



DGP/27-IP/9  
8/9/19

## **DANGEROUS GOODS PANEL (DGP)**

### **TWENTY-SEVENTH MEETING**

**Montréal, 16 to 20 September 2019**

**Agenda Item 9: Harmonization of *Guidance Material for the Dangerous Goods Panel (DGP) to Aid in the Preparation of the Technical Instructions and Supporting Documents* with revised dangerous goods provisions**

### **GUIDANCE FOR THE PANEL TO AID IN PREPARATION OF THE TECHNICAL INSTRUCTIONS AND SUPPORTING DOCUMENTS**

(Presented by the Secretary)

#### **SUMMARY**

The latest version of the guidance document for the panel to aid in preparation of the technical instructions and supporting documents is provided in this information paper as the basis for work under Agenda Item 9.



# **DANGEROUS GOODS PANEL**

## **GUIDANCE FOR THE PANEL TO AID IN PREPARATION OF THE *TECHNICAL INSTRUCTIONS* AND SUPPORTING DOCUMENTS**

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## **PART 0 – INTRODUCTION AND GENERAL PRINCIPLES**

### ***Introduction***

This document has been produced to assist the Dangerous Goods Panel with the up-dating of the Technical Instructions. It contains guidance material and criteria which can be used when deciding how to make changes to those Instructions and how new items of dangerous goods should be incorporated into them and other documents, including the Supplement to the Technical Instructions and the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Doc 9481-AN/928)*.

The general principles used in developing the provisions of the Technical Instructions are to be found in the Foreword to the Technical Instructions. What is contained in this document is the detailed material to aid in the interpretation and application of those general principles.

### ***0.1 Basis for the Technical Instructions***

0.1.1 Annex 18 contains the standards and recommended practices for the transport of dangerous goods by air. These are written broadly and without technical detail, in order that amendment to them is required only infrequently. The Technical Instructions contain all the detailed material; they are amended at regular intervals on a cycle commensurate with the cycle of amendment applied to the up-dating of the *UN Recommendations on the Transport of Dangerous Goods (Model Regulations)*.

0.1.2 The Air Navigation Commission require the Panel to use the Recommendations, which are prepared by the UN Subcommittee of Experts, and the Regulations for the Safe Transport of Radioactive Material (which are produced by the International Atomic Energy Agency) as the base documents for the development and up-dating of the Technical Instructions. This ensures there is compatibility of the basic requirements between all the modes of transport (i.e.: air, road, rail and sea), so that shippers can have a co-ordinated approach to consigning dangerous goods no matter which modes are involved and also avoid problems when it is necessary to transfer goods between those modes.

0.1.3 The UN Recommendations are acknowledged as the model regulations on which the modes of transport should base their requirements. The Technical Instructions follow, as far as possible, both the format and content of the Recommendations; this means that, although the requirements for radioactive materials will be those of the International Atomic Energy Agency, their method of inclusion in the Instructions will be the same as in the Recommendations. The UN Recommendations and the IAEA Regulations have been developed to cover all modes of transport and may, therefore, contain some requirements that are inappropriate for air transport. This has to be taken into account when deciding how to incorporate changes made to the UN Recommendations and IAEA Regulations, since they may not be applicable or may have to be modified before being included in the Technical Instructions.

0.1.4 Amendments to the Technical Instructions are also made to reflect changes in the operational aspects of handling dangerous goods in air transport; and requirements may be developed which recognise that additional conditions need to be imposed for particular dangerous goods.

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### ***0.2 Differences between the UN Recommendations and the Technical Instructions***

0.4.1 Whilst the Technical Instructions follow closely the UN Recommendations, there are some requirements in those Recommendations which have no application in air transport, or which the Panel has deemed to be inappropriate for air transport. When this occurs the Panel can decide the requirement does not need be included in the Instructions. Significant differences are specifically identified in this guidance document together with the Panel's basis for deviating from the provisions of the UN Recommendations.

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## PART 1 - GENERAL

The Technical Instructions consist of eight Parts, with each part being divided into Chapters and each Chapter divided into paragraphs and subparagraphs. Following the eight parts there are a number of attachments. The attachments do not form part of the Technical Instructions.

**Comment [11]:** Is this a valid statement?

Within each Chapter, the Chapter number is incorporated into all of the paragraph numbers; thus, in Chapter 3, paragraph 2 carries the number “3.2”. When referring to a paragraph, it is necessary to identify the appropriate Part; if the above example were located in Part 2, the reference to it would be shown as “2;3.2” (that is, Part 2; Chapter 3, paragraph 3.2).

As an exception, and in an effort to maintain a correspondence between the class number and the chapter number in Part 2, the first chapter, “Introduction”, of Part 2 is not numbered

Figures and Tables are numbered sequentially within the Part in which they appear. Thus the second figure appearing in Part 4 is identified as “Figure 4-2” and the first table appearing in Part 3 is identified as “Table 3-1”.

### 1.1 *Scope and Applicability*

#### 1.1.1 General Applicability

The provisions of the Instructions detail the requirements applicable to the international transport of dangerous goods by air. However, it is recognised that there will be circumstances where there is a justifiable need for dangerous goods to be transported other than as normally provided for in the Instructions.

To make provision for this to happen, while still ensuring that an equivalent level of safety is maintained, the Instructions make allowance for dangerous goods to be transported under an “approval” or an “exemption”.

Issue of an “approval” typically requires agreement from both the appropriate national authorities of the State of origin and the State of the operator and may only be applied when the Instructions make a specific allowance for an approval. Issue of an “Exemption” is only possible when all States concerned agree. Further detail of the conditions for issue of approvals and exemptions is contained in the Supplement, see Part 10.

### 1.2 *Limitation of Dangerous Goods on Aircraft*

#### 1.2.1 Exceptions for Dangerous Goods of the Operator

The Instructions provide for certain dangerous goods to be carried on an aircraft and for the provisions of the Instruction not to apply. This allowance addresses dangerous goods which are:

- a) items of dangerous goods which are required on board an aircraft for operational / airworthiness reasons, e.g. oxygen cylinders, oxygen generators, fire extinguishers, etc.;
- b) dangerous goods carried in the cabin for sale or use by the operator, e.g. duty free goods for sale such as perfumes, aerosols, etc, aerosols, perfumes which may be placed in aircraft lavatories for passenger use;
- c) dry ice required used as part of food and beverage service;
- d) articles containing lithium batteries used on board the aircraft, e.g. laptop computers on the flight deck, portable DVD / CD players provided for passenger use, etc.



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### **1.3 Definitions**

1.3.1 Where a definition is needed in the Annex and/or the Technical Instructions and it already appears in another ICAO Annex, the Air Navigation Commission will expect that definition to be used. This is for consistency.

1.3.2 Where a definition appears in the UN Recommendations or IAEA Regulations it is included in the Technical Instructions providing it is applicable and it does not conflict with any definition already used in another ICAO Annex; in which case it will be necessary to resolve any conflict before it is added to the Technical Instructions.

1.3.3 Definition of shipper. There is no definition of shipper in either Annex 18 or the Technical Instructions. In past Panel discussions it has been decided that any definition could result in a loophole and preference has been given to relying on what has become the accepted meaning, which is that it is a synonym for "consignor". Whilst the term "shipper" is used in most of the requirements, in those paragraphs where it is necessary to more specifically identify the relevant person or organisation the wording used is "person who offers ...".

1.3.4 Definitions for "Bundles of cylinders", "Large packagings", "Multiple-element gas containers (MEGCs)", "Pressure drums", "Remanufactured large packaging", "Reused large packaging", and "Salvage pressure receptacles" from the UN Recommendations have not been included in the Technical Instructions. These are identified in Part 1;3 with the annotation "(see UN Recommendations, Chapter 1.2). Not permitted in air transport."

1.3.5 Any term used in the Technical Instructions which may not be understood can be defined. However, where a term has its usual dictionary meaning or is used in its usual technical sense it is not further defined.

### **1.4 Training**

1.4.1 The requirements for dangerous goods training set out in Part 1;4 of the Technical Instructions are based on the UN Recommendations, although the Technical Instructions provisions are more detailed in that specific categories of persons are identified who must received dangerous goods training and in addition guidance is provided on the training elements that should be applied to each category of person.

### **1.5 Dangerous goods security**

1.5.1 Provisions relating to dangerous goods security that reflect the content of the UN Recommendations were adopted into the Technical Instructions with effect the 2005-2006 edition.

1.5.2 In adopting the provisions from the UN Recommendations the Panel considered the merit of including security provisions into the Technical Instructions vs. recommendation that the ICAO AvSec Panel adopt the security provisions for dangerous goods into Annex 17 and the associated AvSec Manual. As there was some pressure to adopt the UN provisions into air transport to ensure a consistent application across the modes and the AvSec Panel were not in a position to adopt the dangerous goods security provisions the Panel agreed to incorporate the dangerous goods security provisions into the Technical Instructions.

1.5.3 However, as the national authority responsible for air transport is often not the national authority for transport security the dangerous goods security provisions in the Technical Instructions have only been included as recommendations and not as mandatory requirements, i.e. "should" and not "must".

## PART 2 - CLASSIFICATION

### 2.1 General

2.1.1 The classification provisions of Part 2 are in almost complete alignment with those of the UN Recommendations to ensure modal harmonisation. There is however some content from the UN Recommendations on classification that has not been included in Part 2 of the Technical Instructions as the content is seen as being specialist in use and not specific to air transport.

2.1.2 Some classification provisions though have not been incorporated into the Part 2 of the Technical Instructions as the provisions are seen as being inappropriate for application in air transport. The provisions not currently adopted are:

2.1.2.1 Class 3 Flammable Liquids. The UN Recommendations in paragraph 2.3.2.5 permits viscous substances with a flash point of 23°C or above to be considered “not subject to the Regulations” provided the solvent separation and flowtime in the viscosity test meet specified requirements. This provision has not been adopted into the Technical Instructions because???

**Comment [12]:** Need to develop some text to identify the reason.

2.1.2.2 Division 4.1 Self-Reactive Substances. The provisions of paragraph 2.4.2.3.2.1 of the UN Recommendations have not been adopted into the Technical Instructions because??

**Comment [13]:** Need to develop some text to identify the reason.

2.1.2.3 Paragraph 2.4.2.3.5.4 of the UN Recommendations has not been adopted as it refers to conditions for diluents for substances that require temperature control. Self-reactive substances that require temperature control are forbidden in air transport.

2.1.2.4 Division 5.2 Organic Peroxides. The provisions of paragraph 2.5.3.2.2 of the UN Recommendations have not been adopted into the Technical Instructions because??

**Comment [14]:** Need to develop some text to identify the reason.

## **PART 3 - DANGEROUS GOODS LIST, SPECIAL PROVISIONS AND LIMITED AND EXCEPTED QUANTITIES**

### **3.1 *Dangerous goods list***

3.1.1 The Dangerous Goods List, Table 3-1 in the Technical Instructions is that which is included in the UN Recommendations, with the addition of specific items which are peculiar to air transport. The list is shown in alphabetical order, although this is not the order used for the list in the UN Recommendations, since it is felt the user would search primarily by name and not by number.

3.1.2 Where an item is listed in the UN Recommendations it will be allocated a UN number by the UN Subcommittee. Where an item has been identified by the Panel for inclusion in the list of dangerous goods, the UN Subcommittee will be asked to allocate a UN number and a case for doing so needs to be made to them. However, if it is considered to be peculiar to air transport, the Subcommittee may decline to do so, and in such instances the item is allocated an "ID" number. At the current time there is only one "ID" number item listed, being ID 8000, Consumer commodity.

3.1.3 UN numbers and Proper shipping names which are not used in air transport have not been included in Table 3-1. The current exclusions are:

- UN 1327, Hay, Straw or Bhusa;
- UN 1372, Fibres, animal or Fibres, vegetable;
- UN 1374, Fish meal, unstabilized or Fish scrap, unstabilized;
- UN 1387, Wool waste, wet;
- UN 1856, Rags, oily;
- UN 1857, Textile waste, wet;
- UN 2216, Fish meal, stabilized or Fish scrap, stabilized;
- UN 3359, Fumigated cargo transport unit;
- UN 3360, Fibres, vegetable, dry;
- UN 3947, Krill meal.

### **3.2 *Quantity limitations for the dangerous goods list***

3.2.1 The quantity limitations shown in columns 10 and 12 Table 3-1 in the Technical Instructions and the Table S-3-1 in the Supplement are applied according to the criteria shown in Tables 1 through 3 below. The entries in parenthesis in columns 4 and 5 of Table 1 and columns 5 and 6 of Table 2 are appropriate for those dangerous goods listed in the Supplement. Where only one figure is shown this means the Class/Division is permitted in the list in the Technical Instructions. However, sometimes 'Forbidden' may need to be considered for a particular item, although according to Table 1 the Class/Division is generally permitted. Also, some variation in the quantity shown for the hazard in general may need to be considered.

3.2.2 Where articles and substances have only a primary risk the maximum net quantity per package is according to Table 1; where articles and substances have subsidiary risks see Table 2 for the maximum net quantity per package.

3.2.3 Columns 9 and 10 of the list in the Technical Instructions show the maximum net quantities applicable to limited quantities; the criteria for these are in Table 3.

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3.2.4 The criteria used when adding organic peroxides or self-reactive substances to the dangerous goods list are as follows:

- (a) Organic peroxides and self-reactive substances are either permitted on both passenger and cargo aircraft or forbidden on both types (ie: there are no organic peroxides or self-reactive substances which should be forbidden on passenger aircraft but permitted on cargo aircraft in normal circumstances).
- (b) The organic peroxides and self-reactive substances which are forbidden are:
  - (i) those requiring temperature control;
  - (ii) those assigned Special Provision A215 (e.g.: Self-reactive [etc], type B).
- (c) Packagings must conform to the applicable OP method shown in UN P520; but even if the UN OP method permits other types of packagings, those used are restricted as follows:
  - (i) only combination packagings are permitted (ie: single packagings are not used) ;
  - (ii) only plastic inner packagings are permitted;
  - (iii) metal outer packagings are not permitted; outer packagings are restricted to boxes of fibreboard, plywood, solid plastic or wood, drums of fibre, plastic and plywood or plastic jerricans.
- (d) Even if the UN OP method permits larger quantities, the maximum net quantities per package are restricted to:

<i>Type</i>	<i>Physical state</i>	<i>Passenger aircraft</i>	<i>Cargo aircraft</i>
C and D	Liquid	5 L	10 L
	Solid	5 kg	10 kg
E and F	Liquid	10 L	25 L
	Solid	10 kg	25 kg

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**TABLE 1**

**Maximum Net Quantities Per Package For Dangerous Goods With Only A Primary Hazard**

<i>Class/ Division</i>	<i>Packing group</i>	<i>Physical state</i>	<i>Passenger aircraft</i>	<i>Cargo aircraft</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<b>DIVISIONS 1.1 TO 1.3 - EXPLOSIVES</b>				
1.1			Forbidden (Forbidden)	Forbidden (Forbidden)
1.2			Forbidden (Forbidden)	Forbidden (Forbidden)
1.3 <i>(Note 1)</i>			Forbidden (Forbidden)	Forbidden (Forbidden) 75 kg
<b>DIVISION 1.4 - EXPLOSIVES</b>				
1.4B			Forbidden (Forbidden)	75 kg
1.4C			Forbidden (Forbidden)	75 kg
1.4D			Forbidden (Forbidden)	75 kg
1.4E			Forbidden (Forbidden)	75 kg
1.4F			Forbidden (Forbidden)	Forbidden (Forbidden)
1.4G			Forbidden (Forbidden)	75 kg
1.4S			25 kg	100 kg
<b>DIVISIONS 1.5 AND 1.6 - EXPLOSIVES</b>				
1.5D			Forbidden (Forbidden)	Forbidden (Forbidden)
1.6N			Forbidden (Forbidden)	Forbidden (Forbidden)
<b>CLASS 2 - GASES</b>				
2.1		Gases, not aerosols	Forbidden (5 kg)	150 kg (150 kg)
		Aerosols	75 kg	150 kg
		Chemicals under pressure	[5 kg]	[150 kg]
2.2		Gases, not aerosols and not refrigerated liquefied gases	75 kg	150 kg
		Aerosols	75 kg	150 kg
		Refrigerated liquefied gas	50 kg	500 kg
		Chemicals under pressure	[75 kg]	[150 kg]
2.3		Gases	Forbidden ( <i>Note 2</i> )	Forbidden ( <i>Note 2</i> )
<b>CLASS 3 - FLAMMABLE LIQUID</b>				
3	I	Liquid	1 L	30 L ( <i>Note 3</i> )
	II	Liquid	5 L ( <i>Note 3</i> )	60 L ( <i>Note 3</i> )
	III	Liquid	60 L ( <i>Note 3</i> )	220 L ( <i>Note 3</i> )

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**TABLE 1 - (Continued)**

<i>Class/ Division</i>	<i>Packing group</i>	<i>Physical state</i>	<i>Passenger aircraft</i>	<i>Cargo aircraft</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<b>DIVISION 4.1 - FLAMMABLE SOLID</b>				
4.1	I	Desensitized explosives	0.5 kg / 1 kg <i>(Note 4)</i>	0.5 kg / 15 kg <i>(Note 4)</i>
	II	Solid, but not self-reactive substances	15 kg <i>(Note 3)</i>	50 kg <i>(Note 3)</i>
		Self-reactive liquid <i>(Note 5)</i>	5 L / 10 L <i>(Note 6)</i>	10 L / 25 L <i>(Note 6)</i>
		Self-reactive solid <i>(Note 5)</i>	5 kg / 10 kg <i>(Note 6)</i>	10 kg / 25 kg <i>(Note 6)</i>
	III	Solid, but not self-reactive or related substances	25 kg	100 kg
		Self-reactive or related substance	Forbidden (Individual consideration)	Forbidden (Individual consideration)
<b>DIVISION 4.2 SPONTANEOUSLY COMBUSTIBLE SUBSTANCES</b>				
4.2	I	Pyrophoric liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		Pyrophoric solid	Forbidden (Forbidden)	Forbidden (Forbidden)
	II	Liquid	1 L	5 L
		Solid	15 kg <i>(Note 3)</i>	50 kg <i>(Note 3)</i>
	III	Liquid	5 L	60 L
		Solid	25 kg <i>(Note 3)</i>	100 kg <i>(Note 3)</i>
<b>DIVISION 4.3 - WATER REACTIVE SUBSTANCES</b>				
4.3	I	Liquid	Forbidden (Forbidden)	1 L
		Solid	Forbidden (Forbidden)	15 kg
	II	Liquid	1 L	5 L
		Solid	15 kg	50 kg
	III	Liquid	5 L	60 L
		Solid	25 kg	100 kg
<b>DIVISION 5.1 - OXIDIZERS</b>				
5.1	I	Liquid	Forbidden (Forbidden)	2.5 L
		Solid	1 kg	15 kg
	II	Liquid	1 L	5 L
		Solid	5 kg	25 kg
	III	Liquid	2.5 L	30 L
		Solid	25 kg	100 kg

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**TABLE 1 - (Continued)**

<i>Class/ Division</i>	<i>Packing group</i>	<i>Physical state</i>	<i>Passenger aircraft</i>	<i>Cargo aircraft</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<b>DIVISION 5.2 - ORGANIC PEROXIDES</b>				
5.2	II	Liquid ( <i>Note 7</i> )	5 L / 10 L ( <i>Note 6</i> )	10 L / 25 L ( <i>Note 6</i> )
		Solid ( <i>Note 7</i> )	5 kg / 10 kg ( <i>Note 6</i> )	10 kg / 25 kg ( <i>Note 6</i> )
<b>DIVISION 6.1 - TOXIC SUBSTANCES</b>				
6.1(i)	I	Liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		Solid	Forbidden (Forbidden)	15 kg
6.1(d and o)	I	Liquid	1 L	30 L
		Solid	5 kg ( <i>Note 3</i> )	50 kg ( <i>Note 3</i> )
6.1	II	Liquid	5 L ( <i>Note 3</i> )	60 L ( <i>Note 3</i> )
		Solid	25 kg	100 kg ( <i>Note 3</i> )
	III	Liquid	60 L	220 L
		Solid	100 kg	200 kg
<b>DIVISION 6.2 - INFECTIOUS SUBSTANCES</b>				
6.2		Liquid	50 mL	4 L
		Solid	50 mg	4 kg
<b>CLASS 8 - CORROSIVE SUBSTANCES</b>				
8	I	Liquid	0.5 L	2.5 L
		Solid	1 kg	25 kg
	II	Liquid	1 L	30 L
		Solid	15 kg	50 kg
	III	Liquid	5 L	60 L
		Solid	25 kg	100 kg
<b>CLASS 9 - MISCELLANEOUS DANGEROUS GOODS</b>				
9			Quantities vary according to individual items ( <i>Note 8</i> )	Quantities vary according to individual items ( <i>Note 8</i> )

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### Notes for Table 1

1. Some articles in Division 1.3 are permitted on cargo aircraft, when the articles are for life-saving purposes (eg: Flares, aerial [UN 0093]).
2. The quantity permitted will always be according to Packing Instruction 213 in the Supplement [Note: possibly to become PI 200 in the Supplement].
3. Reduced quantities apply to specific substances such as chlorosilanes, nitrocellulose, etc. Substances for which specific quantity limits or packaging types apply are assigned to non-standard packing instructions are identified in Table 4, which identifies the packing instructions assigned to each class/division by packing group for passenger aircraft and cargo aircraft only.
4. Quantity varies depending on the sensitivity of the explosive form.
5. Self-reactive substances which are temperature controlled are Forbidden on both passenger and cargo aircraft.
6. See paragraph 3.2.4 above.
7. Organic peroxides which are temperature controlled are Forbidden on both passenger and cargo aircraft.
8. The Panel agreed with effect the 2011-2012 Instructions to permit solid environmentally hazardous substances (UN 3077) only to be shipped in intermediate bulk containers (IBC) up to a maximum net quantity of 1 000 kg.



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**TABLE 2**

**Maximum Net Quantities Per Package For Dangerous Goods With A Primary Hazard And One Or More Subsidiary Risks**

<i>Primary hazard</i>		<i>Subsidiary risk(s)</i>	<i>Physical state</i>	<i>Passenger aircraft</i>	<i>Cargo aircraft</i>
<i>Class/Div</i>	<i>PG</i>	<i>(Note 1)</i>			
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
<b>CLASS 1 - EXPLOSIVES</b>					
1.1		6.1		Forbidden (Forbidden)	Forbidden (Forbidden)
		8		Forbidden (Forbidden)	Forbidden (Forbidden)
1.2		6.1		Forbidden (Forbidden)	Forbidden (Forbidden)
		8		Forbidden (Forbidden)	Forbidden (Forbidden)
1.3		6.1		Forbidden (Forbidden)	Forbidden (Forbidden)
		8		Forbidden (Forbidden)	Forbidden (Forbidden)
1.4B		6.1		Forbidden (Forbidden)	75 kg
		8		Forbidden (Forbidden)	75 kg
1.4C		6.1		Forbidden (Forbidden)	75 kg
		8		Forbidden (Forbidden)	75 kg
1.4D		6.1		Forbidden (Forbidden)	75 kg
		8		Forbidden (Forbidden)	75 kg
1.4E		6.1		Forbidden (Forbidden)	75 kg
		8		Forbidden (Forbidden)	75 kg
1.4F		6.1		Forbidden (Forbidden)	Forbidden (Forbidden)
		8		Forbidden (Forbidden)	Forbidden (Forbidden)
1.4G		6.1		Forbidden (Forbidden)	75 kg
		8		Forbidden (Forbidden)	75 kg
1.4S		6.1		25 kg	100 kg
		8		25 kg	100 kg
1.5D		6.1		Forbidden (Forbidden)	Forbidden (Forbidden)
		8		Forbidden (Forbidden)	Forbidden (Forbidden)
1.6N		6.1		Forbidden (Forbidden)	Forbidden (Forbidden)
		8		Forbidden (Forbidden)	Forbidden (Forbidden)

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**TABLE 2 - (Continued)**

<i>Primary hazard</i>		<i>Subsidiary risk(s)</i>	<i>Physical state</i>	<i>Passenger aircraft</i>	<i>Cargo aircraft</i>
<i>Class/Div</i>	<i>PG</i>	<i>(Note 1)</i>			
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
<b>DIVISION 2.1 - FLAMMABLE GASES</b>					
2.1		6.1, 8	Gases, not aerosols	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		6.1 I or II	Aerosols	Forbidden (Forbidden)	Forbidden (Forbidden)
		8 I or II	Aerosols	Forbidden (Forbidden)	Forbidden (Forbidden)
		6.1 III	Aerosols	75 kg	150 kg
		8 III	Aerosols	75 kg	150 kg
		6.1	Chemicals under pressure	[Forbidden (? kg)]	[75 kg]
		8	Chemicals under pressure	[Forbidden (? kg)]	[75 kg]
<b>DIVISION 2.2 - NON-FLAMMABLE, NON-TOXIC GASES</b>					
2.2		5.1	Gases, not aerosols <i>(Note 2)</i>	75 kg	150 kg
		6.1	Gases, not aerosols <i>(Note 2)</i>	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		8	Gases, not aerosols <i>(Note 2)</i>	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		6.1 I or II	Aerosols	Forbidden (Forbidden)	Forbidden (Forbidden)
		8 I or II	Aerosols	Forbidden (Forbidden)	Forbidden (Forbidden)
		6.1 III	Aerosols	75 kg	150 kg
		8 III	Aerosols	75 kg	150 kg
		6.1	Chemicals under pressure	[Forbidden (? kg)]	[75 kg]
8	Chemicals under pressure	[1 kg]	[150 kg]		
<b>DIVISION 2.3 - TOXIC GASES</b>					
2.3		2.1		Forbidden <i>(Note 3)</i>	Forbidden <i>(Note 3)</i>
		5.1		Forbidden <i>(Note 3)</i>	Forbidden <i>(Note 3)</i>
		8		Forbidden <i>(Note 3)</i>	Forbidden <i>(Note 3)</i>
<b>CLASS 3 - FLAMMABLE LIQUID</b>					
3	I	4.3	Liquid	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		5.1	Liquid	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		6.1	Liquid	Forbidden (Forbidden)	30 L
		8	Liquid	0.5 L	2.5 L

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**TABLE 2 - (Continued)**

Primary hazard		Subsidiary risk(s)	Physical state	Passenger aircraft	Cargo aircraft
Class/Div	PG	(Note 1)			
1	2	3	4	5	6
<b>CLASS - FLAMMABLE LIQUID (Continued)</b>					
	II	4.3	Liquid	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		5.1	Liquid	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		6.1	Liquid	1 L	60 L
		8	Liquid	1 L	5 L
3	III	4.3	Liquid	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		5.1	Liquid	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		6.1	Liquid	60 L	220 L
		8	Liquid	5 L	60 L
<b>DIVISION 4.1 - FLAMMABLE SOLID</b>					
4.1	I	4.2	Desensitized explosive	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		4.3	Desensitized explosive	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		5.1	Desensitized explosive	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		6.1	Desensitized explosive	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		8	Desensitized explosive	Forbidden (Individual consideration)	Forbidden (Individual consideration)
	II	5.1	Solid	Forbidden (Forbidden)	Forbidden (Forbidden)
		6.1	Solid	15 kg	50 kg
		8	Solid	15 kg	50 kg
	III	5.1	Solid	Forbidden (Forbidden)	Forbidden (Forbidden)
		6.1	Solid	25 kg	100 kg
		8	Solid	25 kg	100 kg
	<b>DIVISION 4.2 - SPONTANEOUSLY COMBUSTIBLE SUBSTANCES</b>				
4.2	I	3	Pyrophoric liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		4.3	Pyrophoric liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		5.1	Pyrophoric liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		6.1	Pyrophoric liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		8	Pyrophoric liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		3,	Pyrophoric solid	Forbidden (Forbidden)	Forbidden (Forbidden)

# DANGEROUS GOODS PANEL - GUIDANCE DOCUMENT

**TABLE 2 - (Continued)**

<i>Primary hazard</i>		<i>Subsidiary risk(s)</i>	<i>Physical state</i>	<i>Passenger aircraft</i>	<i>Cargo aircraft</i>
<i>Class/Div</i>	<i>PG</i>	<i>(Note 1)</i>			
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
<b>DIVISION 4.2 - SPONTANEOUSLY COMBUSTIBLE SUBSTANCES (Continued)</b>					
		4.3	Pyrophoric solid	Forbidden (Forbidden)	Forbidden (Forbidden)
		5.1	Pyrophoric solid	Forbidden (Forbidden)	Forbidden (Forbidden)
		6.1	Pyrophoric solid	Forbidden (Forbidden)	Forbidden (Forbidden)
		8	Pyrophoric solid	Forbidden (Forbidden)	Forbidden (Forbidden)
4.2	II	3	Liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		4.3	Liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		5.1	Liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		6.1	Liquid	1 L	5 L
		8	Liquid	1 L	5 L
		4.1	Solid	5 kg	15 kg
		5.1	Solid	Forbidden (Forbidden)	Forbidden (Forbidden)
		6.1	Solid	15 kg	50 kg
		8	Solid	15 kg	50 kg
	III	4.3	Liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		5.1	Liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		6.1	Liquid	5 L	60 L
		8	Liquid	5 L	60 L
		4.1	Solid	15 kg	50 kg
		4.3	Solid	25 kg	100 kg
		5.1	Solid	Forbidden (Forbidden)	Forbidden (Forbidden)
		6.1	Solid	25 kg	100 kg
		8	Solid	25 kg	100 kg
<b>DIVISION 4.3 - WATER REACTIVE SUBSTANCES</b>					
4.3	I	3	Liquid	Forbidden (Individual consideration)	[1 L]
		5.1	Liquid	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		6.1	Liquid	Forbidden (Forbidden)	1 L
		8	Liquid	Forbidden (Forbidden)	1 L
		4.1	Solid	Forbidden (Forbidden)	15 kg
		4.2	Solid	Forbidden (Forbidden)	15 kg
		5.1	Solid	Forbidden (Forbidden)	Forbidden (Forbidden)
		6.1	Solid	Forbidden (Forbidden)	15 kg

**DANGEROUS GOODS PANEL - GUIDANCE DOCUMENT**

**TABLE 2 - (Continued)**

Primary hazard		Subsidiary risk(s)	Physical state	Passenger aircraft	Cargo aircraft
Class/Div	PG	(Note 1)			
1	2	3	4	5	6
<b>DIVISION 4.3 - WATER REACTIVE SUBSTANCES (Continued)</b>					
		8	Solid	Forbidden (Forbidden)	15 kg
4.3	II	3	Liquid	Forbidden (Individual consideration [1 L])	[5 L])
		5.1	Liquid	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		6.1	Liquid	1 L	5 L
		8	Liquid	1 L	5 L
		4.1	Solid	15 kg	50 kg
		4.2	Solid	15 kg	50 kg
		5.1	Solid	Forbidden (Forbidden)	Forbidden (Forbidden)
		6.1	Solid	15 kg	50 kg
	8	Solid	15 kg	50 kg	
	III	3	Liquid	Forbidden (Individual consideration [5 L])	[60 L])
		5.1	Liquid	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		6.1	Liquid	5 L	60 L
		8	Liquid	5 L	60 L
		4.1	Solid	25 kg	100 kg
		4.2	Solid	25 kg	100 kg
		5.1	Solid	Forbidden (Forbidden)	Forbidden (Forbidden)
6.1		Solid	25 kg	100 kg	
8	Solid	25 kg	100 kg		
<b>DIVISION 5.1 - OXIDIZERS</b>					
5.1	I	3	Liquid	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		4.3	Liquid	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		6.1	Liquid	Forbidden (Forbidden)	2.5 L
		8	Liquid	Forbidden (Forbidden)	2.5 L
		4.1	Solid	Forbidden (Forbidden)	Forbidden (Forbidden)
		4.2	Solid	Forbidden (Forbidden)	Forbidden (Forbidden)
		4.3	Solid	Forbidden (Forbidden)	Forbidden (Forbidden)
		6.1	Solid	1 kg	15 kg
		8	Solid	1 kg	15 kg

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**TABLE 2- (Continued)**

Primary hazard		Subsidiary risk(s)	Physical state	Passenger aircraft	Cargo aircraft
Class/Div	PG	(Note 1)			
1	2	3	4	5	6
<b>DIVISION 5.1 - OXIDIZERS (Continued)</b>					
5.1	II	3	Liquid	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		4.3	Liquid	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		6.1	Liquid	1 L	5 L
		8	Liquid	1 L	5 L
		4.2	Solid	Forbidden (Forbidden)	Forbidden (Forbidden)
		4.3	Solid	Forbidden (Forbidden)	Forbidden (Forbidden)
		6.1	Solid	5 kg	25 kg
		8	Solid	5 kg	25 kg
	III	3	Liquid	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		4.3	Liquid	Forbidden (Individual consideration)	Forbidden (Individual consideration)
		6.1	Liquid	2.5 L	30 L
		8	Liquid	2.5 L	30 L
		6.1	Solid	25 kg	100 kg
		8	Solid	25 kg	100 kg
<b>DIVISION 6.1 - TOXIC SUBSTANCES</b>					
6.1(i)	I	3	Liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		4.2	Liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		4.3	Liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		5.1	Liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		8	Liquid	Forbidden (Forbidden)	Forbidden (Forbidden)
		4.1	Solid	Forbidden (Forbidden)	15 kg
		4.2	Solid	Forbidden (Forbidden)	15 kg
		4.3	Solid	Forbidden (Forbidden)	15 kg
		5.1	Solid	Forbidden (Forbidden)	15 kg
		8	Solid	Forbidden (Forbidden)	15 kg

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**TABLE 2 - (Continued)**

Primary hazard		Subsidiary risk(s)	Physical state	Passenger aircraft	Cargo aircraft
Class/Div	PG	(Note 1)			
1	2	3	4	5	6
<b>DIVISION 6.1 - TOXIC SUBSTANCES (Continued)</b>					
6.1(d and o)	I	3	Liquid	1 L	30 L
		4.3	Liquid	Forbidden (Forbidden)	1 L
		5.1	Liquid	Forbidden (Forbidden)	2.5 L
		8	Liquid	0.5 L	2.5 L
		4.1	Solid	1 kg	15 kg
		4.2	Solid	5 kg	15 kg
		4.3	Solid	5 kg	15 kg
		5.1	Solid	1 kg	15 kg
		8	Solid	1 kg	25 kg
6.1	II	3	Liquid	5 L	60 L
		4.3	Liquid	1 L	5 L
		5.1	Liquid	1 L	5 L
		8	Liquid	1 L	30 L
		4.1	Solid	15 kg	50 kg
		4.2	Solid	15 kg	50 kg
		4.3	Solid	15 kg	50 kg
		5.1	Solid	5 kg	25 kg
		8	Solid	15 kg	50 kg
6.1	III	3	Liquid	60 L	220 L
<b>CLASS 8 - CORROSIVES SUBSTANCES</b>					
8	I	3	Liquid	0.5 L	2.5 L
		4.2	Liquid	0.5 L	2.5 L
		4.3	Liquid	Forbidden (Forbidden)	1 L
		5.1	Liquid	Forbidden (Forbidden)	2.5 L
		6.1	Liquid	0.5 L	2.5 L
		4.1	Solid	1 kg	25 kg
		4.2	Solid	1 kg	25 kg
		4.3	Solid	1 kg	25 kg
		5.1	Solid	1 kg	25 kg
		6.1	Solid	1 kg	25 kg

**DANGEROUS GOODS PANEL - GUIDANCE DOCUMENT**

**TABLE 2 - (Continued)**

<i>Primary hazard</i>		<i>Subsidiary risk(s)</i>	<i>Physical state</i>	<i>Passenger aircraft</i>	<i>Cargo aircraft</i>
<i>Class/Div</i>	<i>PG</i>	<i>(Note 1)</i>			
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
<b>CLASS 8 - CORROSIVES SUBSTANCES (Continued)</b>					
8	II	3	Liquid	1 L	30 L
		4.2	Liquid	1 L	30 L
		4.3	Liquid	1 L	30 L
		5.1	Liquid	1 L	30 L
		6.1	Liquid	1 L	30 L
		4.1	Solid	15 kg	50 kg
		4.2	Solid	15 kg	50 kg
		4.3	Solid	15 kg	50 kg
		5.1	Solid	15 kg	50 kg
		6.1	Solid	15 kg	50 kg
	III	6.1	Liquid	5 L	60 L
		6.1	Solid	25 kg	100 kg

Notes for Table 2

1. Subsidiary risk(s) in classes/divisions other than those shown are not possible. When there is more than one subsidiary risk for a particular Class/Division and Packing Group (eg: Class 3 PG II, with subsidiary risks 6.1 and 8) individual consideration needs to be given as to the quantities which would be appropriate or whether a total or partial prohibition is warranted.
2. Does not apply to refrigerated liquefied gases, for which subsidiary risks are inappropriate.
3. The quantity permitted will always be according to Packing Instruction 213 in the Supplement [Note: possibly to become PI 200 in the Supplement].



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**TABLE 3**

**Maximum Net Quantities Per Package For Dangerous Goods In Limited Quantities**

<i>Class/ Division</i>	<i>Packing group</i>	<i>Physical state</i>	<i>Inner packaging</i>	<i>Per package</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<b>DIVISION 1.4 - EXPLOSIVES</b>				
1.4S ( <i>Note 1</i> )				[5 kg]
<b>CLASS 2 - GASES</b>				
2.1		Aerosols	120 mL ( <i>Note 2</i> )	Gross mass applies only
2.2 ( <i>Note 3</i> )		Aerosols and gases without subsidiary risk	120 mL ( <i>Note 2</i> )	Gross mass applies only
<b>CLASS 3 - FLAMMABLE LIQUID</b>				
3	I	Liquid	Not Permitted	
	II ( <i>Note 4</i> )	Liquid	500 mL	1 L
	III	Liquid	5 L	10 L
		UN 3316 (Polyester resin kit)	30 mL / 100 g	1 kg
		UN 3473 (Fuel cell cartridges)	2.5 kg	2.5 kg
<b>CLASS 4 - FLAMMABLE SOLIDS AND WATER REACTIVE SUBSTANCES</b>				
4.1	II	Solid, not self-reactive substances	500 g	5 kg
	III	Solid, not self-reactive substances	1 kg	10 kg
4.3	II	Solid	500 g	5 kg
	III	Solid	1 kg	10 kg
<b>CLASS 5 - OXIDIZERS AND ORGANIC PEROXIDES</b>				
5.1	II	Liquid	100 mL	500 mL
		Solid	500 g	2.5 kg
	III	Liquid	500 mL	1 L
		Solid	1 kg	10 kg
5.2 ( <i>Note 5</i> )		Liquid	30 mL	500 mL
		Solid	100 g	1 kg
<b>CLASS 6 - TOXIC SUBSTANCES</b>				
6.1	II	Liquid	100 mL	1 L
		Solid	500 g	1 kg
	III	Liquid	500 mL	2 L
		Solid	1 kg	10 kg

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<b>CLASS 8 - CORROSIVES SUBSTANCES</b>				
8	II	Liquid	100 mL	500 mL
		Solid	500 g	5 kg
<i>(Note 6)</i>	III	Liquid	500 mL	1 L
		Solid	1 kg	5 kg
<i>(Note 7)</i>				
<b>CLASS 9 - MISCELLANEOUS DANGEROUS GOODS</b>				
9		UN 2071 (Ammonium nitrate fertilizers)	5 kg	Gross mass applies only (30 kg)
		UN 1990 (Benzaldehyde) UN 1941 (Dibromodifluoromethane) UN 3082 (Environmentally hazardous substance, liquid) UN 3334 (Aviation regulated liquid)	5 L	Gross mass applies only
		UN 3077 (Environmentally hazardous substance, solid) UN 3335 (Aviation regulated solid)	5 kg	Gross mass applies only

### Notes for Table 3

1. Division 1.4S explosives in limited quantities only apply to UN 0012, UN 0014 and UN 0055.
2. The capacity of an aerosol containing only non-toxic substance(s), when in a metal receptacle, may be up to 1 L. Aerosols containing toxic substances are limited to 120 mL.
3. Excludes refrigerated liquefied gases.
4. Chlorosilanes (UN Nos. 1162, 1196, 1250, 1298, 1305, 2985): not permitted,
5. Restricted to those organic peroxides contained in a chemical kit or first aid kit.
6. Excludes Batteries, wet filled with acid/alkali (UN 2794, 2795).
7. Excludes Batteries, dry, containing potassium hydroxide solid (UN 3028).

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### 3.3 *Special provisions*

3.3.1 The special provisions in the Technical Instructions and Supplement are either the same as the equivalent special provision in the UN Recommendations, or based on it, or unrelated to the Recommendations and has been developed for specific use in air transport. The special provisions are prefixed by "A", primarily to differentiate them from those shown in the Recommendations. The special provisions which are the same as those in the Recommendations have the UN special provision number shown in parentheses following the special provision "A" number allocated in the Technical Instructions.

3.3.2 The sequence of numbering the special provisions is that numbers A1 to A199 are reserved for the Technical Instructions; A200 onwards are used in the Supplement. Where an item of dangerous goods appears in the lists of both the Technical Instructions and the Supplement any special provisions assigned to it have numbers allocated from the sequence in the Technical Instructions (unless there is an additional requirement that applies only to the item as listed in the Supplement) and they are not renumbered from the sequence used in the Supplement. It is where a special provision needs only to be shown in the list in the Supplement that a number in the A200 sequence is allocated. Where a special provision number is cancelled, for whatever reason, it is not reallocated immediately; there is a period of at least 2 years before it is reused.

2.5.3 The following are the lists of the special provisions identifying whether they are the equivalents, or modifications, of special provisions in the UN Recommendations, or have been developed for air transport use only.

A1	Developed for air transport use	A20	UN SP 132 (Modified)
A2	Developed for air transport use	A21	UN SP 240
A3	UN SP 223	A22	UN SP 152
A4	Developed for air transport use	A23	UN SP 325
A5	Developed for air transport use	A24	Developed for air transport use
A6	UN SP 43	A25	UN SP 205
A7	Not used	A26	UN SP 119
A8	Not used	A27	UN SP 276
A9	Based on UN SPs 145 & 146	A28	UN SP 135
A10	UN SP 39	A29	UN SP 138
A11	UN SP 305	A30	UN SP 273
A12	UN SP 45	A31	UN SP 141
A13	UN SP 47	A32	Based on SP 289
A14	Not used	A33	UN SP 103
A15	UN SP 59	A34	UN SP 113
A16	UN SP 62	A35	No UN equivalent
A17	UN SP 288	A36	Developed for air transport use
A18	UN SP 66	A37	UN SP 206 (Modified)
A19	UN SP 225	A38	UN SP 207

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A39	UN SP 26 (Modified)	A76	UN SP 326
A40	UN SP 28	A77	UN SP 218 (Modified)
A41	Developed for air transport use	A78	UN SP 172 (Modified)
A42	UN SP 249	A79	UN SP 307
A43	UN SP 210	A80	UN SP 220
A44	UN SP 251 (Modified)	A81	Developed for air transport use
A45	Not used	A82	UN SP 177
A46	UN SP 216 (Modified)	A83	UN SP 208
A47	UN SP 219	A84	UN SP 182
A48	Developed for air transport use	A85	UN SP 183
A49	UN SP 127	A86	UN SP 241
A50	UN SP 217 (Modified)	A87	Developed for air transport use
A51	Developed for air transport use	A88	UN SP 310 (Modified)
A52	UN SP 228	A89	UN SP 186
A53	UN SP 37	A90	UN SP 193
A54	UN SP 32	A91	UN SP 198
A55	UN SP 142	A92	UN SP 199
A56	UN SP 235 (Modified)	A93	Developed for air transport use
A57	??	A94	UN SP 239 (Modified)
A58	UN SP 144	A95	UN SP 203
A59	Developed for air transport use	A96	UN SP 196
A60	UN SP 215 (Modified)	A97	UN SP 179 (Modified)
A61	UN SP 168	A98	Developed for air transport use
A62	UN SP 178	A99	Developed for air transport use
A63	Not used	A100	UN SP 243
A64	UN SP 306	A101	UN SP 227
A65	UN SP 270	A102	UN SP 244
A66	UN SP 236 (Modified)	A103	Developed for air transport use
A67	UN SP 238 (b)	A104	Developed for air transport use
A68	UN SP 272 (Modified)	A105	UN SP 242
A69	Developed for air transport use	A106	UN SP 250 (Modified)
A70	Developed for air transport use	A107	Developed for air transport use
A71	UN SP 38	A108	Developed for air transport use
A72	UN SP 163	A109	Developed for air transport use
A73	UN SP 237	A110	UN SP 226
A74	UN SP 169	A111	Developed for air transport use
A75	Developed for air transport use	A112	Developed for air transport use

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A113	UN SP 279	A151	Developed for air transport use
A114	UN SP 283	A152	Developed for air transport use
A115	UN SP 280	A153	Not used
A116	UN SP 284	A154	Developed for air transport use
A117	Developed for air transport use	A155	UN SP 332
A118	Developed for air transport use	A156	UN SP 333
A119	Developed for air transport use	A157	UN SP 334
A120	Developed for air transport use	A158	UN SP 335
A121	Not used	A159	UN SP 336
A122	Developed for air transport use	A160	UN SP 337
A123	Developed for air transport use	A161	UN SP 338
A124	UN SP 292	A162	UN SP 339
A125	UN SP 293	A163	UN SP 340
A126	Not used	A164	Developed for air transport use
A127	Not used	A165	UN SP 347
A128	UN SP 153	A166	UN SP 343
A129	UN SP 252	A167	UN SP 344
A130	UN SP 290	A168	Not used
A131	UN SP 342	A169	UN SP 349
A132	UN SP 204	A170	UN SP 350
A133	UN SP 311	A171	UN SP 351
A134	UN SP 312	A172	UN SP 352
A135	Not used	A173	UN SP 353
A136	UN SP 314	A174	UN SP 354
A137	UN SP 315	A175	UN SP 355
A138	UN SP 316	A176	UN SP 356
A139	UN SP 317	A177	UN SP 357
A140	UN SP 318	A178	Developed for air transport use
A141	Not used	A179	Developed for air transport use
A142	Not used	A180	Developed for air transport use
A143	UN SP 143	A181	Developed for air transport use
A144	Developed for air transport use	A182	Developed for air transport use
A145	Developed for air transport use	A183	Developed for air transport use
A146	UN SP 328	A184	UN SP 304
A147	Not used	A185	UN SP 360
A148	Not used	A186	UN SP 361
A149	Not used	A187	UN SP 362
A150	Developed for air transport use	A188	UN SP 359
		A189	UN SP 364

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A200	UN SP 133 (Modified)	A221	Not used
A201	Developed for air transport use	A222	UN SP 16
A202	Developed for air transport use	A223	
A203	UN SP 122	A224	Developed for air transport use
A204	UN SP 278	A225	
A205	UN SP 232	A226	
A206	UN SP 224	A227	
A207	UN SP 268 UN SP 268 no longer exists.	A228	
A208	UN SP 15 UN SP 15 no longer exists	A229	
A209	UN SP 18 UN SP 18 no longer exists	A230	
A210	UN SP 131	A231	
A211	UN SP 266	A232	
A212	UN SP 267	A233	
A213	UN SP 105 (Modified)	A234	
A214	UN SP 194	A235	
A215	UN SP 181 (Modified)	A236	
A216	UN SP 36 UN SP 36 no longer exists	A237	
A217	UN SP 271	A238	
A218	Repeat of SP A 68	A239	
A219	UN SP 324	A240	
A220	Not used	A241	

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### **3.4 Limited quantities**

3.4.1 The requirements for limited quantities are based on those in the UN Recommendations but there are differences. Only substances permitted in limited quantities in the UN Recommendations are considered as being suitable for limited quantities in air transport, although not all substances allowed in limited quantities in the UN Recommendations are allowed in limited quantities in Table 3-1.

3.4.2 In the UN Recommendations packages of limited quantities need not be labelled and need not be marked with the proper shipping name and UN number. In the Technical Instructions packages containing limited quantities are not excluded from these requirements; the relaxation in the Instructions is the ability for the packaging not to be tested and marked as a UN specification packaging, although the packaging must meet the construction standards applicable to the type.

3.4.3 The UN Recommendations specify the quantity that can be contained in the inner packaging and the gross mass of the completed package must not exceed 30 kg, but do not set limits for maximum net quantities per package. The Technical Instructions include requirements for maximum net quantities per package other than for Classes 2, except for Fuel cell cartridges (UN Nos. 3478 & 3479) and Gas cartridges and Receptacles, small, containing gas (UN 2037) and Class 9; except for Chemical Kits/First Aid Kits (UN 3316), where maximum net quantities per package are specified. This is because the quantities specified in the UN Recommendations for inner packagings of limited quantities may sometimes be the same as the maximum net quantity per package specified in the Technical Instructions for the particular item in UN specification packaging (eg: for Acetyl chloride ,UN 1717 the UN Recommendations allow 1 L per inner packaging for limited quantities; in the Technical Instructions this is the maximum net quantity per package for UN specification packaging on passenger aircraft). Also the quantities specified for some limited quantities in the Recommendations are considered to be too great for air transport.

3.4.4 For dangerous goods in limited quantities the Technical Instructions maintain the requirements for hazard labels, marking of the UN number and proper shipping name on packages and for the dangerous goods transport document and for the information to the Pilot-in-Command. This is because most of them will be carried on passenger aircraft and be stowed so they are inaccessible in flight. The requirements are intended to ensure that in the event of an incident it can be identified that dangerous goods are involved but they ought not to be a major contributing factor to it.

### **3.5 Excepted quantities**

3.5.1 The rationale behind the excepted quantity provisions is that selected dangerous goods, other than articles, packed in very small quantities with limitations on the quantity per inner packaging and outer packaging in very robust tested packagings pose a minimal risk in transport. On this basis the Panel adopted provisions into the Technical Instructions for dangerous goods in excepted quantities.

3.5.2 Packages containing dangerous goods in excepted quantities are not required to bear hazard labels; there is no requirement for the marking of the UN number and proper shipping name and no requirement for a dangerous goods transport document. Such packages though are required to bear the excepted quantities mark, which must include identification of the class(es)/division(s) of the dangerous goods contained in the package.

3.5.3 Table 3-1 in the Technical Instructions identifies if dangerous goods are permitted in excepted quantities by indication of the applicable excepted quantities code shown in column 9. Only substances permitted on passenger aircraft are permitted in excepted quantities. These are:

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Class / Division	Packing Group I	Packing Group I	Packing Group I
	EQ Code	EQ Code	EQ Code
1	E0 (not permitted)		
2.1	E0 (not permitted)		
22 (without subsidiary risk)	E1		
2.2 (with subsidiary risk)	E0 (not permitted)		
2.3	E0 (not permitted)		
3 (without subsidiary risk)	E3	E2	E1
3 (with subsidiary risk)	E0 (not permitted)	E2	E1
4.1	E0 (not permitted)	E2	E1
4.2	E0 (not permitted)	E2	E1
4.3	E0 (not permitted)	E2	E1
5.1	E0 (not permitted)	E2	E1
5.2	E0 (not permitted)		
6.1	E5	E4	E1
6.2	E0 (not permitted)		
7	E0 (not permitted)		
8	E0 (not permitted)	E2	E1
9		E2	E1



## **PART 4 - PACKING INSTRUCTIONS**

### **4.1 Introduction**

4.1.1 In general dangerous goods are packed according to the requirements of the UN Recommendations and the IAEA Regulations and the packagings are those which are specified in those documents. However, specialised items may mean the development of packing methods which recognise that for air transport more stringent (or different) requirements are needed.

4.1.2 The packing instructions in the Technical Instructions do not however follow the structure used by the UN Recommendations. The Panel determined that to the extent possible packing instructions for substances permitted on passenger aircraft and those permitted only on cargo aircraft should be separated. Packing instructions for limited quantities are identified by the prefix "Y". The numbers assigned to packing instructions commence with the class number of the substance. Within a class separate packing instructions apply to divisions within the class. Table 4 shows the current assignment of the packing instructions.

4.1.3 The reformatted packing instructions that became effective with the 2011 – 2012 edition of the Technical Instructions adopted a consistent application of requirements across all classes / divisions as follows:

#### General Requirements

- metal packagings must be corrosion resistant or protected against corrosion for substances with a Class 8 primary or subsidiary risk;

#### Specific Requirements

##### Packing Group I

- for liquid dangerous goods, inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

#### Class Specific Requirements

##### Class 3

- for PG I substances plastic inner packagings are prohibited..

##### Packing Group III

- packagings must be meet the Packing Group II performance requirements if the substance has a Class 8 primary or subsidiary risk.

#### Passenger Aircraft

- single packagings are only permitted for substances in PG III.

##### Class 4

##### Packing Group III

- packagings must be meet the Packing Group II performance requirements.

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### Passenger Aircraft

- single packagings are only permitted for liquid substances in Division 4.2 and 4.3 in PG III.

### Class 5

#### Packing Group III

- packagings must be meet the Packing Group II performance requirements.

### Passenger Aircraft

- single packagings are only permitted for liquid substances in Division 5.1 in PG III.

### Cargo Aircraft

- single packagings not permitted for liquid substances in Div 5.1, PG I and PG II.

### Class 6

#### Passenger Aircraft

- single packagings are permitted for substances in Division 6.1, PG III.

### Cargo Aircraft

- single packagings not permitted for liquid substances in Div 5.1, PG I and PG II.

### Class 8

#### Packing Group III

- packagings must be meet the Packing Group II performance requirements.

### Passenger Aircraft

- single packagings are not permitted.

### Cargo Aircraft

- single packagings not permitted for liquid substances in PG I.

## 4.2 *Packagings*

4.2.1 Dangerous goods are almost always packed in packagings; where there is the ability to carry an item unpackaged this is shown in the packing instruction. Unless there are technical reasons for forbidding a particular packaging, all possible inner, outer and single packagings are shown in the packing instructions.

## 4.3 *Portable tanks*

4.3.1 Portable tanks can be used also for dangerous goods in packing groups II and III of Classes 3, 8 and 9 and Divisions 4.1 (other than self-reactive substances), 4.3 (other than liquids), 5.1 (other than liquids) and 6.1. These tanks are restricted to cargo aircraft and need the approval of the appropriate authority of the State of origin and of the State of the operator; the complete requirements are currently shown in Part S4, Chapter 12 of the Supplement.

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### **4.4 Intermediate bulk containers**

4.4.1 The use of intermediate bulk containers (IBC) is only permitted for solid environmentally hazardous substances. In principle there is no reason that other solids in Packing Group III could not also be permitted in IBCs, although the Panel has yet to approve this for general use.

### **4.5 Standard of inner packagings**

4.5.1 Generally the UN Recommendations do not make reference to inner packagings and there are no construction standards for them. Inner packaging construction standards for use in air transport have been developed by the Panel over the years and the types of packagings identified are those which experience has shown are used by shippers. With the exception of the need to demonstrate the ability to withstand a pressure differential (see 4.6 below), there are no independent tests applied to inner packagings; the tests are those applicable to the complete package "as prepared for transport".

### **4.6 Ability of packagings to withstand a pressure differential**

4.6.1 Due to the nature of air transport, it is an important requirement that packagings for liquids are able to withstand a reduction in pressure. This applies to any packaging which is intended to contain a liquid and includes the inner packagings as well as single and composite packagings. Packagings must have the ability to withstand a pressure differential of 95 kPa or a pressure related to the vapour pressure, if this is greater; for packing group III liquids in Class 3 and Division 6.1, the pressure differential need only be 75 kPa.

### **4.7 Requirement for some substances to be in more stringent packagings**

4.7.1 Some dangerous goods which are in packing group III are considered to present a particular hazard on an aircraft in that in the event of leakage they can cause irreversible damage to the aluminium structure or react readily with the atmosphere to produce flammable gases or some other uncontrollable event.

4.7.2 Dangerous goods which have the possibility of causing such damage or reaction are, therefore, required to be in packagings which meet at least packing group II standards. In particular, this applies to Class 8 (corrosives) in packing group III, where many of them have corrosivity to metal as their main hazard; and Class 4 (flammable solids, spontaneously combustible substances and water reactive substances) in packing group III, where many of them are extremely reactive with moist air.

4.7.3 There are currently 2 items of dangerous goods which are in packing group III but which are required to be in packing group I packagings. These are Gallium (UN 2803) and Mercury (UN 2809), where their main hazard in the event of leakage is the ability to embrittle or otherwise irreversibly damage aluminium within a few minutes. The standard of packaging reflects the need to ensure adequate containment of these particular substances.

### **4.8 Packing instructions for explosives**

4.8.1 The packing instructions for explosives and their numbers are same as those used in the UN Recommendations.

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### 4.9 Packing instructions for self-reactive substances and organic peroxides

4.9.1 Even if the UN OP method permits larger quantities, the quantities in inner packagings are restricted to:

<i>Type</i>	<i>Physical state</i>	<i>Passenger aircraft</i>	<i>Cargo aircraft</i>
C and D	Liquid	0.5 L	1 L
	Solid	0.5 kg	1 kg
E and F	Liquid	1 L	2.5 L
	Solid	1 kg	2.5 kg

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**TABLE 4**

**Packing Instruction Assignment**

CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
<b>CLASS 3</b>	<b>PASSENGER</b>					
350	I	8	Glass	0.5 L	0.5 L	
			Plastic	F		
			Metal	0.5 L		
351	I	NONE	Glass	0.5 L	1.0 L	
			Plastic	F		
			Metal	1.0 L		
352	II	8, 6.1, 6.1 + 8, AND NONE	Glass	1.0 L	1.0 L	
			Plastic	1.0 L		
			Metal	1.0 L		
353	II	NONE	Glass	1.0 L	5.0 L	
			Plastic	5.0 L		
			Metal	5.0 L		
354	III	8	Glass	2.5 L	5.0 L	
			Plastic	5.0 L		
			Metal	5.0 L		
355	III	6.1 AND NONE	Glass	2.5 L	60.0 L	
			Plastic	10.0 L		
			Metal	10.0 L		
<b>LTD QTY</b>						
Y340	II	8	Glass	0.5 L	0.5 L	
			Plastic	0.5 L		
			Metal	0.5 L		
Y341	II	6.1 AND NONE	Glass	0.5 L	1.0 L	
			Plastic	0.5 L		
			Metal	0.5 L		
Y342	III	8	Glass	1.0 L	1.0 L	
			Plastic	1.0 L		
			Metal	1.0 L		
Y343	III	6.1	Glass	1.0 L	2.0 L	
			Plastic	1.0 L		
			Metal	1.0 L		
Y344	III	NONE	Glass	2.5 L	10.0 L	
			Plastic	10.0 L		
			Metal	10.0 L		
<b>CARGO</b>						
360	I	8, 6.1 + 8 AND NONE	Glass	1.0 L	2.5 L	
			Plastic	F		
			Metal	2.5 L		
361	I	6.1 AND NONE	Glass	1.0 L	30.0 L	
			Plastic	F		
			Metal	5.0 L		
362	II	8	Glass	1.0 L	5.0 L	
			Plastic	1.0 L		
			Metal	1.0 L		

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CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
363	II	8, 6.1 + 8,	Glass	2.5 L	5.0 L	
			Plastic	2.5 L		
			Metal	5.0 L		
364	II	6.1 AND NONE	Glass	2.5 L	60.0 L	
			Plastic	5.0 L		
			Metal	10.0 L		
365	III	8	Glass	5.0 L	60.0 L	
			Plastic	10.0 L		
			Metal	25.0 L		
366	III	6.1 AND NONE	Glass	5.0 L	220.0 L	
			Plastic	10.0 L		
			Metal	25.0 L		
<b>SPECIALS</b>						
370					5 kg	Polyester resin kits
Y370					1 kg	Polyester resin kits
371			Glass	1.0 L	5.0 L Pax / 60.0L CAO	UN 1204
			Plastic	1.0 L		
			Metal	1.0 L		
			Metal	1.0 L		
372					5.0 L CAO 42.0 L CAO	UN 3064  UN 3165
373	II	6.1	Glass	5.0 L	60.0 L CAO	UN 1228 Mercaptans, flammable, toxic
			Plastic	5.0 L		
			Metal	5.0 L		
	III	6.1	Glass	1.0 L	5.0 L pax	
			Plastic	1.0 L		
			Metal	1.0 L		
III	6.1	Glass	5.0 L	220.0 L CAO		
		Plastic	5.0 L			
		Metal	5.0 L			
Y373	III	6.1	Glass	0.5 L	1.0 L	UN 1228 Mercaptans, flammable, toxic
Plastic	0.5 L					
Metal	0.5 L					
374					5.0 kg pax 50.0 kg CAO	Fuel cell cartridges
Y374					2.5 kg	Fuel cell cartridges
375					5.0 kg pax 50.0 kg CAO	Fuel cell cartridges contained in equipment
376					5.0 kg pax 50.0 kg CAO	Fuel cell cartridges packed with equipment
377	II		Glass	1 L	5 L	Chlorosilanes CAO
			Plastic	Forbidden		
			Metal	5 L		

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CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
<b>CLASS 4</b>	<b>DIVISION 4.1</b>					
<b>PASSENGER SOLID</b>						
445	II	6.1, 8, AND NONE	Glass Plastic Metal Plastic bag	1.0 kg 2.5 kg 2.5 kg 1.0 kg	15.0 kg	
446	III	6.1, 8, AND NONE	Glass Plastic Metal Plastic bag	1.0 kg 2.5 kg 2.5 kg 1.0 kg	25.0 kg	
<b>LTD QTY</b>						
Y440	II	6.1	Glass Plastic Metal Plastic bag	0.5 kg 0.5 kg 0.5 kg 0.5 kg	1.0 kg	
Y441	II	8 AND NONE	Glass Plastic Metal Plastic bag	0.5 kg 0.5 kg 0.5 kg 0.5 kg	5.0 kg	
Y442	III	8 AND NONE	Glass Plastic Metal Plastic bag	1.0 kg 1.0 kg 1.0 kg 1.0 kg	5.0 kg	
Y443	III	6.1 AND NONE	Glass Plastic Metal Plastic bag	1.0 kg 1.0 kg 1.0 kg 1.0 kg	10.0 kg	
<b>CARGO SOLID</b>						
448	II	6.1, 8, AND NONE	Glass Plastic Metal Plastic bag	2.5 kg 5.0 kg 5.0 kg 2.5 kg	50.0 kg	
449	III	6.1, 8, AND NONE	Glass Plastic Metal Plastic bag	5.0 kg 10.0 kg 10.0 kg 5.0 kg	100.0 kg	

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CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
<b>SPECIALS</b>						
451	I	Wetted explosives	Glass	0.5 kg	0.5 kg pax & CAO	UN 1354, UN 1355, UN 1356, UN 3364, UN 3365, UN 3366, UN 3367, UN 3368, UN 3369, UN 3370
			Plastic	0.5 kg		
			Metal	0.5 kg		
			Plastic bag	0.5 kg		
			Glass	0.5 kg	1.0 kg pax	UN 1336, UN 1337, UN 1357
			Plastic	0.5 kg		
			Metal	0.5 kg		
			Plastic bag	0.5 kg	15.0 kg CAO	UN 1320, UN 1321, UN 1322, UN 1344, UN 1348, UN 1517, UN 3317
			Glass	0.5 kg		
			Plastic	0.5 kg		
			Metal	0.5 kg		
			Plastic bag	0.5 kg	0.5 kg pax & CAO	UN 1310
			Glass	0.5 kg		
			Plastic	0.5 kg		
			Metal	0.5 kg		
			Plastic bag	0.5 kg	1.0 kg pax	UN 1571, UN 2852
Glass	0.25 kg					
452 pax	II		Glass	1.0 kg	15.0 kg	UN 2555
			Plastic	1.0 kg		
			Metal	1.0 kg		
			Plastic bag	1.0 kg		
			Glass	1.0 kg	1.0 kg	UN 2556
			Plastic	1.0 kg		
			Metal	1.0 kg		
			Plastic bag	1.0 kg	1.0 kg	UN 2557
			Glass	1.0 kg		
			Plastic	1.0 kg		
			Metal	1.0 kg		
			Plastic bag	1.0 kg	50.0 kg	UN 2555
Glass	1.0 kg					
Plastic	1.0 kg					
Metal	1.0 kg					
Plastic bag	1.0 kg	15.0 kg	UN 2556			
Glass	1.0 kg					
Plastic	1.0 kg					
Metal	1.0 kg					
Plastic bag	1.0 kg	15.0 kg	UN 2557			
Glass	1.0 kg					
Plastic	1.0 kg					
Metal	1.0 kg					
Plastic bag	1.0 kg	25 kg pax 100 kg CAO	UN 1324			
Glass	1.0 kg					
Plastic	1.0 kg					
Metal	1.0 kg					
Plastic bag	1.0 kg					



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CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
Y454	III			1 kg	10 kg	UN 1324
455	III				25 kg pax 100 kg CAO	UN 1944, UN 1945
Y455	III				10 kg	UN 1944, UN 1945
456	III				25 kg pax 100 kg CAO	UN 2000
457	III		Glass Plastic Plastic bag	0.5 kg 1.0 kg 1.0 kg	25 kg pax / 50 kg CAO	UN 3241
Y457	III		Glass Plastic Plastic bag	0.5 kg 0.5 kg 0.5 kg	5 kg	UN 3241
458	II				1.0 kg pax 15 kg CAO	UN 3270
Y458	II				1.0 kg	UN 3270
459		Self- reactive substances	Plastic	0.5 L	5.0 L pax 10.0 L CAO	UN 3223, UN 3225
			Plastic	1.0 L	10.0 L pax 25.0 L CAO	UN 3227, UN 3229
			Plastic	2.5 L	5.0 kg pax 10.0 kg CAO	UN 3224, UN 3226
			Plastic	0.5 kg	10.0 kg pax 25.0 kg CAO	UN 3228, UN 3230
			Plastic	1.0 kg		
			Plastic	2.5 kg		
<b>4.2</b>						
<b>PASSENGER LIQUID</b>						
462	II	6.1, 8, AND NONE	Glass Plastic Metal	1.0 L 1.0 L 1.0 L	1.0 L	self-heating
463	III	6.1, 8, AND NONE	Glass Plastic Metal	2.5 L 2.5 L 5.0 L	5.0 L	self-heating
<b>CARGO LIQUID</b>						
464	II	6.1, 8, AND NONE	Glass Plastic Metal	2.5 L 2.5 L 5.0 L	5.0 L	self-heating
465	III	6.1, 8, AND NONE	Glass Plastic Metal	2.5 L 5.0 L 10.0 L	60.0 L	self-heating
<b>PASSENGER SOLID</b>						
466	II	6.1, 8	Glass Plastic Metal	1.0 kg 1.0 kg 1.0 kg	15.0 kg	self-heating

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CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
467	II	NONE	Glass	1.0 kg	15.0 kg	self-heating
			Plastic	2.5 kg		
			Metal	2.5 kg		
			Plastic bag	1.0 kg		
468	III	4.3, 6.1, 8	Glass	2.5 kg	25.0 kg	self-heating
			Plastic	2.5 kg		
			Metal	5.0 kg		
469	III	NONE	Glass	5.0 kg	25.0 kg	self-heating
			Plastic	10.0 kg		
			Metal	10.0 kg		
			Plastic bag	5.0 kg		
<b>CARGO SOLID</b>						
470	II	6.1, 8, AND NONE	Glass	2.5 kg	50.0 kg	self-heating
			Plastic	5.0 kg		
			Metal	5.0 kg		
			Plastic bag	2.5 kg		
471	III	4.3, 6.1, 8, AND NONE	Glass	5.0 kg	100.0 kg	self-heating
			Plastic	10.0 kg		
			Metal	10.0 kg		
			Plastic bag	5.0 kg		
<b>SPECIALS</b>						
472	III			0.1 kg	0.5 kg	UN 1362
473	II		Glass	1.0 kg	50 kg CAO	UN 1378
			Metal	1.0 kg		
	III		Glass	1.0 kg	25 kg pax	UN 2881
			Metal	1.0 kg		
	III		Glass	2.5 kg	100 kg CAO	
			Metal	5.0 kg		
<b>4.3</b>						
<b>PASSENGER LIQUID</b>						
478	II	NONE	Glass	1.0 L	1.0 L	water reactive
			Plastic	1.0 L		
			Metal	1.0 L		
479	III	6.1, 8, AND NONE	Glass	2.5 L	5.0 L	water reactive
			Plastic	2.5 L		
			Metal	5.0 L		
<b>CARGO LIQUID</b>						
480	I	3, 6.1, 3 + 8, NONE	Glass	1.0 L	1.0 L	water reactive
			Plastic	F		
			Metal	1.0 L		
481	II	6.1, 8, AND NONE	Glass	2.5 L	5.0 L	water reactive
			Plastic	2.5 L		
			Metal	5.0 L		

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CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
482	III	6.1, 8, AND NONE	Glass	5.0 L	60.0 L	water reactive
			Plastic	5.0 L		
			Metal	10.0 L		
<b>PASENGER SOLID</b>						
483	II	4.1, 4.2, 6.1, 8 AND NONE	Glass	1.0 kg	15.0 kg	water reactive
			Plastic	1.0 kg		
			Metal	1.0 kg		
484	II	NONE	Glass	1.0 kg	15.0 kg	water reactive
			Plastic	2.5 kg		
			Metal	2.5 kg		
			Plastic bag	1.0 kg		
485	III	4.2, 6.1 AND NONE	Glass	2.5 kg	25.0 kg	water reactive and self heating
			Plastic	2.5 kg		
			Metal	5.0 kg		
486	III	4.1, 4.2, 6.1, 8 AND NONE	Glass	5.0 kg	25.0 kg	water reactive and self heating
			Plastic	10.0 kg		
			Metal	10.0 kg		
			Plastic bag	5.0 kg		
<b>LTD QTY SOLID</b>						
Y474	II	6.1	Glass	0.5 kg	1.0 kg	water reactive
			Plastic	0.5 kg		
			Metal	0.5 kg		
			Plastic bag	0.5 kg		
Y475	II	4.1, 8 AND NONE	Glass	0.5 kg	5.0 kg	water reactive
			Plastic	0.5 kg		
			Metal	0.5 kg		
			Plastic bag	0.5 kg		
Y476	III	4.1, 8 AND NONE	Glass	1.0 kg	5.0 kg	water reactive and self heating
			Plastic	1.0 kg		
			Metal	1.0 kg		
			Plastic bag	1.0 kg		
Y477	III	6.1 AND NONE	Glass	1.0 kg	10.0 kg	water reactive and self heating
			Plastic	1.0 kg		
			Metal	1.0 kg		
			Plastic bag	1.0 kg		
<b>CARGO SOLID</b>						
487	I	4.2, 6.1 AND NONE	Glass	1.0 kg	15.0 kg	water reactive and self heating
			Plastic	1.0 kg		
			Metal	1.0 kg		
488	I	4.1, 4.2, 6.1, 8 AND NONE	Glass	1.0 kg	15.0 kg	water reactive and self heating
			Plastic	2.5 kg		
			Metal	2.5 kg		
			Plastic bag	2.5 kg		
489	II	4.1, 4.2 AND NONE	Glass	2.5 kg	50.0 kg	water reactive and self heating
			Plastic	2.5 kg		
			Metal	5.0 kg		

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CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
490	II	4.1, 4.2, 6.1, 8 AND NONE	Glass	2.5 kg	50.0 kg	water reactive and self heating
			Plastic	5.0 kg		
			Metal	5.0 kg		
			Plastic bag	2.5 kg		
491	III	4.1, 4.2, 6.1, 8 AND NONE	Glass	5.0 kg	100.0 kg	water reactive and self heating
			Plastic	10.0 kg		
			Metal	10.0 kg		
			Plastic bag	5.0 kg		
<b>SPECIALS</b>						
492	II				F pax No limit CAO	UN 3292 batteries
					25 kg pax No limit CAO	UN 3292 cells
493 pax	II	3	Glass	1.0 L	1.0 L	UN 3399
			Cylinders	1.0 L		
	III		Glass	5.0 L		
			Cylinders	5.0 L		
494 CAO	I	3	Glass	1.0 L	5.0 L	UN 3399
			Cylinders	1.0 L		
	II		Glass	2.5 L		
			Cylinders	2.5 L		
	III		Glass	5.0 L		
			Cylinders	5.0 L		
495					5.0 kg pax 50.0 kg CAO	Fuel cell cartridges
Y495					2.5 kg	Fuel cell cartridges
496					5.0 kg pax 50.0 kg CAO	Fuel cell cartridges contained in equipment
497					5.0 kg pax 50.0 kg CAO	Fuel cell cartridges packed with equipment
499						UN 3319
<b>CLASS 5</b>						
<b>DIVISION 5.1</b>						
<b>PASSENGER LIQUID</b>						
550	II	6.1, 8 AND NONE	Glass	1.0 L	1.0 L	
			Plastic	1.0 L		
			Metal	1.0 L		
551	III	6.1, 8 AND NONE	Glass	2.5 L	2.5 L	
			Plastic	2.5 L		
			Metal	2.5 L		
<b>LTD QTY LIQUID</b>						
Y540	II	6.1, 8 AND NONE	Glass	0.1 L	0.5 L	
			Plastic	0.1 L		
			Metal	0.1 L		

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CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
Y541	III	6.1, 8 AND NONE	Glass	0.5 L	1.0 L	
			Plastic	0.5 L		
			Metal	0.5 L		
<b>CARGO LIQUID</b>						
553	I	6.1, 8 AND NONE	Glass	1.0 L	2.5 L	
			Plastic	1.0 L		
			Metal	1.0 L		
554	II	6.1, 8 AND NONE	Glass	2.5 L	5.0 L	
			Plastic	2.5 L		
			Metal	2.5 L		
555	III	6.1, 8 AND NONE	Glass	5.0 L	30.0 L	
			Plastic	5.0 L		
			Metal	5.0 L		
<b>PASSENGER SOLID</b>						
557	I	6.1, 8 AND NONE	Glass	1.0 kg	1.0 kg	
			Plastic	1.0 kg		
			Metal	1.0 kg		
558	II	6.1, 8 AND NONE	Glass	1.0 kg	5.0 kg	
			Plastic	1.0 kg		
			Metal	1.0 kg		
			Paper bag	1.0 kg		
			Plastic bag	1.0 kg		
559	III	6.1, 8 AND NONE	Fibre	1.0 kg	25.0 kg	
			Glass	2.5 kg		
			Plastic	2.5 kg		
			Metal	2.5 kg		
			Paper bag	2.5 kg		
559	III	6.1, 8 AND NONE	Plastic bag	2.5 kg	25.0 kg	
			Plastic bag	2.5 kg		
			Plastic bag	2.5 kg		
			Plastic bag	2.5 kg		
			Fibre	2.5 kg		
<b>LTD QTY SOLID</b>						
Y543	II	6.1	Glass	0.5 kg	1.0 kg	
			Plastic	0.5 kg		
			Metal	0.5 kg		
			Paper bag	0.5 kg		
			Plastic bag	0.5 kg		
			Fibre	0.5 kg		
Y544	II	8 AND NONE	Glass	0.5 kg	2.5 kg	
			Plastic	0.5 kg		
			Metal	0.5 kg		
			Paper bag	0.5 kg		
			Plastic bag	0.5 kg		
			Fibre	0.5 kg		

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CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
Y545	III	8	Glass	1.0 kg	5.0 kg	
			Plastic	1.0 kg		
			Metal	1.0 kg		
			Paper bag	1.0 kg		
			Plastic bag	1.0 kg		
			Fibre	1.0 kg		
			Glass	1.0 kg		
			Plastic	1.0 kg		
			Metal	1.0 kg		
			Paper bag	1.0 kg		
Y546	III	6.1 AND NONE	Plastic bag	1.0 kg	10.0 kg	
			Plastic bag	1.0 kg		
			Fibre	1.0 kg		
			Glass	1.0 kg		
			Plastic	1.0 kg		
<b>CARGO SOLID</b>						
561	I	6.1, 8 AND NONE	Glass	1.0 kg	15.0 kg	
			Plastic	1.0 kg		
			Metal	1.0 kg		
562	II	6.1, 8 AND NONE	Glass	2.5 kg	25.0 kg	
			Plastic	2.5 kg		
			Metal	5.0 kg		
			Paper bag	2.5 kg		
			Plastic bag	2.5 kg		
			Fibre	2.5 kg		
			Glass	5.0 kg		
			Plastic	5.0 kg		
			Metal	5.0 kg		
			Paper bag	5.0 kg		
563	III	6.1, 8 AND NONE	Plastic bag	5.0 kg	100.0 kg	
			Plastic bag	5.0 kg		
			Fibre	5.0 kg		
			Glass	5.0 kg		
			Plastic	5.0 kg		
<b>SPECIALS</b>						
565	II				25 kg	UN 3356 CAO
<b>DIVISION 5.2</b>						
570		Organic peroxides	Plastic	0.5 L	5.0 L pax	UN 3103, UN 3105
			Plastic	1.0 L	10.0 L CAO	
			Plastic	1.0 L	10.0 L pax 25.0 L	UN 3107, UN 3109
			Plastic	2.5 L	CAO	
			Plastic bag	0.5 kg	5.0 kg pax	UN 3104, UN 3106
			Plastic bag	0.5 kg		
			Plastic bag	1.0 kg	10.0 kg CAO	
			Plastic bag	1.0 kg		UN 3108, UN 3110
			Plastic bag	1.0 kg	10.0 kg pax	
			Plastic bag	2.5 kg	25.0 kg CAO	
Plastic bag	2.5 kg					

## DANGEROUS GOODS PANEL - GUIDANCE DOCUMENT

CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
<b>DIVISION 6.1</b>						
<b>PASSENGER LIQUID</b>						
651	I	8	Glass	0.5 L	0.5 L	
			Plastic	0.5 L		
			Metal	0.5 L		
652	I	3 AND NONE	Glass	0.5 L	1.0 L	
			Plastic	0.5 L		
			Metal	1.0 L		
653	II	4.3, 5.1, 8 AND 3 + 8	Glass	1.0 L	1.0 L	
			Plastic	1.0 L		
			Metal	1.0 L		
654	II	3 AND NONE	Glass	1.0 L	5.0 L	
			Plastic	1.0 L		
			Metal	2.5 L		
655	III	3 AND NONE	Glass	2.5 L	60.0 L	
			Plastic	2.5 L		
			Metal	5.0 L		
<b>LTD QTY LIQUID</b>						
Y640	II	8 AND 3 + 8	Glass	0.1 L	0.5 L	
			Plastic	0.1 L		
			Metal	0.1 L		
Y641	II	3 AND NONE	Glass	0.1 L	1.0 L	
			Plastic	0.1 L		
			Metal	0.1 L		
Y642	III	3 AND NONE	Glass	0.5 L	2.0 L	
			Plastic	0.5 L		
			Metal	0.5 L		
<b>CARGO LIQUID</b>						
657	I	5.1 AND 8	Glass	1.0 L	2.5 L	
			Plastic	1.0 L		
			Metal	2.5 L		
658	I	3 AND NONE	Glass	1.0 L	30.0 L	
			Plastic	1.0 L		
			Metal	2.5 L		
659	II	5.1, 4.3 AND NONE	Glass	1.0 L	5.0 L	
			Plastic	1.0 L		
			Metal	2.5 L		
660	II	8 AND 3 + 8	Glass	1.0 L	30.0 L	
			Plastic	1.0 L		
			Metal	2.5 L		
661	II	3 AND NONE	Glass	1.0 L	60.0 L	
			Plastic	1.0 L		
			Metal	2.5 L		
662	II	3 AND NONE	Glass	2.5 L	60.0 L	
			Plastic	2.5 L		
			Metal	5.0 L		
663	III	3 AND NONE	Glass	5.0 L	220.0 L	
			Plastic	5.0 L		

## DANGEROUS GOODS PANEL - GUIDANCE DOCUMENT

CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	Metal IP TYPE	10.0 L INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
<b>PASSENGER SOLID</b>						
665	I	4.1, 5.1, 8 AND NONE	Glass Plastic Metal	0.5 kg 1.0 kg 1.0 kg	1.0 kg	
666	I	NONE	Glass Plastic Metal	0.5 kg 1.0 kg 1.0 kg	5.0 kg	
667	II	5.1	Glass Plastic Metal Paper bag Plastic bag Fibre	1.0 kg 2.5 kg 2.5 kg 1.0 kg 1.0 kg 1.0 kg	5.0 kg	
668	II	4.1, 4.2, 4.3 AND 8	Glass Plastic Metal Paper bag Plastic bag Fibre	1.0 kg 2.5 kg 2.5 kg 1.0 kg 1.0 kg 1.0 kg	15.0 kg	
669	II	NONE	Glass Plastic Metal Paper bag Plastic bag Fibre	1.0 kg 2.5 kg 2.5 kg 1.0 kg 1.0 kg 1.0 kg	25.0 kg	
670	III	NONE	Glass Plastic Metal Paper bag Plastic bag Fibre	5.0 kg 10.0 kg 10.0 kg 5.0 kg 5.0 kg 5.0 kg	100.0 kg	
<b>LTD QTY SOLID</b>						
Y644	II	4.1, 4.3, 5.1 AND 8	Glass Plastic Metal Paper bag Plastic bag Fibre	0.5 kg 0.5 kg 0.5 kg 0.5 kg 0.5 kg 0.5 kg	1.0 kg	
Y645	III	NONE	Glass Plastic Metal Paper bag Plastic bag Fibre	1.0 kg 1.0 kg 1.0 kg 1.0 kg 1.0 kg 1.0 kg	10.0 kg	



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CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS	
<b>CARGO SOLID</b>							
672	I	4.1, 5.1, 8 AND NONE	Glass	1.0 kg	15.0 kg		
			Plastic	2.5 kg			
			Metal	2.5 kg			
			Paper bag	1.0 kg			
			Plastic bag	1.0 kg			
			Fibre	1.0 kg			
673	I	NONE	Glass	1.0 kg	50.0 kg		
			Plastic	2.5 kg			
			Metal	2.5 kg			
			Paper bag	1.0 kg			
			Plastic bag	1.0 kg			
			Fibre	1.0 kg			
674	II	5.1 AND NONE	Glass	2.5 kg	25.0 kg		
			Plastic	5.0 kg			
			Metal	5.0 kg			
			Paper bag	2.5 kg			
			Plastic bag	2.5 kg			
			Fibre	2.5 kg			
675	II	4.1, 4.2, 4.3 AND 8	Glass	2.5 kg	50.0 kg		
			Plastic	5.0 kg			
			Metal	5.0 kg			
			Paper bag	2.5 kg			
			Plastic bag	2.5 kg			
			Fibre	2.5 kg			
676	II	NONE	Glass	2.5 kg	100.0 kg		
			Plastic	5.0 kg			
			Metal	5.0 kg			
			Paper bag	2.5 kg			
			Plastic bag	2.5 kg			
			Fibre	2.5 kg			
677	III	NONE	Glass	5.0 kg	200.0 kg		
			Plastic	10.0 kg			
			Metal	10.0 kg			
			Paper bag	5.0 kg			
			Plastic bag	5.0 kg			
			Fibre	5.0 kg			
<b>SPECIALS</b>							
679 CAO	II	4.1			50.0 kg	UN 1700	
					75.0 kg	UN 2016	
		8			50.0 kg	UN 2017	
680	III		Glass	1.0 L	60.0 L pax		
			Plastic	1.0 L			
			Metal	2.5 L			
			Glass	2.5 L			UN 1888
			Plastic	2.5 L			
			Metal	5.0 L			
			220.0 L CAO				

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CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
Y680	III		Glass	0.1 L	2.0 L	
			Plastic	0.1 L		
			Metal	0.1 L		
681	II		Glass	1 L pax & CAO	1 L pax	Chlorosilanes
			Plastic	Forbidden		
			Metal	1 L pax/ 5 L CAO	30 L CAO	
699	I					UN 3123 & UN 3125
<b>CLASS 8</b>						
<b>PASSENGER LIQUID</b>						
850	I	3, 6.1 AND NONE	Glass	0.5 L	0.5 L	
			Plastic	0.5 L		
			Metal	0.5 L		
851	II	3, 3 + 6.1, 4.2, 4.3, 5.1, 6.1 AND NONE	Glass	1.0 L	1.0 L	
			Plastic	1.0 L		
			Metal	1.0 L		
852	III	6.1 AND NONE	Glass	2.5 L	5.0 L	
			Plastic	2.5 L		
			Metal	5.0 L		
<b>LTD QTY LIQUID</b>						
Y840	II	3, 3 + 6.1, 5.1, 6.1 AND NONE	Glass	0.1 L	0.5 L	
			Plastic	0.1 L		
			Metal	0.1 L		
Y841	III	6.1 AND NONE	Glass	0.5 L	1.0 L	
			Plastic	0.5 L		
			Metal	0.5 L		
<b>CARGO LIQUID</b>						
854	I	3, 3 + 6.1, 5.1, 6.1 AND NONE	Glass	1.0 L	2.5 L	
			Plastic	1.0 L		
			Metal	1.0 L		
855	II	3, 3 + 6.1, 4.2, 4.3, 5.1, 6.1 AND NONE	Glass	2.5 L	30.0 L	
			Plastic	2.5 L		
			Metal	2.5 L		
856	III	6.1 AND NONE	Glass	5.0 L	60.0 L	
			Plastic	5.0 L		
			Metal	10.0 L		
<b>PASSENGER SOLID</b>						
858	I	4.1, 5.1, 6.1 AND NONE	Glass	0.5 kg	1.0 kg	
			Plastic	0.5 kg		
			Metal	0.5 kg		
859	II	4.1, 4.2, 4.3, 5.1, 6.1 AND NONE	Glass	1.0 kg	15.0 kg	
			Plastic	2.5 kg		
			Metal	2.5 kg		
			Plastic bag	1.0 kg		
860	III	6.1 AND NONE	Glass	2.5 kg	25.0 kg	
			Plastic	2.5 kg		
			Metal	5.0 kg		
			Plastic bag	2.5 kg		

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CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
<b>LTD QTY SOLID</b>						
Y843	II	NONE	Glass	0.5 kg	1.0 kg	
			Plastic	0.5 kg		
			Metal	0.5 kg		
			Plastic bag	0.5 kg		
Y844	II	4.1, 4.3, 5.1, 6.1 AND NONE	Glass	0.5 kg	5.0 kg	
			Plastic	0.5 kg		
			Metal	0.5 kg		
			Plastic bag	0.5 kg		
Y845	III	6.1 AND NONE	Glass	1.0 kg	5.0 kg	
			Plastic	1.0 kg		
			Metal	1.0 kg		
			Plastic bag	1.0 kg		
<b>CARGO SOLID</b>						
862	I	4.1, 5.1, 6.1 AND NONE	Glass	1.0 kg	25.0 kg	
			Plastic	2.5 kg		
			Metal	2.5 kg		
863	II	4.1, 4.2, 4.3, 5.1, 6.1 AND NONE	Glass	2.5 kg	50.0 kg	
			Plastic	5.0 kg		
			Metal	5.0 kg		
			Plastic bag	2.5 kg		
864	III	6.1 AND NONE	Glass	5.0 kg	100.0 kg	
			Plastic	5.0 kg		
			Metal	10.0 kg		
			Plastic bag	5.0 kg		
<b>SPECIALS</b>						
866	II				50.0 kg CAO	UN 2028
867	III		Plastic	3.5 kg	20 kg	UN 2803
868	III		Glass	2.5 kg	35.0 kg	UN 2809
			Plastic	2.5 kg		
869	III				No limit	UN 2809 in articles
870					30 kg G pax	UN 2794, UN 2795
					No limit CAO	
871					25 kg G pax	UN 3028
					230 kgG CAO	
872					No limit	UN 2800
873					5.0 kg pax	Fuel cell cartridges
					50.0 kg CAO	
Y873					2.5 kg	Fuel cell cartridges
874					5.0 kg pax	Fuel cell cartridges contained in equipment
					50.0 kg CAO	
875					5.0 kg pax	Fuel cell cartridges packed with equipment
					50.0 kg CAO	

## DANGEROUS GOODS PANEL - GUIDANCE DOCUMENT

CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
876	II		Glass	1 L		
			Plastic	Forbidden	30 L CAO	Chlorosilanes CAO
			Metal	5 L		
<b>CLASS 9</b>						
950					No limit	UN 3166 Flammable liquid powered
951					No limit CAO	UN 3166 Flammable gas powered
952					No limit	UN 3171
953					No limit	UN 2807
954					200 kg	UN 1845
955					No limit	UN 2990, UN 3072
956					200 kg pax 200 kg CAO	UN 1841
					100 kg pax 200 kg CAO	UN 1931, UN 3152, UN 3432
					No limit 400 kg pax/CAO	UN 2969
					1 000 kg in IBC pax/CAO (UN 3077 only)	UN 3077, UN 3335
Y956			Glass	5.0 kg		
			Plastic	5.0 kg		
			Metal	5.0 kg		
			Paper bag	5.0 kg	30 kg G	UN 3077 & UN 3335
			Plastic bag	5.0 kg		
			Fibre	5.0 kg		
957					100 kg pax 200 kg CAO	UN 2211, UN 3314
958					200 kg pax 200 kg CAO	UN 2071, UN 2590
Y958					30.0 kg G	UN 2071
959					No limit	UN 3245
960			250 mL / IP	1.0 L / kit	10.0 kg	UN 3316
			250 g / IP	1.0 kg / kit		
Y960			30 mL / IP	1.0 L / kit	1.0 kg	UN 3316
			100 g / IP	1.0 kg / kit		
961					25 kg pax 100 kg CAO	UN 3268
962					0.5 L; or 1 kg; or 0.5 kg gas	UN 3363
Y963				500 mL / g	30 kg G	ID 8000

## DANGEROUS GOODS PANEL - GUIDANCE DOCUMENT

CLASS / AIRCRAFT TYPE	PACKING GROUP	SUBRISK	IP TYPE	INNER QTY	QTY / PACKAGE	OTHER CONSIDERATIONS
964			Glass	10.0 L	100 L pax	UN 1941, UN 1990, UN 2315, UN 3151
			Plastic	30.0 L	220 L CAO	
			Metal	40.0 L	450 L	UN 3082, UN 3334
Y964			Glass	5.0 L	30 kg G	UN 1941, UN 1990, UN 3082, UN 3334
			Plastic	5.0 L		
			Metal	5.0 L		
965					5 kg pax 35 kg CAO	UN 3480
966					5 kg pax 35 kg CAO	UN 3481 Lithium ion batteries packed with equipment
967					5 kg pax , 35 kg CAO	UN 3481 Lithium ion batteries contained in equipment
968					2.5 kg pax 35 kg CAO	UN 3090
969					5 kg pax 35 kg CAO	UN 3091 Lithium metal batteries packed with equipment
970					5 kg pax, 35 kg CAO	UN 3091 Lithium metal batteries contained in equipment
971					No limit	UN 3499 Capacitors

## **PART 5 - SHIPPER'S RESPONSIBILITIES**

### **5.1 General**

5.1.1 To ensure that all persons on the transport chain are aware of the potential hazards associated with dangerous goods, shippers are required to ensure that packages of dangerous goods offered for air transport must have defined marking and labelling and specific information must be provided on the dangerous goods transport document.

5.1.2 The provisions of Part 5 of the Technical Instructions largely reflect those of Part 5 – Consignment Procedures of the UN Recommendations to ensure modal harmonisation, although the Panel has determined in some instances to apply more stringent requirements.

### **5.2 Marking**

In addition to the marking requirements specified in the UN Recommendations the Panel has also adopted special marking requirements for:

- Refrigerated liquefied gases; and
- Carbon dioxide, solid. (dry ice).

These requirements have been added to address specific operational safety needs to address the handling of packages containing cryogenic liquids and to manage the risk of asphyxiation resulting from the potential build up of carbon dioxide gas in the cargo compartments.

### **5.3 Labelling**

The design and size of hazard labels is aligned with those in the UN Recommendations, except that the Technical Instructions does not permit the use of half-size hazard labels other than for packages containing substances in Division 6.2, infectious substances.

The Panel agreed to allow half-size hazard labels on packages for Division 6.2 substances in recognition that the net quantities permitted in air transport invariably result in packagings that have external dimensions too small to permit full size hazard labels.

In addition to the UN design hazard labels the Technical Instructions also mandates the use of specific handling labels for:

- Magnetized material (UN 2807);
- Substances or quantities permitted only on a cargo aircraft (cargo aircraft only);
- Refrigerated liquefied gases (cryogenic liquid);
- Self-reactive substances and organic peroxides (keep away from heat);
- Radioactive materials in excepted packages (radioactive material, excepted package); and
- Lithium batteries shipped in accordance with Section II of packing instructions 965 to 970 (lithium battery handling label).

The Panel adopted these handling labels to ensure that substances or articles that have specific handling requirements or limitations are visibly identified so the handling requirements can be applied through the course of air transport.

## **DANGEROUS GOODS PANEL - GUIDANCE DOCUMENT**

### **5.4 Documentation**

The documentation requirements in 5.4 is largely aligned with 5.4 in the UN Recommendations, except that the Panel has specified more detailed requirements in 5.4.1.5.1 where the shipper is required to specify the net quantity in each package by package type, rather than just the total quantity of dangerous goods by proper shipping name and packing group as applies in the UN Recommendations.

The difference in the Technical Instructions is to ensure that operators' acceptance personnel are able to validate that the net quantity is within the limits specified in Table 3-1.

### **5.5 Other Requirements**

5.5.1 The provisions set out in Chapter 5.5 – Special Provisions in the UN Recommendations that deal with carriage requirements which are inappropriate in air transport (eg: for identifying fumigated cargo transport units [5.5.2 in the UN Recommendations]) have not been included in the Technical Instructions.

**PART 6 – PACKAGING NOMENCLATURE, MARKING, REQUIREMENTS AND TESTS**

**6.1 General**

6.1.1 The provisions of Part 6 of the Technical Instructions are in almost complete alignment with those of the UN Recommendations to ensure modal harmonisation. The Panel however has determined that some UN packagings are inappropriate for use in air transport, e.g. composite packagings with a glass, porcelain or stoneware receptacle.



## **PART 7 – OPERATOR’S RESPONSIBILITIES**

### **7.1 *Operator's responsibilities***

7.1.1 Most of the requirements contained in Part 7 of the Technical Instructions have been developed by the Panel and have no equivalent in the UN Recommendations. Exceptions are: separation of explosives by compatibility group; also the Tables specifying the distances by which radioactive material must be separated from persons are based on criteria laid down by IAEA. The UN Recommendations make it clear that modes are expected to develop their own requirements concerning handling once the dangerous goods have been delivered to the carrier for transport but do include the need for emergency response information to be available.

### **7.2 *Segregation of dangerous goods***

7.2.1 The UN Recommendations contain general information about segregating incompatible dangerous goods; and this includes applying the segregation requirements to subsidiary risks. In the Technical Instructions, this general information has been turned into a Table showing certain classes and divisions which need to be segregated from each other and from other classes/divisions.

### **7.3 *Segregation of radioactive materials***

7.3.1 The IAEA Regulations contain the general requirement for segregating radioactive materials from persons and film; these state the maximum levels of exposure in either annual dose rate or per consignment. Many years ago, these levels were used to develop Tables giving ranges of Transport Indices and distances which identify how far radioactive materials need to be stowed from persons and film. Reviews have been undertaken in several Contracting States over the years to demonstrate that the distances required by the Tables do ensure the necessary level of protection.

**PART 8 – PROVISIONS FOR PASSENGERS AND CREW**

**8.1 General**

8.1.1 Many dangerous goods are used by people in everyday life, e.g. perfumes, aerosols, lithium batteries, etc. Other dangerous goods are used in medical applications or in specific equipment needed by persons with disabilities, e.g. wet-cell, non-spillable and lithium batteries in mobility aids, gaseous oxygen, etc. To address the need for passengers and crew to be able to carry as part of their luggage these dangerous goods while still ensuring the required level of safety the Panel has developed provisions for certain dangerous goods to be permitted in baggage.

# **DANGEROUS GOODS PANEL - GUIDANCE DOCUMENT**

## **PART 9 – ATTACHMENTS – STATE AND OPERATOR VARIATIONS**

**9.1**    *State variations*

**9.2**    *Operator variations*

## **PART 10 - SUPPLEMENT**

### **10.1 General**

10.1.1 The Supplement contains information primarily of interest to Contracting States and to shippers of dangerous goods which are normally forbidden by the Technical Instructions and which can only be carried under an approval or exemption.

10.1.2 The Supplement also contains guidance for members States on providing information for passengers, the reporting of accidents and incidents, inspections and enforcement.

### **10.2 Dangerous goods list**

10.2.1 The dangerous goods list contains all the entries in the list in the Technical Instructions which are shown as being forbidden in normal circumstances, irrespective of whether this is on both passenger and cargo aircraft, or only on passenger aircraft, or only for part of the entry (eg: where there is more than one packing group for an item of dangerous goods and the packing group I entry is forbidden but the other packing groups are permitted).

10.2.2 The dangerous goods list in the Supplement provides information or recommended quantities per package and packing instruction for substances requiring an approval or exemption from the appropriate national authority. Not all of the entries in the list have additional information, eg: Allyl alcohol, UN 1098 still shows only 'Forbidden/Forbidden' in Columns 9 - 12 of the list in the Supplement. This does not mean the Panel intends the item to be totally forbidden but only that no suitable universal packing method and quantity limitation has been established.

10.2.3 Where a quantity is shown in brackets in columns 10 or 12 and special provisions A1 or A2 appear in column 7, it identifies the maximum quantity which qualifies for an approval under those special provisions.

10.2.4 The packing instruction numbers for explosives are shown in brackets in columns 9 - 12.

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## PART 11 - EMERGENCY RESPONSE GUIDANCE

### 11.1 *Emergency Response Guidance*

11.1.1 The Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods (Doc 9481 AN/928) is amended to reflect changes to the list of dangerous goods. The amendment cycle follows that for the Technical Instructions.

### 11.1 *Assignment of emergency response drill codes*

11.1.1 Drill codes are assigned to the entries for dangerous goods in the *Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods* on the basis of the following criteria.

#### (a) **Drill Code Number**

The drill code number assigned is the number of the UN class into which the substance or article has been placed, except that:

- (i) the drill code number 10 is assigned to flammable gases in Division 2.1 and to toxic gases having a subsidiary risk 2.1, with all other gases being assigned the drill code number 2;
- (ii) the drill code number 11 is assigned to infectious substances in Division 6.2;
- (iii) flammable solids (ie: Division 4.1 substances) are assigned the drill code number 3; drill code number 4 being reserved for spontaneously combustible and water-reactive substances (ie: those in Divisions 4.2 and 4.3); and
- (iv) articles and substances classified in Division 1.4S are assigned to drill code number 3.

#### (b) **Drill Code Letter**

- (i) Code letters C, F, P, and X - are assigned to articles and substances required to bear a Corrosive, Flammable, Toxic or Oxidizer subsidiary risk label, respectively.

*(Note - the code letter P is also assigned to toxic gases in Division 2.3)*

- (ii) Code letter E - is assigned to articles and substances to which Special Provision A 215 has been assigned in Table S-2-6 and to desensitised explosives classified in Division 4.1, Packing Group I.
- (iii) Code letter H - is assigned to liquids with a high risk of ignition by virtue of having a FP below 0°C. For "nos" or other generalised entries in Class 3, where a separate line entry is presented for packing groups I and II or for all three packing groups, the drill code letter H is indicated for both PG I and II entries, since even the substances falling into PG II may have flash points below 0°C. If an "nos" or other generalised entry in Class 3 has only a PG II or III line entry, the H is not indicated for the PG II entry since the flash points would be expected to be relatively high, as evidenced by the absence of a PG I entry.

*(Note - the H drill code letter is not assigned to Class 3 entries only. It is also assigned to liquids having a flash point below 0°C and which are classified in a Class or*

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*Division that precedence over Class 3 (eg: a highly ignitable liquid which has a PG I inhalation toxicity is assigned the drill code 6H)*

- (iv) Code letter M - is assigned to Magnetized materials.
- (v) Code letter S - is assigned to self-reactive and related substances of Division 4.1 and organic peroxides of Division 5.2, which require temperature control in transport; and to solid substances having a subsidiary risk of 4.2; and to explosive articles and substances that are also pyrophoric.
- (vi) Code letter W - is assigned to any article or substance classified in Division 4.3 or having a subsidiary risk 4.3. Because of the effect of inhalation of a corrosive/toxic gas, it is also assigned to substances which react violently with water to produce corrosive/toxic gases (eg: Phosphorus pentachloride).
- (vii) Code letter Y – is assigned to infectious substances in Category A (UN 2841 and UN 2900).
- (viii) Code letter Z – is assigned to lithium batteries to identify to flight crew that the cargo fire suppression system may not extinguish or contain a fire.
- (ix) Code letter A, i and N - are assigned subjectively to articles and substances for which none of the above code letters apply and which exhibit anaesthetic, irritating (tear-producing) or noxious properties, respectively.
- (x) Code letter L - is assigned when no other code letter applies to articles and substances having no subsidiary risk and to all articles and substances classified in Division 1.4S.

*(Note - the L drill code letter does not necessarily mean that the substance to which the code is assigned is of a low hazard, only that there is little of no risk in addition to that indicated by the basic drill code number. For example, a flammable gas in Division 2.1 would have the drill code 10L assigned. Clearly, such a gas could be very dangerous on an aircraft, but the code letter L only indicates that there is no hazard in addition to that indicated in the Inherent Risk column of Table 4-1 of Doc 9481 for the drill number 10)*

11.1.2 Not more than 2 drill code letters are used in the drill code. In order to ensure this, it may be necessary to ignore a lesser risk of a substance having multiple hazards which may, however, require multiple subsidiary risk labels. For example **Chlorosilanes, water reactive, flammable, corrosive, nos** are required to be labelled with a Danger if wet primary hazard label and subsidiary risk labels for Liquid flammable and Corrosive; the drill code assigned, however, is **4FW** rather than **4CFW**.