

Summary of International Dangerous Goods Regulations

Dangerous goods can be carried safely by air transport providing certain principles are adopted. These principles have been used in developing the International Civil Aviation Organization's Technical Instructions for the Safe Transport of Dangerous Goods by Air and are set out below; they are intended to facilitate transport while giving a level of safety such that dangerous goods can be carried without placing an aircraft or its occupants at risk, providing all the requirements are fulfilled.

In general, dangerous goods are divided into nine classes according to the hazard they present:

Class 1	Explosives
Class 2	Division 2.1 Flammable gases Division 2.2 Non-toxic, non-flammable gases Division 2.3 Toxic gases
Class 3	Flammable liquids
Class 4	Division 4.1 Flammable solids Division 4.2 Substances liable to spontaneous combustion Division 4.3 Substances which, in contact with water, emit flammable gas
Class 5	Division 5.1 Oxidisers Division 5.2 Organic peroxides
Class 6	Division 6.1 Toxic substances Division 6.2 Infectious substances
Class 7	Radioactive material
Class 8	Corrosives
Class 9	Miscellaneous dangerous goods

A detailed list of individual commodities is shown in the Technical Instructions which indicates the class or division into which each commodity falls as well as its acceptability for transport by air and under what conditions. Since such a list cannot be exhaustive, it also includes various generic or "not otherwise specified" entries to assist in the transport of those commodities not specifically listed by name.

Some dangerous goods are identified as too dangerous ever to be carried on any aircraft; some are forbidden in normal circumstances but may be carried with specific approval from the States concerned; some are restricted to carriage only on all-cargo aircraft; but most may be carried on both passenger and all-cargo aircraft, subject to meeting the required conditions.

Those restricted to all-cargo aircraft are either in larger quantities than allowed on passenger aircraft or are forbidden on such aircraft; their transport is permitted due to their being usually accessible in flight and to the ability of the flight crew to consider a greater range of actions in an emergency than is possible on passenger aircraft.

The provisions are based on material produced by the United Nations, which is contained in the Recommendations on the Transport of Dangerous Goods (ST/SG/AC.10/1), the Recommendations on the Transport of Dangerous Goods: Tests and Criteria (ST/SG/AC.10/11), and, for radioactive materials, the International Atomic Energy Agency Regulations for the Safe Transport of Radioactive Material (TS-R-1 (ST-1, Revised)). Using a United Nations system ensures compatibility between the international modes of transport so a consignment may be carried by more than one mode without intermediate reclassification and repacking. Modifications are made to the system to take account of the peculiarities of air transport, while keeping in mind the need to ensure modal compatibility.

There are packing requirements of a general nature and packing instructions which, together, are intended to ensure that the safety of dangerous goods in air transport is assured by their packagings and the way in which they are packed. The packing requirements apply in almost all circumstances; the packing instructions mostly use UN packagings but sometimes these are not required, for instance when dangerous goods are in "limited quantities". There is usually a wide choice of inner and outer packagings and single packagings are often permitted; sometimes, however, very restrictive packagings or only one or two types are permitted, or triple packagings are required. Generally, the quantity which can be put into an inner packaging and a complete package is strictly controlled. This is to minimise the inherent risk presented by the dangerous goods so that if an incident should occur, the situation would not produce an unacceptable hazard or lead to injury or major property damage.

After dangerous goods have been packed, the packages are marked with essential information, including the proper shipping name and UN number, and labels depicting all the potential hazard(s) of the contents are affixed. This is to ensure packages containing dangerous goods can be recognised and warning given of the potential hazard(s) without relying on information on accompanying documents. A dangerous goods transport document accompanies most consignments to provide detailed information about the goods so that, if required, there is a separate means of identifying the contents of packages.

There is generally no restriction on the number of packages of dangerous goods which can be loaded on an aircraft but there are provisions for their stowage. Incompatible dangerous goods are segregated and most are separated from passengers. The pilot-in-command is informed of what is on board an aircraft since, among other things, in an emergency the dangerous goods need to be considered when deciding on action. If an in-flight emergency does occur, the pilot-in-command needs to convey information to the air traffic services, in order to aid the response to such an accident or incident. In the event of an accident or incident, information is provided by the operator to the relevant authority as quickly as possible so as to ensure that any hazard arising from damage to the dangerous goods is minimised.

Dangerous goods accidents and incidents have to be reported so that an investigation by a relevant authority can establish the cause and take action to prevent a recurrence, wherever possible. In particular, any weakness or error in the Technical Instructions has to be identified.

With the exception of a specific list of items, dangerous goods must not be carried in passenger or crew baggage. The exceptions include items falling under the headings of "medical necessities", "articles used in dressing or grooming" and "consumer articles". The Technical Instructions requires passengers to be warned both prior to and during the check-

in process of dangerous goods which must not be carried in baggage; amongst other things these requirements include the provision of warning notices at check-in desks.

Training is an important aid to achieving an understanding of the philosophy and requirements of the Technical Instructions. There is a need for everyone concerned to receive training on the subject either for general familiarisation or to provide detailed knowledge, so that the responsibilities of the individual can be met. Dangerous goods are very unlikely to cause a problem when they are prepared and handled in compliance with the Technical Instructions.