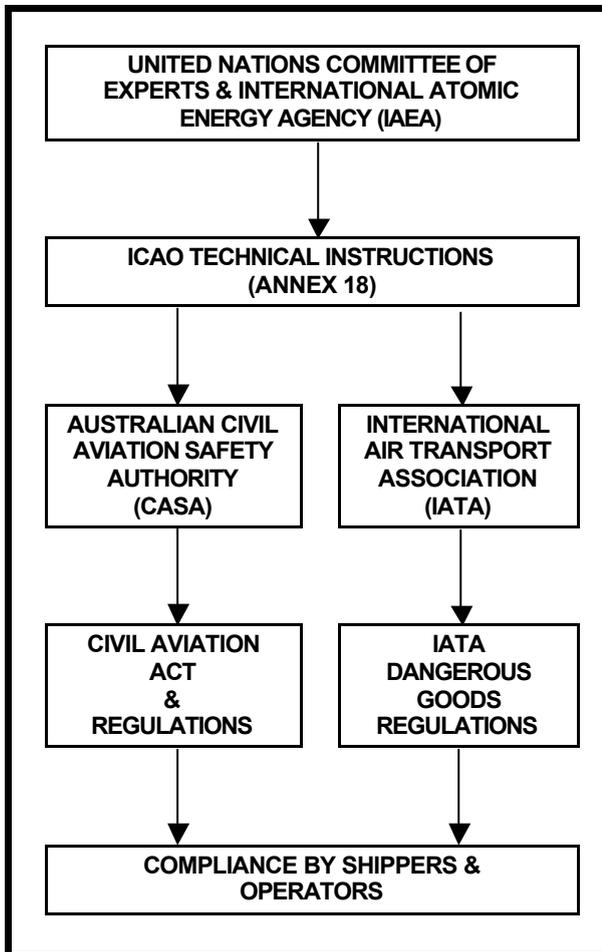


Mr Ray Mackie from Dangerous Goods Training has kindly offered his time to supply the following overview on the shipping of dangerous goods.

## TRANSPORTATION OF TEA TREE OIL

### BASIS OF DANGEROUS GOODS REGULATIONS



The **International Civil Aviation Organisation (ICAO)** is responsible for the safe transport of dangerous goods by air on a worldwide basis. **Recommendations from a United Nations Committee of Experts** develops and recommends the procedures to be adopted for the transport of all types of dangerous goods.

The **International Atomic Energy Agency (IAEA)** develops recommended procedures for the transport of Radioactive materials only.

Recommendations from the two Agencies are published by **ICAO (Annex 18)** which produces **Technical Instructions for the Safe Transport of Dangerous Goods by Air**.

The **IATA (International Air Transport Association (Dangerous Goods Regulations) (DGR)** contains all the requirements of the ICAO Technical Instructions and in some cases is more restrictive.

### WHY IS TEA TREE OIL CLASSIFIED AS A DANGEROUS GOOD?

It has flammable properties, with a **FLASH POINT** (closed cup) under 60.5°C. According to the IATA DGR liquids having flash point less or equal to 60.5°C are classified as dangerous goods (Class 3).

**Definition of flash point:** The minimum temperature at which a liquid vaporises and may be ignited from a momentary source of ignition.

### ***What "Proper Shipping Name" is used for tea tree oil?***

Proper shipping name is the UN transportation name allocated to substances and articles that have dangerous properties. It is the only name that may be used when transporting the substance/article.

**GENERIC CHEMICAL NAME:** Terpene hydrocarbons n.o.s.

or

**HAZARD ENTRY NAME:** Flammable liquid n.o.s.

***The degree of danger allocated to tea tree oil:***

Packing Groups are used as a risk management system when transporting dangerous goods. Quantity limitations per package, packaging standards and, in some cases, type of aircraft used (passenger and/or cargo only) are assigned according to the degree of danger:

PACKING GROUP I =	GREAT DANGER
PACKING GROUP II =	MEDIUM DANGER
PACKING GROUP III =	MINOR DANGER

Tea tree oil is allocated to Packing Group III, flash point between 23°C up to or equal to 60.5°C.

**Transport by Air Mail or Surface Mail**

Transport of dangerous goods (tea tree oil) by air mail or surface mail in any quantity is **completely forbidden**.

**DANGEROUS GOODS BY AIR TRANSPORT**

**AUSTRALIAN CIVIL AVIATION SAFETY AUTHORITY (CASA)**

The Australian Government has legislated the application of the IACO Technical Instructions (Civil Aviation Act 1988). Breaches of these Regulations may lead up to prosecution under this Act by AUSTRALIAN CIVIL AVIATION SAFETY AUTHORITY (CASA) resulting in heavy fines and/or jail sentences for offenders. The Australian Government through CASA monitors and polices the implementation and application of these regulations.

Dangerous goods are articles or substances which are capable of posing significant risk to health, safety or to property, ***when transported by air and which are classified according to Section 3 of the IATA DGR.***

In practical terms, the key words are ***“when transported by air”***. Because the characteristic of air transport (called conditions normal to air transport), (vibration, pressure and temperature changes) can have an effect on articles, substances and packagings so as to pose a risk to the aircraft and its occupants that may not be apparent on the ground. There are some items that pose a risk at all times, whether being transported or not.

***How may dangerous goods be transported by air?***

Thousands of packages of dangerous goods are carried by air daily as controlled cargo provided they are prepared in accordance with the Regulations. Strict controls of quantities and packaging standards must be met. The DGR list contains about three thousand of the most commonly shipped dangerous goods. Maximum quantity limits are imposed per package according to the type of aircraft, passenger or cargo aircraft only. They are not permitted in passengers' or crews' baggage. Some States and Operators impose further restrictions on certain items that are called ***State and Operator Variations***.

## **CONDITIONS NORMAL TO AIR TRANSPORTATION**

Transporting freight by air is a safe, reliable, fast and efficient way of moving goods. Conditions of transport by air have some unique characteristics that have to be taken into account when packaging goods.

### ***TEMPERATURE***

Temperature on the ground can be as high as 50°C, particularly in the tropics, while at cruise altitude in an unpressurised cargo hold it could be as cold as -50°C. Pressurised aircraft have some form of heating in the freight compartments but lack of proper insulation causes the temperature to drop between zero to 9°C depending upon the duration of the flight and weather conditions. Such variances in temperature will cause liquids to expand and contract to such an extent that if not properly packed they would cause the container to burst or lids or stoppers to pop spilling the liquid.

To avoid this problem, sufficient free space must be left in liquid containers to allow for expansion, this is called ULLAGE. Should the temperature drop below zero, the liquid could freeze again causing expansion having the same results.

### ***PRESSURE***

The higher an aircraft flies the further the atmospheric pressure and oxygen in the air decreases. Hence the reason why aircraft capable of flying about 3000 metres are pressurised. Since most packages are prepared at or near sea level where the atmospheric pressure is around 101.3 kilopascals (kPa), the decrease in atmospheric pressure as the aircraft gains altitude, may cause friction type lids (on paint cans) or stoppers that are not positively secured, taped, clipped or wired to pop, resulting in spillage. Larger aircraft are pressurised at 75 kPa, equivalent to an altitude of approximately 3000 metres. This pressure is maintained constantly throughout the flight irrespective of the altitude at which the aircraft is flying, provided there is no malfunction in the system or loss of pressure due to an accident. An aircraft when flying at 12000 metres (40,000 ft) has a huge pressure differential between the inside and the outside. The interior of the aircraft is pressurised at 75 kPa, while outside pressure is around 18.75 kPa.

Sudden depressurisation caused by a faulty system or accident will decrease the pressure inside the aircraft by about 83 kPa in a few seconds. The pressure inside containers will be proportionately increased and may cause them to burst or their cork or lids to pop up resulting in spillage.

**Inner receptacles such as glass or plastic bottles used for the transport of dangerous goods by air must be able to withstand a pressure differential of at least 97 kPa.**

### ***VIBRATIONS***

Vibrations in commercial aircraft (when landing, taking off, braking or during turbulence) to which packagings may be exposed range from 5mm amplitude at 7 Hz (corresponding to 1 G acceleration) to 0.05mm amplitude at 200 Hz (corresponding to 8 G acceleration).

Packaging materials must be of good quality and suitable construction to withstand vibrations and gravitational forces normally experienced during air travel. In extreme cases "G" forces of between 3 to 9 G (3 to 9 times actual body weight) may be encountered (during turbulence or heavy braking) that may cause damage to packages.

### ***What are your responsibilities as a shipper?***

The Civil Aviation Act and Regulations states that shippers must take full responsibility for:

- Classifying and identifying
- Packing, marking and labelling
- Documenting

All dangerous goods as per the IATA DGR.

The Shipper must comply with Section 23(2) and (2A) of the Civil Aviation Act, which says:

“Section 23(2) and (2A) applies to persons, e.g., passengers, shippers, freight forwarders, etc, who carry or consign dangerous goods as classified in the ICAO Technical Instructions without properly declaring, packing and marking as per the regulations or written permission obtained from CASA

(2) A person must not knowingly or recklessly carry or consign for carriage any dangerous goods on board an aircraft except:

(a) in accordance with the regulations, including any conditions subject to which the regulations permit the carriage or consignment of those goods;

or

(b) with the written permission of the Authority and in accordance with any conditions specified in the permission

**PENALTY : IMPRISONMENT FOR 7 YEARS**

(2A) A person must not carry or consign for the carriage any dangerous goods on board an aircraft except:

(a) in accordance with the regulations, including any conditions subject to which the regulations permit the carriage of those goods;

or

(b) with the written permission of the Authority and in accordance with any conditions specified in the permission

**PENALTY : IMPRISONMENT FOR 2 YEARS**

### ***Why must a Shipper accurately declare the contents of an air consignment?***

The Civil Aviation Regulations 262M (1) requires the Shipper to declare the contents precisely.

262M (1) states that a person that consigns cargo must make a statement regarding the contents:

“262M (1) For the purpose of section 23A of the Act and subject to regulations 262N, a person who consigns cargo for carriage on board an aircraft must make a written statement that:

- (a) states that the cargo does not contain dangerous goods; or
- (b) describes the contents of the cargo

**PENALTY : \$3000**

### ***What training is required?***

As from 1 January 2000, commercial shippers (or their employees) must undergo training. Untrained shippers or their staff must not prepare dangerous goods for air transportation. All commercial shippers must undertake a Dangerous Goods Acceptance Course. Duration is three days.

### ***What is the Shipper's liability?***

In case of an accident or incident resulting from their consignment, shippers may be held liable for damages caused. There is very little chance of this happening if the consignment has been properly packed, marked, labeled and documented as per the Regulations.

If an accident or incident occurs, shippers may void their insurance cover and may be sued for damages if it can be proven that the consignment does not meet any one of the Regulations standards or if the contents have not been declared properly.

## **SEA FREIGHT**

Sea freight is less restrictive than airfreight. For more information you should contact a Freight Forwarder or Cargo Agent

## **ROAD TRANSPORT**

### ***What is classified as dangerous goods for road transport?***

With a minimum of 250 kg or 250 litres for:

- For substances in Division 2.1 (Flammable gases)
- For substances in Division 2.3 (Toxic gases)
- For substances allocated into Packing Group I

With a minimum of 1000 kg or 1000 litres (not in bulk):

- The vehicle must be placarded with the applicable hazard label (three required, on two sides and back)

With a minimum of 1000 kg or 1000 litres (in bulk):

- The vehicle must be placarded as above and the driver must possess a dangerous goods by road licence

An EPG (Emergency Procedures Guide) must accompany all dangerous goods shipments by road.

For more information check the Queensland Transport Website:

[www.transport.qld.gov.au/freight](http://www.transport.qld.gov.au/freight)

## **TRAINING AND SUPPLIES**

Dangerous Goods by Air Training Centre (DGTC) offers training for shippers and packers for air transportation. Courses are conducted in Brisbane weekly. The address is:

25 Aminya Street (PO Box 2)  
Mansfield Qld 4122

**Telephone:** (07) 3216 8477  
**Fax:** (07) 3216 8996  
**E-mail** [dgtc@gil.com.au](mailto:dgtc@gil.com.au)

DGTC can also supply you with approved packaging for dangerous goods, labels, shipper's declaration (custom pre-printed if required). They can also pack and prepare shipper's declarations for air transport.