums 1A1, 1A2
 - Aluminium drums 1B1, 1B2
 - Plastic drums 1H1, 1H2
 - Steel jerry cans 3A1, 3A2
 - Aluminium jerry cans 3B1, 3B2
 - Plastic jerry cans 3H1, 3H2
 - PI 361:
 - Single packaging permitted, acceptable packagings as per PI 355 above.
 - Inner packaging must be packed with absorbent material able to absorb the entire contents.
 - Combination packaging maximum quantity for inner packaging: glass 1 L, metal 5 L, plastic not permitted, total net quantity per package 30 L. Acceptable outer packaging as per PI 351 above.
 - PI 364:
 - Single packaging permitted, acceptable packagings as per PI 355 above.
 - Combination packaging maximum quantity for inner packaging: glass 2.5 L, metal 10 L, plastic 5 L, total net quantity per package 60 L. Acceptable outer packaging as per PI 351 above.
 - PI 366:
 - Single packaging permitted, acceptable packagings as per PI 355 above.
 - Combination packaging maximum quantity for inner packaging: glass 5 L, metal 25 L, plastic 10 L, total net quantity per package 220 L. Acceptable outer packaging as per PI 351 above.
 - Packaging must be able to withstand temperature and pressure changes.
 - Closure device must be securely closed and be designed to remain closed during transport.
- Special Provisions:
- A3: only applies to fuel that is tested and proven to not have properties covered by this category, in which case it is not subject to the ICAO TIs.
 - A72: A substance that is specifically listed under another name must not be transported in this category.
 - A192: PSN 'Paint related material' may be used when paint and paint related material are shipped in the same consignment.

Pesticide (liquid)


UN number:					PSN:					
UN 2902					Pesticide, liquid, toxic, n.o.s					
Class/Division (Subsidiary Hazard)					6.1					
Hazard label(s)					Toxic					
Notes: see separate listing for 1080 poison.										
E	F	G	H	I	J	K	L	M	N	
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code	
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg			
		PI	Max net Qty/Pkg							
I	E5	Forbidden		652	1 L	658	30 L	A3 A4	6L	
II	E4	Y641	1 L	654	5 L	662	60 L			
III	E1	Y642	2 L	655	60 L	663	220 L			
Packing Instructions:										
<ul style="list-style-type: none">PI Y641 & PI Y642:<ul style="list-style-type: none">Single packagings are not permitted.Limited quantity packaging does not need to meet marking and testing requirements but must be well constructed of suitable material and withstand a 1.2 m drop test, a stacking test, and a pressure test.Y641 maximum net quantity per inner packaging: glass, metal and plastic 0.1 L, total net quantity per package 1 L.Y642 maximum net quantity per inner packaging: glass, metal and plastic 0.5 L, total net quantity per package 2 L.PI 652:<ul style="list-style-type: none">Single packaging not permitted. Maximum quantity per inner packaging: glass and plastic 0.5L, metal 1.0 L. Acceptable outer packaging includes:<ul style="list-style-type: none">Steel drums 1A1, 1A2Aluminium drums 1B1, 1B2Plastic drums 1H1, 1H2Wooden box 4C1, 4C2Plywood box 4DReconstituted wood box 4FFibreboard box 4GPlastic box 4H1, 4H2Inner packaging must be packed with absorbent material able to absorb the entire contents and placed in a rigid leakproof receptacle before packing in outer packaging.PI 654:<ul style="list-style-type: none">Single packaging not permitted. Maximum quantity per inner packaging: glass and plastic 1 L, metal 2.5 L. Acceptable outer packagings as per PI652 above.PI 655:<ul style="list-style-type: none">Combination and single packagings are permitted.<ul style="list-style-type: none">If combination packaging is used maximum quantity per inner packaging: glass and plastic 2.5 L, metal 5 L. Total net quantity per package 60 L. Acceptable outer packaging as per PI 652 above.If single packaging is used acceptable packagings include:<ul style="list-style-type: none">Steel drums 1A1, 1A2										

- Aluminium drums 1B1, 1B2
 - Plastic drums 1H1, 1H2
 - Steel jerry cans 3A1, 3A2
 - Aluminium jerry cans 3B1, 3B2
 - Plastic jerry cans 3H1, 3H2
- PI 658:
 - Combination and single packagings are permitted.
 - If combination packaging is used maximum quantity per inner packaging: glass and plastic 1 L, metal 2.5 L. Total net quantity per package 30 L. Acceptable outer packaging as per PI652 above.
 - If single packaging is used acceptable packagings as per PI 655 above.
- PI 662:
 - Combination and single packagings are permitted.
 - If combination packaging is used maximum quantity per inner packaging: glass and plastic 2.5 L, metal 5 L. Total net quantity per package 60 L. Acceptable outer packaging as per PI652 above.
 - If single packaging is used acceptable packagings as per PI655 above.
- PI 663:
 - Combination and single packagings are permitted.
 - If combination packaging is used maximum quantity per inner packaging: glass and plastic 5 L, metal 10 L. Total net quantity per package 220 L. Acceptable outer packaging as per PI652 above.
 - If single packaging is used acceptable packagings as per PI 655 above.

Special Provisions:

- A3: Clarifies the criteria for substances to be included in this class.
- A4: if the vapour inhalation toxicity is such that the substance meets PGI criteria, the substance is forbidden on passenger aircraft and cargo aircraft. If the substance has a mist inhalation toxicity is such that the substance meets PGI criteria, the substance is forbidden on passenger aircraft. It may be carried on CAO, packed in accordance with PGI instructions and package not to exceed 5 L.

Pesticide (solid)


UN number:				PSN:					
UN 2588				Pesticide, solid, toxic, n.o.s					
Class/Division (Subsidiary Hazard)				6.1					
Hazard label(s)				Toxic					
Notes: see separate listing for 1080 poison.									
E	F	G	H	I	J	K	L	M	N
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg		
		PI	Max net Qty/Pkg						
I	E5	Forbidden		666	5 Kg	673	50 Kg	A3 A5	6L
II	E4	Y644	1 Kg	669	25 Kg	676	100 Kg		
III	E1	Y645	10 Kg	670	100 Kg	677	200 Kg		
Packing Instructions:									
<ul style="list-style-type: none">PI Y644 & PI Y645:<ul style="list-style-type: none">Single packagings are not permitted.Limited quantity packaging does not need to meet marking and testing requirements but must be well constructed of suitable material and withstand a 1.2 m drop test, a stacking test.Y644 maximum net quantity per inner packaging 0.5 kg.Y645 maximum net quantity per inner packaging 1 kg.PI 666:<ul style="list-style-type: none">Single packaging not permitted. Maximum quantity per inner packaging: glass 0.5 kg, metal and plastic 1.0 kg.Acceptable outer packagings include:<ul style="list-style-type: none">Steel drums 1A1, 1A2Aluminium drums 1B1, 1B2Plastic drums 1H1, 1H2Steel jerry cans 3A1, 3A2Aluminium jerry cans 3B1, 3B2Plastic jerry cans 3H1, 3H2Wooden box 4C1, 4C2Plywood box 4DReconstituted wood box 4FFibreboard box 4GPlastic box 4H1, 4H2PI 669:<ul style="list-style-type: none">Single packaging not permitted. Maximum quantity per inner packaging: fibre, glass, paper bag, plastic bag: 1 kg; metal, plastic: 2.5 kg.Acceptable outer packagings as per PI 666 above.PI 670:<ul style="list-style-type: none">Combination and single packagings are permitted.<ul style="list-style-type: none">If combination packaging is used maximum quantity per inner packaging: fibre, glass, paper bag, plastic bag 5 kg. Metal, plastic 10 kg. Acceptable outer packaging as per PI 666 above.If single packaging is used acceptable packagings include:<ul style="list-style-type: none">Steel drums 1A1, 1A2									

- Aluminium drums 1B1, 1B2
 - Plastic drums 1H1, 1H2
 - Steel jerry cans 3A1, 3A2
 - Aluminium jerry cans 3B1, 3B2
 - Plastic jerry cans 3H1, 3H2
- PI 673:
 - Combination and single packagings are permitted.
 - If combination packaging is used maximum quantity per inner packaging: fibre, glass, paper bag, plastic bag 1 kg. Metal, plastic 2.5 kg. Acceptable outer packaging as per PI666 above.
 - If single packaging is used acceptable packagings as per PI 670 above.
- PI 676:
 - Combination and single packagings are permitted.
 - If combination packaging is used maximum quantity per inner packaging: fibre, glass, paper bag, plastic bag 2.5 kg. Metal, plastic 5 kg. Acceptable outer packaging as per PI 666 above.
 - If single packaging is used acceptable packagings as per PI 670 above.
- PI 677:
 - Combination and single packagings are permitted.
 - If combination packaging is used maximum quantity per inner packaging: fibre, glass, paper bag, plastic bag 5 kg. Metal, plastic 10 kg. Acceptable outer packaging as per PI 666 above.
 - If single packaging is used acceptable packagings as per PI 670 above.

Special Provisions:


- A3: Clarifies the criteria for substances to be included in this class.
- A5: if the inhalation toxicity is such that the substance meets PGI criteria, the substance is forbidden on passenger aircraft. CAO, package not to exceed 15 kg.

Petrol

UN number:				PSN:					
UN 1203				Petrol					
Class/Division (Subsidiary Hazard)				3					
Hazard label(s)				Flammable Liquid					
Notes: includes avgas, petrol, gasoline, motor spirit. <ul style="list-style-type: none">Sufficient ullage (outage) must be left to allow for expansion during transport (do not fill to maximum capacity).Must use packagings designed for carrying fuel.Jerry cans or other plastic containers must not be more than 5 years old.									
E	F	G	H	I	J	K	L	M	N
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg		
		PI	Max net Qty/Pkg						
II	E2	Y341	1 L	353	5L	364	60 L	A100	3H
Packing Instructions: <ul style="list-style-type: none">PI Y341:<ul style="list-style-type: none">Single packagings are not permitted.Limited quantity packaging does not need to meet marking and testing requirements but must be well constructed of suitable material and withstand a 1.2 m drop test, stacking test, and pressure test.Maximum net quantity per inner packaging: glass, metal, and plastic 0.5 L.PI 353:<ul style="list-style-type: none">Single packagings are not permitted.Maximum quantity per inner packaging: glass 1 L, metal and plastic 5 L.Acceptable outer packaging includes:<ul style="list-style-type: none">Steel drums 1A1, 1A2Aluminium drums 1B1, 1B2Plastic drums 1H1, 1H2Steel jerry cans 3A1, 3A2Aluminium jerry cans 3B1, 3B2Plastic jerry cans 3H1, 3H2Wooden box 4C1, 4C2Plywood box 4DReconstituted wood box 4FFibreboard box 4GPlastic box 4H1, 4H2PI 364:<ul style="list-style-type: none">Combination and single packagings are permitted.If combination packaging is used:<ul style="list-style-type: none">Maximum quantity per inner packaging: glass 2.5 L, metal 10 L, plastic 5 L.Acceptable outer packaging as per PI 353 above.If single packaging is used acceptable packagings include:<ul style="list-style-type: none">Steel drums 1A1Aluminium drums 1B1Plastic drums 1H1Steel jerry cans 3A1Aluminium jerry cans 3B1Plastic jerry cans 3H1									
Special Provisions:									


- A100: This entry includes gasoline, motor spirit, and petrol for use in spark-ignition engines.

Turpentine

UN number:				PSN:					
UN 1299				Turpentine					
Class/Division (Subsidiary Hazard)				3					
Hazard label(s)				Flammable Liquid					
Notes: For mineral turpentine and white spirit see UN 1300 turpentine substitute.									
E	F	G	H	I	J	K	L	M	N
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg		
		PI	Max net Qty/Pkg						
III	E1	Y344	10 L	355	60 L	366	220 L		3L
Packing Instructions:									
<ul style="list-style-type: none">PI Y344:<ul style="list-style-type: none">Single packagings are not permitted.Limited quantity packaging does not need to meet marking and testing requirements but must be well constructed of suitable material and withstand a 1.2 m drop test, stacking test, and pressure test.Maximum net quantity per inner packaging: glass 2.5 L, metal and plastic 5 L.PI 355:<ul style="list-style-type: none">Combination and single packagings are permitted.If combination packaging is used:<ul style="list-style-type: none">Maximum quantity per inner packaging: glass 2.5 L, metal and plastic 10 L.Acceptable outer packaging includes:<ul style="list-style-type: none">Wooden box 4C1, 4C2Plywood box 4DReconstituted wood box 4FFibreboard box 4GPlastic box 4H1, 4H2If single packaging is used acceptable packagings include:<ul style="list-style-type: none">Steel drums 1A1, 1A2Aluminium drums 1B1, 1B2Plastic drums 1H1, 1H2Steel jerry cans 3A1, 3A2Aluminium jerry cans 3B1, 3B2Plastic jerry cans 3H1, 3H2PI 366:<ul style="list-style-type: none">As for PI 355 above, except maximum quantity for inner packaging: glass 5.0 L, metal 25 L, plastic 10 L.									

Turpentine Substitute

UN number:					PSN:				
UN 1300					Turpentine substitute				
Class/Division (Subsidiary Hazard)					3				
Hazard label(s)					Flammable Liquid				
Notes: Includes mineral turpentine and white spirit.									



E	F	G	H	I	J	K	L	M	N
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg		
		PI	Max net Qty/Pkg						
II	E2	Y341	1 L	353	5 L	364	60 L	A3	3L
III	E1	Y344	10 L	355	60 L	366	220 L		


Packing Instructions:

- **Y341, 353, and 364 see entry for UN 1203 Petrol.**
- Y344, 355, and 366 see entry for UN 1299 Turpentine.

Special provisions:

- A3: Clarifies the criteria for substances to be included in this class.

Weed killer

UN number:				PSN:					
UN 3082				Environmentally hazardous substance, liquid, n.o.s, triclophyr*					
Class/Division (Subsidiary Hazard)				9					
Hazard label(s)				Miscellaneous and Environmentally Hazardous					
Notes: *PSN must include technical name of product									
E	F	G	H	I	J	K	L	M	N
PG	Passenger and Cargo Aircraft					Cargo Aircraft Only		S.P.	ERG Code
	EQ	Limited Qty		PI	Max net Qty/Pkg	PI	Max net Qty/Pkg		
		PI	Max net Qty/Pkg						
III	E1	Y964	30Kg G	964	450 L	964	450 L	A97 A158 A197 A215	9L
Packing Instructions:									
<ul style="list-style-type: none">PI Y964:<ul style="list-style-type: none">Single packagings are not permitted.Limited quantity packaging does not need to meet marking and testing requirements but must be well constructed of suitable material and withstand a 1.2 m drop test, a stacking test, and a pressure test.Maximum net quantity per inner packaging: 5 L.PI 964:<ul style="list-style-type: none">Combination and single packagings are permitted.If combination packaging is used:<ul style="list-style-type: none">Maximum quantity per inner packaging: glass 10 L, metal 40 L, plastic 30 L.Acceptable outer packaging includes:<ul style="list-style-type: none">Steel drums 1A1, 1A2Plastic drums 1H1, 1H2Wooden box 4C1, 4C2Plywood box 4DReconstituted wood box 4FFibreboard box 4GPlastic box 4H1, 4H2If single packaging is used acceptable packagings include:<ul style="list-style-type: none">Steel drums 1A1, 1A2Aluminium drums 1B1, 1B2Plastic drums 1H1, 1H2Steel jerry cans 3A1, 3A2Aluminium jerry cans 3B1, 3B2Plastic jerry cans 3H1, 3H2									
Special Provisions:									
<ul style="list-style-type: none">A97: Explains classification of these types of substances.A158: Must be no free liquid visible at the time the package is closed and the package is loaded.A197: Provides some exceptions if carried in packagings containing a net quantity of 5 L or less.A215: Clarifies that the PSN includes the technical name of the product.									

Appendix B: Segregation Requirements

Packages containing DG which might react dangerously with one another must not be stowed on an aircraft next to each other or in a position that would allow interaction between them in the event of leakage. The segregation in the following table must be followed to maintain acceptable segregation. The segregation requirements apply whether the hazard is the primary or a subsidiary hazard.

Table B-1: Segregation of Dangerous Goods

Hazard Label	1 excl. 1.4S	2.1	2.2,2.3	3	4.1	4.2	4.3	5.1	5.2	8	9 see note 2
1 excl. 1.4S	Note 1	X	X	X	X	X	X	X	X	X	X
2.1	X	-	-	-	-	-	-	-	-	-	X
2.2,2.3	X	-	-	-	-	-	-	-	-	-	-
3	X	-	-	-	-	-	-	X	-	-	X
4.1	X	-	-	-	-	-	-	-	-	-	X
4.2	X	-	-	-	-	-	-	X	-	-	-
4.3	X	-	-	-	-	-	-	-	-	X	-
5.1	X	-	-	X	-	X	-	-	-	-	X
5.2	X	-	-	-	-	-	-	-	-	-	-
8	X	-	-	-	-	-	X	-	-	-	-
9 see note 2	X	X	-	X	X	-	-	X	-	-	-

Notes:

1. For segregation requirements of different divisions of explosives refer to the ICAO TIs or IATA DGR.
2. For segregation of lithium ion and lithium metal batteries refer to the ICAO TIs or IATA DGR. In general lithium ion and lithium metal batteries must not be stowed next to or close to packages containing Class 1 (other than 1.4(s)), Division 2.1, Class 3, Division 4.1, or Division 5.1 DG.

Appendix C: Aircraft Emergency Response Drills (ICAO DOC 9481 2023-2024 Edition)

Drill #	Inherent Hazard	Hazard to aircraft	Hazard to occupants	Spill or leak procedure	Firefighting procedure	Additional considerations
1	Explosion may cause structural failure	Fire and/or explosion	As indicated by the drill letter(s)	Use 100% oxygen, no smoking	All agents according to availability; use standard firefighting procedure	Possible abrupt loss of pressurisation
2	Gas, non-flammable, pressure may create hazard in fire	Minimal	As indicated by the drill letter(s)	Use 100% oxygen; establish and maintain maximum ventilation for 'A', 'i', or 'P' drill letter	All agents according to availability; use standard firefighting procedure	Possible abrupt loss of pressurisation
3	Flammable liquid or solid	Fire and/or explosion	Smoke, fumes, and heat, and as indicated by the drill letter(s)	Use 100% oxygen; establish and maintain maximum ventilation; no smoking; minimum electrics.	All agents according to availability; no water on 'W' drill letter.	Possible abrupt loss of pressurisation
4	Spontaneously combustible or pyrophoric when exposed to air	Fire and/or explosion	Smoke, fumes, and heat, and as indicated by the drill letter(s)	Use 100% oxygen; establish and maintain maximum ventilation	All agents according to availability; no water on 'W' drill letter.	Possible abrupt loss of pressurisation; minimum electrics if 'F' or H' drill letter
5	Oxidiser, may ignite other materials, may explode in heat of a fire	Fire and/or explosion, possible corrosion damage	Eye, nose, and throat irritation; skin damage on contact	Use 100% oxygen; establish and maintain maximum ventilation	All agents according to availability; no water on 'W' drill letter.	Possible abrupt loss of pressurisation
6	Toxic, may be fatal if inhaled, ingested, or absorbed by skin	Contamination with toxic liquid or solid	Acute toxicity, effects may be delayed	Use 100% oxygen; establish and maintain maximum ventilation; do not touch without gloves	All agents according to availability; no water on 'W' drill letter.	Possible abrupt loss of pressurisation; minimum electrics if 'F' or H' drill letter
7	Radiation from broken/unshielded packages	Contamination with spilled radioactive material	Exposure to radiation, and personnel contamination	Do not move packages, avoid contact	All agents according to availability	Call for a qualified person to meet the aircraft
8	Corrosive, fumes disabling if inhaled or in contact with skin	Possible corrosion damage	Eye, nose, and throat irritation; skin damage on contact	Use 100% oxygen; establish and maintain maximum	All agents according to availability; no	Possible abrupt loss of pressurisation;

Drill #	Inherent Hazard	Hazard to aircraft	Hazard to occupants	Spill or leak procedure	Firefighting procedure	Additional considerations
				ventilation; do not touch without gloves	water on 'W' drill letter.	minimum electrics if 'F' or H' drill letter
9	No general inherent hazard	As indicated by the drill letter	As indicated by the drill letter	Use 100% oxygen; establish and maintain maximum ventilation if 'A' drill letter	All agents according to availability	None
10	Gas, flammable, high fire risk if any ignition source present	Fire and/or explosion	Smoke, fumes, and heat, and as indicated by the drill letter	Use 100% oxygen; establish and maintain maximum ventilation; no smoking; minimum electrics.	All agents according to availability	Possible abrupt loss of pressurisation
11	Infectious substances may affect humans or animals if inhaled, ingested, or absorbed through the mucous membrane or an open wound	Contamination with infectious substances	Delayed infection to humans or animals	Do not touch. Minimum re-circulation and ventilation in affected area.	All agents according to availability; no water on 'Y' drill letter.	Call for a qualified person to meet the aircraft.
12	Fire, heat, smoke, toxic and flammable vapour	Fire and/or explosion	Smoke, fumes, heat	Use 100% oxygen; establish and maintain maximum ventilation	All agents according to availability. Use water if available	Possible abrupt loss of pressurisation; consider landing immediately
Drill letter	Additional risk			Drill letter	Additional risk	
A	Anaesthetic			S	Spontaneously combustible or pyrophoric If wet gives off toxic or flammable gas Oxidiser Depending on the type of infectious substance, the appropriate national authority may be required to quarantine individuals, animals, cargo, and the aircraft Aircraft cargo fire suppression system may not extinguish or contain the fire; consider landing immediately	
C				W		
E				X		
F				Y		
H						
I						
L				Z		
M						
N						
P						
	Toxic (poison)					

Appendix D: Explanation of Carriage of DG for Beginners

DG can be carried under several different provisions of Part 92 and the ICAO TIs. This appendix is designed for personnel who do not have a thorough understanding of DG carriage by air. It explains some of the basic provisions and applicable requirements that apply to the carriage of DG by air. It also includes some explanations to help correct misunderstanding in certain areas. Each of the brief explanations below is only a very light synopsis of the requirements of the ICAO TIs to aid with a simple understanding: it is not a replacement for thorough and correct training, knowledge, and skill required by personnel involved in the carriage of DG by air. Table D-1 is provided to assist with understanding the options available for the carriage of DG.

Carriage of DG. DG may be carried in the following ways:

1. DG carried under the three exceptions of Part 92:
 - a. DG carried by police in carrying out their duties.
 - b. Class 1 explosives carried under the direct supervision of a certified handler.
 - c. DG carried by a passenger for their recreational use.

An explanation of these provisions is found in sections 4, 5, and 6 of this AC

2. DG carried for medical use in flight. An explanation of this provision is found in section 7 of this AC.
3. DG carried for SAR. An explanation of this provision is found in section 8 of this AC.
4. DG carried by passengers and crew in accordance with part eight of the ICAO TIs, as checked in baggage, carry-on baggage, or on their person. An explanation of these provisions is found in section 11 of this AC.
5. DG carried as cargo, which may be carried as:
 - a. **An 'Excepted Quantity' (EQ) of DG:** i.e., a small enough quantity of DG to make it unnecessary for it to meet some of the ICAO TIs. DG carried under this provision must be clearly marked with the EQ package mark. There are some provisions of the ICAO TIs which are still applicable to EQs. To find out whether or not a substance can be carried as an excepted quantity, and what provisions apply, participants need to check the Dangerous Goods List in the ICAO TIs, or the List of Dangerous Goods in the IATA DGR.
 - b. **A 'limited quantity' of DG:** i.e. some DG that may be carried in quantities that present a reduced hazard during transport, and as such do not have to meet the full packaging requirements of the ICAO TIs. To find out whether or not a substance can be carried as a limited quantity, participants need to check the Dangerous Goods List in the ICAO TIs, or the List of Dangerous Goods in the IATA DGR.
 - c. **DG carried in passenger or cargo aircraft.** DG that can be carried on passenger aircraft may also be carried on cargo aircraft. The Dangerous Goods List in the ICAO TIs, and the List of Dangerous Goods in the IATA DGR, prescribe the

maximum quantity per package and the applicable packaging instructions that must be followed.

- d. **DG carried in cargo aircraft only.** Some DG can only be carried on cargo aircraft. The Dangerous Goods List in the ICAO TIs, and the List of Dangerous Goods in the IATA DGR, prescribe the maximum quantity per package and the applicable packaging instructions that must be followed.

The quantities of DG listed in the DG lists in the ICAO TIs and IATA DGR are per-package quantities. There is no limit to the overall quantity that may be carried on an aircraft, other than normal aircraft loading limits.

Forbidden DG. Some DG are forbidden for carriage by air under any circumstances and may not be carried at all. However, there are other items of DG that are listed as forbidden but may be carried in certain circumstances. The two possible avenues for this are:

1. **Approval.** CAA may, on application, approve certain items of DG to be carried which are normally forbidden. These items are identified in the ICAO TIs and there are specific guidelines for CAA to follow in the approval process. An example is an item that may normally be forbidden to be carried in passenger aircraft, but on application may be approved by CAA for carriage in passenger aircraft. CAA is required to abide by the information in the Supplement to the ICAO TIs which, amongst other things, states the quantities that can be approved.
2. **Exemption.** An application for exemption may be made in cases where the carriage of DG by air is not approved under Part 92 and the ICAO TIs. An exemption will only be granted in instances of extreme urgency, when other forms of transport are inappropriate, or when full compliance with the ICAO TIs contrary to the public interest.

For approvals and exemptions, the applicant must prove that the overall level of safety for the transport of these items is equivalent to the level of safety provided by the ICAO TIs.

Note: *It is also **forbidden** to carry DG in quantities that exceed the per-package limits detailed in the ICAO TIs.*

Hidden and mis-declared DG. DG may be deliberately or inadvertently hidden in a passenger's baggage or in general cargo. It may also be mis-declared either deliberately or inadvertently. All personnel involved in air transport need to be aware of the dangers presented by this and must take all reasonable steps to ascertain the correct nature of baggage and cargo that is presented for carriage. Education, signage, questioning, and inspection are some of the methods used to try and prevent DG being carried without the knowledge of the operator or pilot.

Shipper and Operator responsibilities. There are two main processes involved in the transport of DG by air: the shipping, and the acceptance of DG.

- It is the shipper's responsibility to ensure that the DG is correctly packaged, identified, classified, marked, labelled, and documented, and present the DG to an operator for carriage with the correct documentation.
- It is the operator's responsibility to accept the DG for carriage, which includes a physical inspection and an inspection of the documentation. The operator is then responsible for storing the DG, and the handling of the DG including loading, transport, and unloading.

The shipping function is normally done by a qualified DG shipper, and the acceptance function is done by a person qualified to accept DG for carriage by air. As such, these two personnel are the

key personnel in the process, however all personnel (pilots, cabin crew, loaders, dispatchers, etc) who are involved in the carriage of DG by air must be trained and certified for their role. The training requirements for the shipper and the acceptance person are the highest level of training and they are required to have a sound level of knowledge, skill, and experience in their role.

It is possible in a small operation, particularly in remote areas, for a person who wishes to carry DG to be unable to access the services of a qualified DG shipper. In this case, if an operator has personnel who are qualified to conduct the shipping function, they may offer this service. It may even be the same person who is carrying out both the shipping and the acceptance function. In this instance, they must be fully aware of the differentiation in roles, and the procedures required by both roles.

DG carried in operator's property. Articles and substances which would otherwise be classified as DG, but which are required to be aboard an aircraft in accordance with airworthiness requirements or operating regulations, are not subject to the provisions of the ICAO TIs. A similar provision applies to consumer goods carried for use on-board or for sale on-board, for dry ice used in food service, and for electronic devices such as PEDs. However, aircraft spares must be carried in accordance with the provision of the ICAO TIs: they must be shipped and carried as DG.

Exceptions. There are a number of general exceptions to the ICAO TIs that are applicable to various operations, including DG carried for use in flight to provide medical aid to a patient or to preserve organs intended for transplant use, and to provide veterinary aid or as a humane killer for an animal during flight. If an operator intends to use any of these provisions, they must become familiar with the exact nature of the exception and use their SMS to conduct a risk assessment of the operation including the carriage of DG. As a minimum, it is expected that an operator has listed the DG that is being carried, and considered any specific handling, segregation, and emergency procedures that are applicable.

Different DG packed in one outer packaging. It is common for clients to present smaller quantities of DG for carriage packed into one outer packaging. An outer packaging may contain more than one item of DG or other goods, however in order to be acceptable, it must meet several conditions:

1. The DG items must not react dangerously with each other or the other goods
2. The DG must not require segregation
3. A packaging containing infectious substances must not contain other DG except if specifically allowed in the ICAO TIs
4. The inner packaging for each item must comply with the packaging instruction for that item
5. The outer packaging must be allowable for each of the items
6. The packaging must meet the performance test for the most restrictive item
7. A 'Q' value calculation must show that the 'Q' value does not exceed 1.0:
 - a) 'Q' value is calculated by dividing the net quantity per package by the maximum allowable net quantity for that item and adding together then resulting fractions.
 - b) 'Q' value does not need to include dry ice, 'no-limit' items, or items that have the same UN number, packing group, physical state, and maximum net quantity, provided they are the only DG in the package and the maximum net quantity is not exceeded.

Packing group assignment. Some classifications of DG provide options for assignment into packing groups I, II, or III rather than assignment to a specific packing group. It is the responsibility of the shipper to determine which packing group is applicable, based on the physical or chemical properties of the DG. For example, paint may be assigned to any of the three packing groups, determined by the flash point and boiling point of the paint. The packing group assignment then determines the applicable quantities and types of packaging required for that item.

Table D-1: Options for Carriage of Dangerous Goods

Options for Carriage of Dangerous Goods								
Operator Policy	Will-not carry operator (operator elects not to carry DG as cargo)				Will-carry operator (operator elects to carry DG as cargo)			
Options	1	2	3	4	5	6	7	8
	Non-DG	Part 92.11 Exceptions	DG Carried under exceptions contained in the TIs	DG Carried by Passengers and Crew	Pax and cargo a/c Excepted Quantity	Pax and cargo a/c Limited Quantity	Pax and cargo aircraft	Cargo Aircraft only
Quantity	N/A	As per operator exposition ⁹	As per operator exposition ¹⁰	As per table contained in TI and DGR	As per table contained in TI and DGR	Max Net Qty/Pkg defined in TI and DGR	Max Net Qty/Pkg defined in TI and DGR	Max Net Qty/Pkg defined in TI and DGR
Dangerous Goods Transport Document	Dangerous Goods Transport Document is not required	Dangerous Goods Transport Document is not required. List of DG carried should be included in flight documentation.		Dangerous Goods Transport Document is not required		Dangerous Goods Transport Document is required		
Notes	Signed statement that consignment is not DG is required	Operator should have SOP and conduct risk assessment	Operator should have SOP and conduct risk assessment. Exceptions include: a) Medical b) Veterinary c) SAR d) Avalanche control ¹¹ e) Agriculture ¹² f) Aircraft fuel ¹³	Must be carried with the passenger or crew member on the same flight as: a) On-person b) Carry-on bags c) Checked baggage	DG clearly marked with 'E' label	DG clearly marked with 'Y' label. Ltd Qty allows for relief from the packaging material requirements but other requirements still apply.		
Training	DG Awareness training	DG awareness training is not acceptable. DG training must be carried out for all personnel involved in the offer, acceptance, and handling of DG that is applicable to the role of the individual person, and the DG that they deal with.						

⁹ Maximum quantities must follow the TIs.¹⁰ Maximum quantities should follow the TIs.¹¹ DG carried for dropping in connection with avalanche control during that flight, not for transit flights.¹² DG carried for dropping in connection with agricultural activities during that flight, not for transit flights.¹³ Fuel carried in the aircraft fuel tanks for use in that flight. Does not include fuel carried in jerry cans for use on subsequent flights which must be shipped and carried as DG.