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Book 4



INTERNATIONAL CIVIL AVIATION ORGANIZATION

**DANGEROUS GOODS
TRAINING PROGRAMME**

**BOOK 4
LOADING AND WAREHOUSE
PERSONNEL**

*Approved by the Secretary General
and published under his authority*

THIRD EDITION — JANUARY 1993

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DANGEROUS GOODS TRAINING PROGRAMME

(Doc 9375-AN/913)

BOOK 4 LOADING AND WAREHOUSE PERSONNEL



THIRD EDITION — JANUARY 1993

FOREWORD

Annex 18 to the Convention on International Civil Aviation, entitled “The Safe Transport of Dangerous Goods by Air”, requires in Chapter 10 that dangerous goods training programmes be established and updated as provided for in the ICAO document *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284).

The Technical Instructions (Part 6) require that initial and recurrent dangerous goods training programmes be established and maintained for or on behalf of the following:

- regular shippers of dangerous goods and shippers’ agents;
- operators;
- agencies located at an aerodrome which perform, on behalf of the operator, the act of receiving, loading, unloading, transferring or other processing of passengers or cargo;
- agencies other than operators involved in processing or transporting either passengers or cargo; and
- agencies engaged in the security screening of passengers and their baggage.

It also recommends that these training programmes be subjected to review and approval as determined by the appropriate national authority, with the exception of the operators’ training programmes which must be subject to review and approval by the appropriate authority of the State of the operator.

A series of four books, of which this is Book 4, has been produced for the training of particular categories of personnel involved in the transport of dangerous goods by air. The four books are:

- Book 1: Shippers, cargo agents and operators’ cargo acceptance staff
- Book 2: Load planners and flight crew
- Book 3: Passenger handling staff and flight attendants
- Book 4: Loading and warehouse personnel

This programme of books has been developed to help achieve a uniform world-wide level of training in all aspects of handling and transporting dangerous goods by air and particularly to assist those who are responsible for the establishment of training programmes. The material contained in these books was developed jointly by ICAO and IATA in support of the provision contained in Annex 18 to the Convention on International Civil Aviation. It is believed that the use of an internationally developed training programme will facilitate approval by national authorities.

It is intended that revised editions of these books will be published from time to time to maintain alignment with changes to the provisions on which they are based.

This third edition of the training programme series is based on the *1993-1994 Edition* of the Technical Instructions.

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INTRODUCTION

This is a self-study training book intended to familiarize personnel involved with the loading and unloading of aircraft and with transporting cargo, baggage or mail on the airport, with the provisions of the International Civil Aviation Organization (ICAO) *Technical Instructions for the Safe Transport of Dangerous Goods by Air*. The ICAO Technical Instructions contain the internationally agreed rules which will ensure that dangerous goods are carried safely. You need to be aware of the content of these provisions so that you may monitor the system where possible and properly carry out your own responsibilities. Do not attempt to memorize any part of this book or the Instructions.

Dangerous goods are commodities with a potential for danger but, if the regulations are followed, transporting such goods by air is not dangerous.

Within the definition of dangerous goods are not only obvious substances such as acids, radioactive material, poisons and explosives but also some unlikely items such as magnets, wheelchairs with wet-cell batteries, breathing apparatus with compressed gas cylinders, perishables packed in dry ice, pesticides, etc.

The Technical Instructions cover the procedures to be followed by everyone involved in preparing a consignment of dangerous goods and transporting it on an aircraft.

The cargo agent and operator's cargo acceptance staff must:

- complete a checklist which involves a comprehensive check of the package and documentation. The consignment is accepted only if all relevant requirements have been complied with.

The loading personnel must:

- inspect each package for leakage or damage before loading into a unit load device (ULD) or bulk loading an aircraft;
- inspect each ULD for evidence of leakage or damage before loading on an aircraft;
- correctly position, segregate and secure each package or ULD aboard the aircraft.

The pilot-in-command must:

- receive and retain full written details of all dangerous goods loaded on the aircraft (Information to pilot-in-command);
- be aware of the action to be taken in the event of emergencies involving dangerous goods.

The pages that follow will help you to understand the relevant parts of the Technical Instructions more fully.

Throughout this book, cross-references to the relevant parts of the Technical Instructions are given. Extracts from some parts are also shown as examples. The cross-references (which appear in parentheses) always begin with a figure indicating the part of the Technical Instructions, followed by a semicolon and then followed by a group of figures representing the paragraph. For example:

4;2.3 refers to Part 4, paragraph 2.3.

A single figure following the semicolon refers to a whole chapter. For example:

2;9 refers to Part 2, Chapter 9.

It is worth noting that a detailed Index appears at the back of the Technical Instructions (Attachment 4) and this will help you find any other references you may need.

It is intended that you read the relevant paragraphs of the Instructions in conjunction with the notes contained in this book to obtain a fuller understanding of the procedures involved in the transport of dangerous goods by air. To test your understanding, it is suggested that you attempt to answer the review questions given at the end of the book, using the Instructions for reference as necessary. The answers to the review questions are also given to enable you to check your own responses and to indicate areas where further study might be required.

The Technical Instructions are updated and reissued every two years. Only the current edition should be used.

DANGEROUS GOODS

General

Dangerous goods may be divided into three categories:

- a) those which are acceptable for transport by air provided all the provisions of the Instructions are complied with;
- b) those which are forbidden for transport by air; and
- c) those which are excepted from the provisions of the Instructions.

Provided that the requirements of the Technical Instructions are followed, the desired level of safety will be maintained.

Dangerous goods acceptable — 1;1.2

A great many dangerous goods may be carried safely on aircraft as cargo provided they are properly prepared for transport in accordance with the Instructions. Generally, however, they are not permitted in passengers' or crews' checked baggage or as carry-on articles (but see Dangerous goods excepted or limited below). Items refused as baggage may be accepted as cargo only if all the requirements of the Technical Instructions are met. A major aspect of the requirements is the use of secure packaging when transporting limited quantities of dangerous goods. The Instructions, in general, restrict the quantity per package rather than the number of packages.

Dangerous goods forbidden for transport — 1;2.1

Certain dangerous goods are considered to be too dangerous for transport by air under any circumstances. Special care is taken to ensure that such goods are not accepted for transport.

Dangerous goods excepted — 1;2.3 and 9;2.1

Certain items of dangerous goods are excepted from the requirements of the Technical Instructions. Exceptions for dangerous goods belonging to the operator are listed in 1;2.3; note that aircraft replacement parts and spares must meet the normal requirements of these Instructions, except that, when consigned by operators, they can be carried in specially designed containers. Exceptions for dangerous goods belonging to passengers or crew are listed in 9;1.2.

Of particular interest to cargo handling and loading staff are the provisions for self-propelled wheelchairs; these particular subparagraphs are reproduced below.

- i) with the approval of the operator(s), wheelchairs or other battery-powered mobility aids with non-spillable batteries (see Packing Instruction 806 and Special Provision A67), as checked baggage provided that the battery is disconnected, the battery terminals are insulated to prevent accidental short circuits and the battery is securely attached to the wheelchair or mobility aid;
- j) with the approval of the operator(s), wheelchairs or other battery-powered mobility aids with spillable batteries as checked baggage, provided that the wheelchair or mobility aid can be loaded, stowed, secured and unloaded always in an upright position and that the battery is disconnected, the battery terminals are insulated to prevent accidental short circuits and the battery is securely attached to the wheelchair or mobility aid. If the wheelchair or mobility aid cannot be loaded, stowed, secured and unloaded always in an upright position, the battery must be removed and the wheelchair or mobility aid may then be carried as checked baggage without restriction. The removed battery must be carried in strong, rigid packagings as follows:
 - 1) these packagings must be leaktight, impervious to battery fluid and be protected against upset by securing to pallets or by securing them in cargo compartments using appropriate means of securement (other than by bracing with freight or baggage) such as by use of restraining straps, brackets or holders;
 - 2) batteries must be protected against short circuits, secured upright in these packagings and surrounded by compatible absorbent material sufficient to absorb their total liquid contents; and
 - 3) these packagings must be marked 'Battery, wet, with wheelchair' or 'Battery, wet, with mobility aid' and be labelled with a 'Corrosive' label (Figure 4-19) and with a package orientation label (Figure 4-23).

The pilot-in-command must be informed of the location of a wheelchair or mobility aid with an installed battery or the location of a packed battery.

It is recommended that passengers make advance arrangements with each operator; also unless batteries are non-spillable they should be fitted, where feasible, with spill-resistant vent caps;

If it is not possible to confirm that a battery is of the non-spillable type, it must be treated as a spillable battery.

Dangerous goods in excepted quantities — 1;2.5

Certain types of dangerous goods may be carried in small quantities without complying with all the requirements of the Instructions. Special provisions have been made which exempt them from the usual provisions for dangerous goods including documentation, hazard labels and segregation loading. However, such packages must be marked "Dangerous goods in excepted quantities" (1;2.5.6.1).

Packages containing excepted quantities of dangerous goods do not require any special handling or loading except that they must not be carried in a passenger cabin or on the flight deck.

An incident involving leakage or spillage of a package containing excepted quantities of dangerous goods or any other occurrences must be reported in accordance with Part 5;4.4 and 4.5 of the Instructions.

Dangerous goods in limited quantities — 1;2.6

The Instructions contain provisions for limited quantities of dangerous goods. These recognize that many dangerous goods when in reasonably limited quantities present a reduced hazard during transport and can safely be carried in good quality packagings of the types specified in the Instructions but which have not been tested and marked accordingly. The provisions applicable for dangerous goods in limited quantities appear in Part 1;2.6 of the Instructions. The packing instructions and quantities limitation are indicated in Column 9 of Table 2-14 where they are prefixed by the letter "Y"; the associated quantity limitation is shown in Column 10. These packages must be marked, labelled and stowed in the same way as other dangerous goods.

CLASSES AND DIVISIONS

Dangerous goods are divided into nine classes reflecting the type of risk involved, but the order in which they are listed does not imply a relative degree of danger (2;1 to 2;9). It is the responsibility of the shipper to classify the dangerous goods into one of these classes.

The nine classes of dangerous goods are:

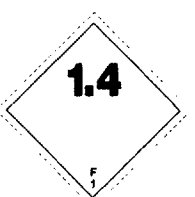
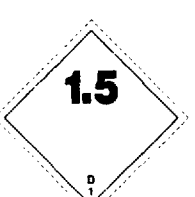
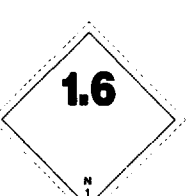
- Class 1 Explosives
- Class 2 Gases
- Class 3 Flammable liquids
- Class 4 Flammable solids; substances liable to spontaneous combustion; substances which, in contact with water, emit flammable gases
- Class 5 Oxidizing substances; organic peroxides
- Class 6 Poisonous (toxic) and infectious substances
- Class 7 Radioactive material
- Class 8 Corrosives
- Class 9 Miscellaneous dangerous goods

In some classes, dangerous goods are further divided into divisions. The division is expressed by placing a decimal point after the class number and reflecting the number of the division, e.g. Division 6.1. In these cases, reference is made only to the division and not to the class, e.g. Division 5.2, not Class 5, Division 2.

When a substance has more than one hazard, the main hazard is referred to as the “primary risk” or “primary hazard” and the other hazard(s) as “subsidiary risk(s)” or “subsidiary hazard(s)”.

Dangerous goods are identified by proper shipping names and UN numbers. These names and numbers are assigned under the United Nations classification system to specific articles and substances.

Description of classes and divisions

<i>Class/division</i>	<i>Label</i>	<i>Description</i>	<i>Remarks and examples</i>
CLASS 1 — EXPLOSIVES			
Division 1.1		Substances and articles which have a mass explosion hazard.	THESE EXPLOSIVES ARE NOT NORMALLY PERMITTED FOR TRANSPORT BY AIR
Division 1.2		Substances and articles which have a projection hazard but not a mass explosion hazard.	
Division 1.3		Substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.	
Division 1.4		Substances and articles which present no significant hazard.	
Division 1.5		Very insensitive substances which have a mass explosion hazard.	
Division 1.6		Extremely insensitive articles which do not have a mass explosion hazard.	