International Civil Aviation Organization

DGP-WG/10-WP/50
10/11/10

WORKING PAPER

DANGEROUS GOODS PANEL (DGP)
MEETING OF THE WORKING GROUP OF THE WHOLE

Abu Dhabi, United Arab Emirates, 7 to 11 November 2010

Agenda Item 3: Development of recommendations for amendments to the *Supplement* to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2013/2014 Edition

NEW CHART FOR CLASS 1 DANGEROUS GOODS IN THE SUPPLEMENT TO THE TECHNICAL INSTRUCTIONS FOR THE SAFE TRANSPORT OF DANGEROUS GOODS BY AIR (DOC 9284)

(Presented by J. McLaughlin)

SUMMARY

This paper proposes revisions to the content and format of the Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air.

Action by the DGP-WG is in paragraph 2.

1. INTRODUCTION

1.1 To incorporate new and revised content as well as to improve the usability of the Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air, this paper proposes revisions relevant to all classes of dangerous goods. These papers proposed are separated by classification for discussion purposes.

1.2 In addition to content and format, the panel is invited to consider placing all Class 1 information (table, special packing provisions, packing instructions, and exemption/approval templates) in one section. Class 2 information and information on Classes 3-9 would be in their own self-contained sections.

1.3 Where there may have been multiple packing instructions applicable to a substance or material, the most restrictive option was chosen.

1.4 State variations, labels, and expected quantities have been purposely left out for discussion purposes. For these issues, no formatting or substantive changes are contemplated in this paper and the intent is to include these items in the final edition.

1.5 Substances with Special Packing Provisions A4 and A223 are included but additional discussions are required before a consistent approach to can be implemented.

1.6 There is currently no reference to for A223 to Annex 7.

1.7 With respect to the background of Toxic by Inhalation Liquids, at (DGP-WG/07-WP/53), a revised listing of toxic by inhalation liquids with supporting data was provided and the proposal to add a special provision was agreed. The working group further agreed that the table should be placed in the Supplement along with introductory text to be developed.

1.8 The working group is asked to consider including 6 D information in the Supplement.

2. ACTION BY THE DGP-WG

2.1 The DGP is invited to consider how the Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air can be improved and revised. The United States anticipates these discussions to span multiple working group meetings and requests comment and input on the following items:

a) new formatting and organization of the attached material;

b) consideration of incorporating guidance proposed in DGP-WG/10-WP/4;

c) inclusion of 6 D information into the Supplement; and

d) how to address A4 and A223 listings to ensure their meaningful and consistent application.

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APPENDIX

Revisions to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air*

Table of Contents

Guidance Material for Inclusion in the 2011/2012 Edition of the Supplement to the Technical Instructions for the Safe Transport of Dangerous Goods by Air (Included for background, no changes proposed)

Chapter 1

SCOPE AND APPLICABILITY

1.1 DESIGNATION OF NATIONAL AUTHORITY

1.1.1 Each State must designate the appropriate authority within its administration to be responsible for ensuring compliance with Annex 18 — *The Safe Transport of Dangerous Goods by Air* and these Instructions. Details specifying the primary point of contact must be notified to ICAO for publication in the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) and for dissemination on the public website. As a minimum, these details must include:

a) name;

b) title (of person or position);

c) address;

d) phone number;

e) facsimile number;

f) e-mail address; and

g) website address (if applicable).

1.1.2 In addition, contact information for other agencies responsible for specific classes (e.g. radioactive material, infectious substances) or for specific actions (e.g. issuance of approvals or exemptions) should be included.

1.2 GENERAL INFORMATION TO BE PROVIDED TO A STATE FOR THE PROCESSING OF EXEMPTIONS

1.2.1 Part 1;1.1.2 of the Technical Instructions provides for States to grant exemptions to enable the transport by air of dangerous goods which may not be permitted in normal circumstances or in conditions which are different to those prescribed in the Instructions. Such exemptions may only be granted in instances of extreme urgency, when other forms of transport are inappropriate or when full compliance with the Technical Instructions is contrary to the public interest. The following is offered as guidance to States to determine whether these criteria have been met:

a) *Extreme urgency.* In deciding whether the transport is urgent, States should consider why it is important for a consignment to reach its destination quickly or why it has been necessary to make an application at short notice. Dangerous goods may need to be transported because of;

   1) humanitarian relief;

2) environmental relief;

3) pestilence;

4) national or international security;

5) saving of life (e.g. rescue);

6) limited availability at destination.

Applications based on commercial reasons only should not be viewed as urgent and carriage by other forms of transport should also be considered.

b) *When other forms of transport are inappropriate.* Whilst carriage by other forms of transport may be possible, States should evaluate a risk analysis which should include consideration of:

1) *Length of journey.* Transport by other forms may result in an unrealistic journey time and could affect the viability of the dangerous goods;

2) *Infrastructure*. The availability of other forms of transport may be limited;

3) *Security.* The comprehensive security provisions of the air mode may reduce the possibility of unlawful interference (theft, etc.);

4) *Routeing.* Transport by air may result in a reduced risk of exposure of the public to the dangerous goods in the event of an incident or accident. The risk of piracy may also be significantly reduced;

5) *Cost.* The cost of carriage by other forms of transport may be economically unreasonable. However, the decision to grant an exemption should not be based on cost alone.

c) *When full compliance with the Technical Instructions is contrary to the public interest, for example:*.

1) medical applications;

2) new technologies;

3) enhancements in safety.

following information should be supplied before consideration is given to granting an exemption:

a) the reason why it is essential the article or substance must be carried by air;

b) a statement why the applicant believes the proposal (including any safety control measures specified by the applicant) will achieve a level of safety equivalent to that provided by these Instructions;

c) proposed proper shipping name, classification and UN number with full supporting technical data;

d) the proposed packaging;

e) quantity to be carried;

f) any special handling required and any special emergency response information;

g) name and address of shipper and consignee;

h) the airports of departure, transit and destination and the proposed dates of transport; and

i) details of the operator including aircraft type, flight numbers etc.

1.2.3 When granting an exemption, an overall level of safety in transport which is at least equivalent to the level of safety provided by the Technical Instructions must be achieved. In determining an equivalent level of safety the following should be considered:

a) A review of the applicable regulatory provisions. This includes an identification of the specific provisions which will not be met, thus requiring determination that an equivalent level of safety has been achieved;

b) A review of any potential increased risk to safety or property that may result from deviating from the provisions in question and identification of the measures considered necessary or appropriate to address that risk. This should include substantiation with applicable analysis or evaluation demonstrating that the proposed additional measures will achieve a level of safety that is at least equal to that required by the Technical Instructions;

c) A thorough review and risk assessment to identify and evaluate potential risks in transport. This may include a risk analysis addressing failure modes and effects, a systems safety evaluation, and an explanation of the measures imposed to ensure each risk factor has been evaluated to provide an appropriate level of safety;

d) When appropriate, risk mitigation factors and a safety analysis may be based on analogy to requirements in place for technologies posing similar risks in order to ensure safety and regulatory consistency.

1.3 GENERAL RECOMMENDATIONS TO BE CONSIDERED WHEN ISSUING EXEMPTIONS

1.3.1 When an exemption is to be issued by a State it is suggested that, if appropriate, the following items should be considered to be the minimum requirements to be applied in connection with that exemption:

a) notification should be provided to the authorities at the relevant airports within that State;

b) the packing method to be used should, where possible, be as shown in the supplementary dangerous goods list. The packaging to be used should provide a level of safety at least equivalent to that which is needed in order to meet the applicable requirements of Parts 4 and 6 of the Technical Instructions; and

c) copies of the relevant exemption documents should be attached to the dangerous goods transport document which accompanies the goods.

1.3.2 When a State grants an exemption it should contain, as a minimum, the following:

a) the UN number, proper shipping name and the classification of the goods;

b) the packaging and quantity applicable;

c) the information listed in 1.1 f) to 1.1 h) above; and

d) the duration of the validity of the exemption, which normally should not exceed a period of two years from the date of issue.

A copy of the exemption must be provided to the operator concerned.

1.3.3 The responsibility for obtaining the above exemption may rest with a State or with the operator or with the shipper, depending on States' national procedures. Generally, the applicant for an exemption should be the party for whom the responsibilities are most relevant e.g. when an exemption is granted for dangerous goods which are forbidden under normal circumstances, it may be most appropriate for the shipper to apply. However, the exemption must address all affected parties. Irrespective of who is responsible, *the* operator must be in possession of confirmation that all the required exemptions have been obtained prior to accepting the goods for shipment.

Note.— Usually an exemption should cover a single occasion, but it may be necessary to issue exemptions to cover multiple occasions and/or multiple shippers.

1.3.4 An exemption must not be granted for any dangerous goods indicated as forbidden under any circumstance, as described in 1.2.1. Where dangerous goods are forbidden on both passenger and cargo aircraft consideration should ordinarily only be given to carriage on cargo aircraft. Transport on a passenger aircraft should only be considered in exceptional circumstances.

1.3.5 Where an exemption or approval is required from more than one State, it is usually most appropriate for the State of Origin to grant the initial exemption because they may have greater awareness of the shipper and the terms and conditions under which the dangerous goods will be shipped. However there may be circumstances where another State concerned might be better placed to grant the initial exemption.

1.4 REQUESTS FOR AMENDMENTS TO THE TECHNICAL INSTRUCTIONS

Upon receipt of a request for amendment to the Technical Instructions, a State should:

1) review the request for completeness (see information required in Part 1;1.5 of the Technical Instructions);

2) check the validity of the data presented in the request;

3) compare the data with other relevant data available or initiate the procurement of further data that may be necessary; and

4) if it is determined that the request is both sound and appropriate, present to ICAO a specific proposal for an amendment to the Technical Instructions.

Class 1 Table

Name		UN No.	Class or division	Sub-sidiary risk	PG	Labels (EMPTY)	State variations (EMPTY)	Special provisions	Excepted Quantities (EMPTY)	Passenger aircraft		Cargo aircraft	
										Packing Instruction	Max.net quantity per package	Packing Instruction	Max.net quantity per package
1		2	3	4	5	6	7	8	9	10	11	12	13
Agent, blasting type B	†	0331	1.5D							F	F	F	F
Agent, blasting type E	†	0332	1.5D							F	F	F	F
Air bag inflators	†	0503	1.4G					A32, A56		F	F	135	75 KG
Air bag modules	†	0503	1.4G					A32, A56		F	F	135	75 KG
Ammonium nitrate	with more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance	0222	1.1D							F (112 b or c)		F (112 b or c)	
Ammonium perchlorate		0402	1.1D					A22		F (112 b or c)		F (112 b or c)	
Ammonium picrate	dry or wetted with less than 10% water, by mass	0004	1.1D							F (112 a, b, or c)		F (112 a, b, or c)	
Ammunition, illuminating	with or without burster, expelling charge or propelling charge †	0171	1.2G							F (130)		F (130)	

Ammunition, illuminating	with or without burster, expelling charge or propelling charge †	0254	1.3G							F (130)		F (130)	
Ammunition, illuminating	with or without burster, expelling charge or propelling charge †	0297	1.4G							F (130)		130	75 KG
Ammunition, incendiary	with or without burster, expelling charge or propelling charge †	0009	1.2G							F (130)		F (130)	
Ammunition, incendiary	with or without burster, expelling charge or propelling charge †	0010	1.3G							F (130)		F (130)	
Ammunition, incendiary	, liquid or gel, with burster, expelling charge or propelling charge †	0247	1.3J							F (101)		F (101)	
Ammunition, incendiary	with or without burster, expelling charge or propelling charge †	0300	1.4G							F (130)		130	75 KG
Ammunition, incendiary, white phosphorus	with burster, expelling charge or propelling charge †	0243	1.2H							F (130)		F (130)	

Ammunition, incendiary, white phosphorus	with burster, expelling charge or propelling charge †	0244	1.3H							F (130)		F (130)	
Ammunition, practice	†	0488	1.3G							F (130)		F (130)	
Ammunition, practice	†	0362	1.4G							F (130)		130	75 KG
Ammunition, proof	†	0363	1.4G							F (130)		130	75 KG
Ammunition, smoke	with or without burster, expelling charge or propelling charge †	0015	1.2G					A132		F (130)		F (130)	
Ammunition, smoke	with or without burster, expelling charge or propelling charge †	0016	1.3G					A132		F (130)		F (130)	
Ammunition, smoke	with or without burster, expelling charge or propelling charge †	0303	1.4G					A132		F (130)		130	75 KG
Ammunition, smoke, white phosphorus	with burster, expelling charge or propelling charge †	0245	1.2H							F (130)		F (130)	
Ammunition, smoke, white phosphorus	with burster, expelling charge or propelling charge †	0246	1.3H							F (130)		F (130)	
Ammunition, tear-producing	with burster, expelling charge or propelling charge †	0018	1.2G	6.1 & 8						F (130)		F (130)	

Ammunition, tear-producing	with burster, expelling charge or propelling charge †	0019	1.3G	6.1 & 8						F (130)		F (130)	
Ammunition, tear-producing	with burster, expelling charge or propelling charge †	0301	1.4G	6.1 & 8						F (130)		130	75 KG
Ammunition, toxic*	with burster, expelling charge or|propelling charge	0020	1.2K							F (101)		F (101)	
Ammunition, toxic*	with burster, expelling charge or|propelling charge	0021	1.3K							F (101)		F (101)	
Articles, EEI	†	0486	1.6N							F (101)		F (101)	
Articles, explosive, extremely insensitive	†	0486	1.6N							F (101)		F (101)	
Articles, explosive, n.o.s.*		0462	1.1C					A62		F (101)		F (101)	
Articles, explosive, n.o.s.*		0463	1.1D							F (101)		F (101)	
Articles, explosive, n.o.s.*		0464	1.1E					A62		F (101)		F (101)	
Articles, explosive, n.o.s.*		0465	1.1F					A62		F (101)		F (101)	
Articles, explosive, n.o.s.*		0354	1.1L					A62		F (101)		F (101)	
Articles, explosive, n.o.s.*		0466	1.2C					A62		F (101)		F (101)	
Articles, explosive, n.o.s.*		0467	1.2D					A62		F (101)		F (101)	
Articles, explosive, n.o.s.*		0468	1.2E					A62		F (101)		F (101)	

Articles, explosive, n.o.s.*		0469	1.2F					A62		F (101)		F (101)	
Articles, explosive, n.o.s.*		0355	1.2L							F (101)		F (101)	
Articles, explosive, n.o.s.*		0470	1.3C					A62		F (101)		F (101)	
Articles, explosive, n.o.s.*		0356	1.3L					A62		F (101)		F (101)	
Articles, explosive, n.o.s.*		0350	1.4B					A62		F (101)		F (101)	
Articles, explosive, n.o.s.*		0351	1.4C					A62		F (101)		101	75 KG
Articles, explosive, n.o.s.*		0352	1.4D					A62		F (101)		101	75 KG
Articles, explosive, n.o.s.*		0471	1.4E					A62		F (101)		101	75 KG
Articles, explosive, n.o.s.*		0472	1.4F					A62		F (101)		F (101)	
Articles, explosive, n.o.s.*		0353	1.4G					A62		F (101)		101	75 KG
Articles, pyrophoric	†	0380	1.2L							F (101)		F (101)	
Articles, pyrotechnic	for technical purposes †	0428	1.1G							F (135)		F (135)	
Articles, pyrotechnic	for technical purposes †	0429	1.2G							F (135)		F (135)	
Articles, pyrotechnic	for technical purposes †	0430	1.3G							F (135)		F (135)	
Articles, pyrotechnic	for technical purposes †	0431	1.4G							F (135)		135	75 KG
Barium azide	, dry or wetted with less than 50% water, by mass	0224	1.1A	6.1						F (110 a or b)		F (110 a or b)	
Black powder	, granular or as a meal †	0027	1.1D							F (113)		F (113)	
Black powder in pellets	†	0028	1.1D							F (113)		F (113)	

Black powder, compressed	†	0028	1.1D							F (113)		F (113)	
Bombs	with bursting charge †	0034	1.1D							F (130)		F (130)	
Bombs	with bursting charge †	0033	1.1F							F (130)		F (130)	
Bombs	with bursting charge †	0035	1.2D							F (130)		F (130)	
Bombs	with bursting charge †	0291	1.2F							F (130)		F (130)	
Bombs with flammable liquid	with bursting charge †	0399	1.1J							F (101)		F (101)	
Bombs with flammable liquid	with bursting charge †	0400	1.2J							F (101)		F (101)	
Bombs, photo-flash	†	0038	1.1D							F (130)		F (130)	
Bombs, photo-flash	†	0037	1.1F							F (130)		F (130)	
Bombs, photo-flash	†	0039	1.2G							F (130)		F (130)	
Bombs, photo-flash	†	0299	1.3G							F (130)		F (130)	
Boosters	without detonator †	0042	1.1D							F (132)		F (132)	
Boosters	without detonator †	0283	1.2D							F (132 a or b)		F (132 a or b)	
Boosters with detonator	†	0225	1.1B							F (133)		F (133)	
Boosters with detonator	†	0268	1.2B							F (133)		F (133)	
Bursters	, explosive †	0043	1.1D							F (133)		F (133)	
Cartridges for weapons	with bursting charge †	0006	1.1E							F (130)		F (130)	
Cartridges for weapons	with bursting charge †	0005	1.1F							F (130)		F (130)	
Cartridges for weapons	with bursting charge †	0321	1.2E							F (130)		F (130)	

Cartridges for weapons	with bursting charge †	0007	1.2F							F (130)		F (130)	
Cartridges for weapons	with bursting charge †	0412	1.4E							F (130)		130	75 KG
Cartridges for weapons	with bursting charge †	0348	1.4F							F (130)		F (130)	
Cartridges for weapons, blank	†	0326	1.1C							F (130)		F (130)	
Cartridges for weapons, blank	†	0413	1.2C							F (130)		F (130)	
Cartridges for weapons, blank	†	0327	1.3C							F (130)		F (130)	
Cartridges for weapons, blank	†	0338	1.4C							F (130)		130	75 KG
Cartridges for weapons, inert projectile	†	0328	1.2C							F (130)		F (130)	
Cartridges for weapons, inert projectile	†	0417	1.3C							F (130)		F (130)	
Cartridges for weapons, inert projectile	†	0339	1.4C							F (130)		130	75 KG
Cartridges, flash	†	0049	1.1G							F (135)		F (135)	
Cartridges, flash	†	0050	1.3G							F (135)		135	75 KG
Cartridges, oil well	†	0277	1.3C							F (134)		F (134)	
Cartridges, oil well	†	0278	1.4C							F (134)		134	75 KG
Cartridges, power device	†	0381	1.2C							F (134)		F (134)	
Cartridges, power device	†	0275	1.3C							F (134)		134	75 KG
Cartridges, power device	†	0276	1.4C							F (134)		134	75 KG
Cartridges, signal	†	0054	1.3G							F (135)		135	75 KG
Cartridges, signal	†	0312	1.4G							F (135)		135	75 KG

Cartridges, small arms	†	0417	1.3C							F (130)		F (130)	
Cartridges, small arms	†	0339	1.4C							F (130)		130	75 KG
Cartridges, small arms, blank	†	0327	1.3C							F (130)		F (130)	
Cartridges, small arms, blank	†	0338	1.4C							F (130)		130	75 KG
Cases, cartridge, empty, with primer	†	0379	1.4C							F (136)		136	75 KG
Cases, combustible, empty, without primer	†	0447	1.3C							F (136)		F (136)	
Cases, combustible, empty, without primer	†	0446	1.4C							F (136)		136	75 KG
Charges, bursting, plastics bonded		0457	1.1D							F (130)		F (130)	
Charges, bursting, plastics bonded		0458	1.2D							F (130)		F (130)	
Charges, bursting, plastics bonded		0459	1.4D							F (130)		130	75 KG
Charges, demolition	†	0048	1.1D							F (130)		F (130)	
Charges, depth	†	0056	1.1D							F (130)		F (130)	
Charges, explosive, commercial	without detonator †	0442	1.1D							F (137)		F (137)	
Charges, explosive, commercial	without detonator †	0443	1.2D							F (137)		F (137)	
Charges, explosive, commercial	without detonator †	0444	1.4D							F (137)		137	75 KG

Charges, propelling	†	0271	1.1C							F (143)		F (143)	
Charges, propelling	†	0415	1.2C							F (143)		F (143)	
Charges, propelling	†	0272	1.3C							F (143)		F (143)	
Charges, propelling	†	0491	1.4C							F (143)		143	75 KG
Charges, propelling, for cannon	†	0279	1.1C							F (130)		F (130)	
Charges, propelling, for cannon	†	0414	1.2C							F (130)		F (130)	
Charges, propelling, for cannon	†	0242	1.3C							F (130)		F (130)	
Charges, shaped, flexible, linear	†	0288	1.1D							F (138)		F (138)	
Charges, shaped, flexible, linear	†	0237	1.4D							F (138)		138	75 KG
Charges, shaped_	|without detonator †	0059	1.1D					A2		F	F	F (137)	F (75 KG)
Charges, shaped_	|without detonator †	0439	1.2D							F (137)		F (137)	
Charges, shaped_	|without detonator †	0440	1.4D					A1		F (137)	F (25 KG)	137	75 KG
Charges, supplementary, explosive	†	0060	1.1D							F (132)		F (132)	
Components, explosive train, n.o.s.*	†	0461	1.1B					A62		F (101)		F (101)	
Components, explosive train, n.o.s.*	†	0382	1.2B					A62		F (101)		F (101)	

Components, explosive train, n.o.s.*	†	0383	1.4B					A62		F (101)		101	75 KG
Contrivances, water-activated*	with burster, expelling charge or propelling charge †	0248	1.2L							F (144)		F (144)	
Contrivances, water-activated*	with burster, expelling charge or propelling charge †	0249	1.3L							F (144)		F (144)	
Cord, detonating	, flexible †	0065	1.1D					A2		F	F	F (139)	F (75 KG)
Cord, detonating	, metal clad †	0290	1.1D							F (139)		F (139)	
Cord, detonating	, metal clad †	0102	1.2D							F (139)		F (139)	
Cord, detonating	, flexible †	0289	1.4D					A1		F (139)	F (25 KG)	139	75 KG
Cord, detonating, mild effect	, metal clad	0104	1.4D							F (140)	F (25 KG)	139	75 KG
Cord, igniter	†	0066	1.4G					A1		F (140)	F (25 KG)	140	75 KG
Cyclonite and cyclotetramethylenetetranitramine mixture, desensitized	with not less than 10% phlegmatizer, by mass	0391	1.1D					A211		F (112 a or b)		F (112 a or b)	
Cyclonite and cyclotetramethylenetetranitramine mixture, wetted	with not less than 15% water, by mass	0391	1.1D					A211		F (112 a or b)		F (112 a or b)	
Cyclonite, desensitized		0483	1.1D							F (112 b or c)		F (112 b or c)	
Cyclonite, wetted	with not less than 15% water, by mass	0072	1.1D					A211		F (112 a)		F (112 a)	

Cyclotetramethylene-|tetranitramine, wetted	with not less than 15% water, by mass	0226	1.1D					A211		F (112 a)		F (112 a)	
Cyclotetramethylene-tetranitramine, desensitized		0484	1.1D							F (112 b or c)		F (112 b or c)	
Cyclotrimethylenetrinitramine and cyclotetramethylenetetranitramine mixture, desensitized	with not less than 10% phlegmatizer, by mass	0391	1.1D					A211		F (112 b or c)		F (112 b or c)	
Cyclotrimethylenetrinitramine and cyclotetramethylenetetranitramine mixture, wetted	with not less than 15% water, by mass	0391	1.1D					A211		F (112 b or c)		F (112 b or c)	
Cyclotrimethylenetrinitramine, desensitized		0483	1.1D							F (112 b or c)		F (112 b or c)	
Cyclotrimethylenetrinitramine, wetted	with not less than 15% water, by mass	0072	1.1D					A211		F (112 a)		F (112 a)	
Deflagrating metal salts of aromatic nitro-derivatives, n.o.s.		0132	1.3C							F (114 b)		F (114 b)	
Detonator assemblies, non-electric	for blasting †	0360	1.1B							F (131)		F (131)	
Detonator assemblies, non-electric	for blasting †	0361	1.4B							F (131)		131	75 KG
Detonators for ammunition	†	0073	1.1B							F (133)		F (133)	
Detonators for ammunition	†	0364	1.2B							F (133)		F (133)	

Detonators for ammunition	†	0365	1.4B							F (133)		133	75 KG
Detonators, electric	for blasting †	0030	1.1B							F (131)		F (131)	
Detonators, electric	for blasting †	0255	1.4B							F (131)		131	75 KG
Detonators, non-electric	for blasting †	0029	1.1B							F (131)		F (131)	
Detonators, non-electric	for blasting †	0267	1.4B							F (131)		131	75 KG
Diazodinitrophenol, wetted	with not less than 40% water, or mixture of alcohol and water, by mass	0074	1.1A					A211		F (110 a or b)		F (110 a or b)	
Diethyleneglycol dinitrate, desensitized	with not less than 25% non-volatile, water-insoluble phlegmatizer, by mass	0075	1.1D					A211		F (115)		F (115)	
DINGU		0489	1.1D							F (112 b or c)		F (112 b or c)	
Dinitroglycoluril		0489	1.1D							F (112 b or c)		F (112 b or c)	
Dinitrophenol	, dry or wetted with less than 15% water, by mass	0076	1.1D	6.1						F (112 a, b, or c)		F (112 a, b, or c)	
Dinitrophenolates	, alkali metals, dry or wetted with less than 15% water, by mass	0077	1.3C	6.1						F (114 a or b)		F (114 a or b)	
Dinitroresorcinol	, dry or wetted with less than 15% water, by mass	0078	1.1D							F (112 a, b, or c)		F (112 a, b, or c)	
Dinitrosobenzene		0406	1.3C							F (114 b)		F (114 b)	

Dipicryl sulphide	, dry or wetted with less than 10% water, by mass	0401	1.1D					A208		F (112 a, b, or c)		F (112 a, b, or c)	
Dipicrylamine		0079	1.1D							F (112 b or c)		F (112 b or c)	
Explosive, blasting, type A	†	0081	1.1D							F (116)		F (116)	
Explosive, blasting, type B	†	0082	1.1D							F (116)		F (116)	
Explosive, blasting, type B	†	0331	1.5D					A207		F (116)		F (116)	
Explosive, blasting, type C	†	0083	1.1D					A212		F (116)		F (116)	
Explosive, blasting, type D	†	0084	1.1D							F (116)		F (116)	
Explosive, blasting, type E	†	0241	1.1D							F (116)		F (116)	
Explosive, blasting, type E	†	0332	1.5D					A207		F (116)		F (116)	
Fireworks	†	0333	1.1G							F (135)		F (135)	
Fireworks	†	0334	1.2G							F (135)		F (135)	
Fireworks	†	0335	1.3G							F (135)		F (135)	
Fireworks	†	0336	1.4G							F (135)		135	75 KG
Flares, aerial	†	0420	1.1G							F (135)		F (135)	
Flares, aerial	†	0421	1.2G							F (135)		F (135)	
Flares, aerial	†	0093	1.3G							F (135)		135	75 KG
Flares, aerial	†	0403	1.4G							F (135)		135	75 KG
Flares, surface	†	0418	1.1G							F (135)		F (135)	
Flares, surface	†	0419	1.2G							F (135)		F (135)	
Flares, surface	†	0092	1.3G							F (135)		135	75 KG
Flash powder	†	0094	1.1G							F (113)		F (113)	
Flash powder	†	0305	1.3G							F (113)		F (113)	

Fracturing devices, explosive	, without detonator for oil wells†	0099	1.1D					A2		F	F	F (134)	F (75 KG)
Fuse, detonating	, metal clad	0290	1.1D							F (139)		F (139)	
Fuse, detonating	, metal clad	0102	1.2D							F (139)		F (139)	
Fuse, detonating, mild effect	, metal clad	0104	1.4D							F (139)		139	75 KG
Fuse, igniter	, tubular, metal clad †	0103	1.4G							F (140)		140	75 KG
Fuse, non-detonating	†	0101	1.3G							F (140)		F (140)	
Fuzes, detonating	†	0106	1.1B							F (141)		F (141)	
Fuzes, detonating	with protective features †	0408	1.1D							F (141)		F (141)	
Fuzes, detonating	†	0107	1.2B							F (141)		F (141)	
Fuzes, detonating	with protective features †	0409	1.2D							F (141)		F (141)	
Fuzes, detonating	†	0257	1.4B							F (141)		141	75 KG
Fuzes, detonating	with protective features †	0410	1.4D							F (141)		141	75 KG
Fuzes, igniting	†	0316	1.3G							F (141)		F (141)	
Fuzes, igniting	†	0317	1.4G							F (141)		141	75 KG
Grenades	, hand or rifle, with bursting charge †	0284	1.1D							F (141)		F (141)	
Grenades	, hand or rifle, with bursting charge †	0292	1.1F							F (141)		F (141)	
Grenades	, hand or rifle, with bursting charge †	0285	1.2D							F (141)		F (141)	
Grenades	, hand or rifle, with bursting charge †	0293	1.2F							F (141)		F (141)	
Grenades, practice	, hand or rifle †	0372	1.2G							F (141)		F (141)	
Grenades, practice	, hand or rifle †	0318	1.3G							F (141)		F (141)	

Grenades, practice	, hand or rifle †	0452	1.4G							F (141)		141	75 KG
Guanyl nitrosaminoguanylidene hydrazine, wetted	with not less than 30% water, by mass	0113	1.1A					A211		F (110 a or b)		F (110 a or b)	
Guanyl nitrosaminoguanyltetrazene, wetted	with not less than 30% water, or mixture of alcohol and water, by mass	0114	1.1A					A211		F (110 a or b)		F (110 a or b)	
Gunpowder	, granular or as a meal	0027	1.1D							F (113)		F (113)	
Gunpowder in pellets		0028	1.1D							F (113)		F (113)	
Gunpowder, compressed		0028	1.1D							F (113)		F (113)	
Hexanitrodiphenylamine		0079	1.1D							F (112 b or c)		F (112 b or c)	
Hexanitrostilbene		0392	1.1D							F (112 b or c)		F (112 b or c)	
Hexogen and cyclotetramethylenetetranitramine mixture, desensitized	with not less than 10% phlegmatizer, by mass	0391	1.1D					A211		F (112 a, b, or c)		F (112 a, b, or c)	
Hexogen and cyclotetramethylenetetranitramine mixture, wetted	with not less than 15% water, by mass	0391	1.1D					A211		F (112 a, b, or c)		F (112 a, b, or c)	
Hexogen, desensitized		0483	1.1D							F (112 b or c)		F (112 b or c)	
Hexogen, wetted	with not less than 15% water, by mass	0072	1.1D					A211		F (112 a)		F (112 a)	
Hexolite	, dry or wetted with less than 15% water, by mass	0118	1.1D							F (112 a, b, or c)		F (112 a, b, or c)	

Hexotol	, dry or wetted with less than 15% water, by mass	0118	1.1D							F (112 a, b, or c)		F (112 a, b, or c)	
Hexotonal		0393	1.1D							F (112 b)		F (112 b)	
Hexyl		0079	1.1D							F (112 b or c)		F (112 b or c)	
HMX, desensitized		0484	1.1D							F (112 b or c)		F (112 b or c)	
HMX, wetted	with not less than 15% water, by mass	0226	1.1D					A211		F (112 a)		F (112 a)	
Hydroxybenzotriazole, anhydrous	, dry or wetted with less than 20% w	0508	1.3C							F	F	F	F
Igniters		0121	1.1G							F (142)		F (142)	
Igniters		0314	1.2G							F (142)		F (142)	
Igniters	†	0315	1.3G							F (142)		F (142)	
Igniters	†	0325	1.4G							F (142)		142	75 KG
Jet perforating guns, charged	, oil well, without detonator †	0124	1.1D							F (101)		F (101)	
Jet perforating guns, charged	, oil well, without detonator †	0494	1.4D					A24		F (101)		101	75 KG
Lead azide, wetted	with not less than 20% water, or mixture of alcohol and water, by mass	0129	1.1A					A211		F (112 a or b)		F (112 a or b)	
Lead styphnate, wetted	with not less than 20% water, or mixture of alcohol and water, by mass	0130	1.1A					A211		F (112 a or b)		F (112 a or b)	

Lead trinitroresorcinate, wetted	with not less than 20% water, or mixture of alcohol and water, by mass	0130	1.1A					A211		F (112 a or b)		F (112 a or b)	
Mannitol hexanitrate, wetted	with not less than 40% water, or mixture of alcohol and water, by mass	0133	1.1D					A211		F (112 a)		F (112 a)	
Mercaptotetrazol-1-acetic acid		0448	1.4C							F (114 b)		F (114 b)	F (75 KG)
Mercury fulminate, wetted	with not less than 20% water, or mixture of alcohol and water, by mass	0135	1.1A					A211		F (110 a or b)		F (110 a or b)	
Mines	with bursting charge †	0137	1.1D							F (130)		F (130)	
Mines	with bursting charge †	0136	1.1F							F (130)		F (130)	
Mines	with bursting charge †	0138	1.2D							F (130)		F (130)	
Mines	with bursting charge †	0294	1.2F							F (130)		F (130)	
Nitro urea		0147	1.1D							F (112 b)		F (112 b)	
Nitrobenzotriazol		0385	1.1D							F (112 b or c)		F (112 b or c)	
Nitrocellulose	, dry or wetted with less than 25% water (or alcohol), by mass	0340	1.1D							F (112 b or c)		F (112 b or c)	

Nitrocellulose	, unmodified or plasticized with less than 18% plasticizing substance, by mass	0341	1.1D							F (112 b)		F (112 b)	
Nitrocellulose, plasticized	with not less than 18% plasticizing substance, by mass	0343	1.3C					A213		F (111)		F (111)	
Nitrocellulose, wetted	with not less than 25% alcohol, by mass	0342	1.3C					A213		F (114 a)		F (114 a)	
Nitroglycerin solution in alcohol	with more than 1% but not more than 10% nitroglycerin	0144	1.1D							F (115)		F (115)	
Nitroglycerin, desensitized	with not less than 40% non-volatile water-insoluble phlegmatizer, by mass	0143	1.1D	6.1				A211, A217		F (115)		F (115)	
Nitroguanidine	, dry or wetted with less than 20% water, by mass	0282	1.1D							F (112 b or c)		F (112 b or c)	
Nitromannite, wetted	with not less than 40% water, or mixture of alcohol and water, by mass	0133	1.1D					A211		F (112 a)		F (112 a)	
Nitrostarch	, dry or wetted with less than 20% water, by mass	0146	1.1D							F (112 b or c)		F (112 b or c)	
Nitrotriazolone		0490	1.1D							F (112 b or c)		F (112 b or c)	

NTO		0490	1.1D							F (112 b or c)		F (112 b or c)	
Octogen, desensitized		0484	1.1D							F (112 b or c)		F (112 b or c)	
Octogen, wetted	with not less than 15% water, by mass	0226	1.1D					A211		F (112 a)		F (112 a)	
Octol	, dry or wetted with less than 15% water, by mass	0266	1.1D							F (112 a, b, or c)		F (112 a, b, or c)	
Octolite	, dry or wetted with less than 15% water, by mass	0266	1.1D							F (112 a, b, or c)		F (112 a, b, or c)	
Octonal		0496	1.1D							F (112 b or c)		F (112 b or c)	
Pentaerythrite tetranitrate	with not less than 7% wax, by mass	0411	1.1D					A210		F (112 b or c)		F (112 b or c)	
Pentaerythrite tetranitrate, desensitized	with not less than 15% phlegmatizer by mass	0150	1.1D					A211		F (112 a or b)		F (112 a or b)	
Pentaerythrite tetranitrate, wetted	with not less than 25% water, by mass	0150	1.1D					A211		F (112 a or b)		F (112 a or b)	
Pentaerythritol tetranitrate	with not less than 7% wax, by mass	0411	1.1D					A210		F (112 b or c)		F (112 b or c)	
Pentaerythritol tetranitrate, desensitized	with not less than 15% phlegmatizer, by mass	0150	1.1D					A211		F (112 a or b)		F (112 a or b)	
Pentaerythritol tetranitrate, wetted	with not less than 25% water, by mass	0150	1.1D					A211		F (112 a or b)		F (112 a or b)	
Pentolite	, dry or wetted with less than 15% water, by	0151	1.1D							F (112 a, b, or c)		F (112 a, b, or c)	

	mass												
PETN	with not less than 7% wax, by mass	0411	1.1D					A210		F (112 b or c)		F (112 b or c)	
PETN, desensitized	with not less than 15% phlegmatizer, by mass	0150	1.1D					A211		F (112 a or b)		F (112 a or b)	
PETN, wetted	with not less than 25% water, by mass	0150	1.1D					A211		F (112 a or b)		F (112 a or b)	
Picramide		0153	1.1D							F (112 b or c)		F (112 b or c)	
Picric acid	, dry or wetted with less than 30% water, by mass	0154	1.1D					A208		F (112 a, b, or c)		F (112 a, b, or c)	
Picrite	, dry or wetted with less than 20% water, by mass	0282	1.1D							F (112 a, b, or c)		F (112 a, b, or c)	
Picryl chloride		0155	1.1D					A208		F (112 b or c)		F (112 b or c)	
Powder cake, wetted	with not less than 17% alcohol, by mass †	0433	1.1C					A211		F (111)		F (111)	
Powder cake, wetted	with not less than 25% water, by mass †	0159	1.3C					A211		F (111)		F (111)	
Powder paste, wetted	with not less than 17% alcohol, by mass †	0433	1.1C					A211		F (111)		F (111)	
Powder paste, wetted	with not less than 25% water, by mass	0159	1.3C					A211		F (111)		F (111)	

Powder, smokeless	†	0160	1.1C							F (114 b)		F (114 b)	
Powder, smokeless	†	0161	1.3C							F (114 b)		F (114 b)	
Primers, cap type	†	0377	1.1B							F (133)		F (133)	
Primers, cap type	†	0378	1.4B							F (133)		133	75 KG
Primers, tubular	†	0319	1.3G							F (133)		F (133)	
Primers, tubular	†	0320	1.4G							F (133)		133	75 KG
Projectiles	with bursting charge †	0168	1.1D							F (130)		F (130)	
Projectiles	with bursting charge †	0167	1.1F							F (130)		F (130)	
Projectiles	with burster or expelling charge †	0346	1.2D							F (130)		F (130)	
Projectiles	with bursting charge †	0169	1.2D							F (130)		F (130)	
Projectiles	with burster or expelling charge †	0426	1.2F							F (130)		F (130)	
Projectiles	with bursting charge †	0324	1.2F							F (130)		F (130)	
Projectiles	with burster or expelling charge †	0434	1.2G							F (130)		F (130)	
Projectiles	, inert with tracer †	0424	1.3G							F (130)		F (130)	
Projectiles	with burster or expelling charge †	0347	1.4D							F (130)		130	75 KG
Projectiles	with bursting charge †	0344	1.4D							F (130)		130	75 KG
Projectiles	with burster or expelling charge †	0427	1.4F							F (130)		F (130)	
Projectiles	, inert with tracer †	0425	1.4G							F (130)		130	75 KG
Projectiles	with burster or expelling	0435	1.4G							F (130)		130	75 KG

	charge †												
Propellant, liquid	†	0497	1.1C					A206		F (115)		F (115)	
Propellant, liquid	†	0495	1.3C					A206		F (115)		F (115)	
Propellant, solid	†	0498	1.1C							F (114 b)		F (114 b)	
Propellant, solid	†	0499	1.3C							F (114 b)		F (114 b)	
Propellant, solid		0501	1.4C							F (114 b)		F (114 b)	
RDX and cyclotetramethylenetetranitramine mixture, desensitized	with not less than 10% phlegmatizer, by mass	0391	1.1D					A211		F (112 b or c)		F (112 b or c)	
RDX and cyclotetramethylenetetranitramine mixture, wetted	with not less than 15% water, by mass	0391	1.1D					A211		F (112 b or c)		F (112 b or c)	
RDX, desensitized		0483	1.1D							F (112 b or c)		F (112 b or c)	
RDX, wetted	with not less than 15% water, by mass	0072	1.1D					A211		F (112 a)		F (112 a)	
Rocket motors	†	0280	1.1C							F (130)		F (130)	
Rocket motors	†	0281	1.2C							F (130)		F (130)	
Rocket motors	†	0186	1.3C							F (130)		130	220 KG
Rocket motors with hypergolic liquids	with or without expelling charge †	0322	1.2L							F (101)		F (101)	
Rocket motors with hypergolic liquids	with or without expelling charge †	0250	1.3L							F (101)		F (101)	
Rocket motors, liquid fuelled	†	0395	1.2J							F (101)		F (101)	
Rocket motors, liquid fuelled	†	0396	1.3J							F (101)		F (101)	

Rockets	with bursting charge †	0181	1.1E							F (130)		F (130)	
Rockets	with bursting charge †	0180	1.1F							F (130)		F (130)	
Rockets	with expelling charge †	0436	1.2C							F (130)		F (130)	
Rockets	with inert head †	0502	1.2C							F (130)		F (130)	
Rockets	with bursting charge †	0182	1.2E							F (130)		F (130)	
Rockets	with bursting charge †	0295	1.2F							F (130)		F (130)	
Rockets	with expelling charge †	0437	1.3C							F (130)		F (130)	
Rockets	with inert head †	0183	1.3C							F (130)		F (130)	
Rockets	with expelling charge †	0438	1.4C							F (130)		130	75 KG
Rockets, line-throwing	†	0238	1.2G							F (130)		F (130)	
Rockets, line-throwing	†	0240	1.3G							F (130)		130	75 KG
Rockets, line-throwing	†	0453	1.4G							F (130)		130	75 KG
Rockets, liquid fuelled	with bursting charge †	0397	1.1J							F (101)		F (101)	
Rockets, liquid fuelled	with bursting charge †	0398	1.2J							F (101)		F (101)	
Samples, explosive*	, other than initiating explosives	0190	1							F (101)		F (101)	
Seat-belt pretensioners	†	0503	1.4G					A32, A56		F	F	135	75 KG
Seat-belt pretensioners	†	0503	1.4G					A32, A56		F (135)	F (75 KG)	F	F
Signal devices, hand	†	0191	1.4G							F (135)		135	75 KG

Signals, distress	, ship †	0194	1.1G							F (135)		F (135)	
Signals, distress	, ship †	0195	1.3G							F (135)		135	75 KG
Signals, distress	, ship †	0505	1.4G							F	F	135	75 KG
Signals, railway track, explosive	†	0192	1.1G							F (135)		F (135)	
Signals, railway track, explosive	†	0492	1.3G							F (135)		F (135)	
Signals, railway track, explosive	†	0493	1.4G							F (135)		135	75 KG
Signals, smoke	†	0196	1.1G							F (135)		F (135)	
Signals, smoke	†	0313	1.2G							F (135)		F (135)	
Signals, smoke	†	0487	1.3G							F (135)		F (135)	
Signals, smoke	†	0197	1.4G							F (135)		135	75 KG
Sodium dinitro-o-cresolate	, dry or wetted with less than 15% water, by mass	0234	1.3C					A208		F (114 a or b)		F (114 a or b)	
Sodium picramate	, dry or wetted with less than 20% water, by mass	0235	1.3C							F (114 a or b)		F (114 a or b)	
Sounding devices, explosive	†	0374	1.1D							F (134)		F (134)	
Sounding devices, explosive	†	0296	1.1F							F (134)		F (134)	
Sounding devices, explosive	†	0375	1.2D							F (134)		F (134)	
Sounding devices, explosive	†	0204	1.2F							F (134)		F (134)	
Styphnic acid	, dry or wetted with less than 20% water, or mixture of alcohol and water, by mass	0219	1.1D							F (112 a, b, or c)		F (112 a, b, or c)	

Styphnic acid, wetted	with not less than 20% water, or mixture of alcohol and water, by mass	0394	1.1D							F (112 a)		F (112 a)	
Substances, EVI, n.o.s.*	†	0482	1.5D							F (101)		F (101)	
Substances, explosive, n.o.s.*		0473	1.1A							F (101)		F (101)	
Substances, explosive, n.o.s.*		0474	1.1C					A62		F (101)		F (101)	
Substances, explosive, n.o.s.*		0475	1.1D					A62		F (101)		F (101)	
Substances, explosive, n.o.s.*		0476	1.1G					A62		F (101)		F (101)	
Substances, explosive, n.o.s.*		0357	1.1L					A62		F (101)		F (101)	
Substances, explosive, n.o.s.*		0358	1.2L					A62		F (101)		F (101)	
Substances, explosive, n.o.s.*		0477	1.3C					A62		F (101)		F (101)	
Substances, explosive, n.o.s.*		0478	1.3G					A62		F (101)		F (101)	
Substances, explosive, n.o.s.*		0359	1.3L					A62		F (101)		F (101)	
Substances, explosive, n.o.s.*		0479	1.4C					A62		F (101)		101	75 KG
Substances, explosive, n.o.s.*		0480	1.4D					A62		F (101)		101	75 KG
Substances, explosive, n.o.s.*		0485	1.4G					A62		F (101)		101	75 KG
Substances, explosive, very insensitive, n.o.s.*	†	0482	1.5D							F (101)		F (101)	
Tetranitroaniline		0207	1.1D							F (112 b or c)		F (112 b or c)	

Tetrazene, wetted	with not less than 30% water, or mixture of alcohol and water, by mass	0114	1.1A					A211		F (110 a or b)		F (110 a or b)	
Tetrazol-1-acetic acid		0407	1.4C							F (114 b)		F (114 b)	F (75 KG)
Tetrazole		0504	1.1D							F (112 c)		F (112 c)	
Tetryl		0208	1.1D							F (112 b or c)		F (112 b or c)	
TNT	, dry or wetted with less than 30% water, by mass	0209	1.1D					A208		F (112 b or c)		F (112 b or c)	
TNT and hexanitrostilbene mixture		0388	1.1D							F (112 b or c)		F (112 b or c)	
TNT and trinitrobenzene mixture		0388	1.1D							F (112 b or c)		F (112 b or c)	
TNT mixture containing trinitrobenzene and hexanitrostilbene		0389	1.1D							F (112 b or c)		F (112 b or c)	
Torpedoes	with bursting charge †	0451	1.1D							F (130)		F (130)	
Torpedoes	with bursting charge †	0329	1.1E							F (130)		F (130)	
Torpedoes	with bursting charge †	0330	1.1F							F (130)		F (130)	
Torpedoes, liquid fuelled	with or without bursting charge †	0449	1.1J							F (101)		F (101)	
Torpedoes, liquid fuelled	with inert head †	0450	1.3J							F (101)		F (101)	

Tracers for ammunition	†	0212	1.3G							F (133)		F (133)	
Tracers for ammunition	†	0306	1.4G							F (133)		133	75 KG
Trinitroaniline		0153	1.1D							F (112 b or c)		F (112 b or c)	
Trinitroanisole		0213	1.1D							F (112 b or c)		F (112 b or c)	
Trinitrobenzene	, dry or wetted with less than 30% water, by mass	0214	1.1D					A208		F (112 a, b, or c)		F (112 a, b, or c)	
Trinitrobenzenesulphonic acid		0386	1.1D							F (112 b or c)		F (112 b or c)	
Trinitrobenzoic acid	, dry or wetted with less than 30% water, by mass	0215	1.1D					A208		F (112 a, b, or c)		F (112 a, b, or c)	
Trinitrochlorobenzene		0155	1.1D					A208		F (112 b or c)		F (112 b or c)	
Trinitrofluorenone		0387	1.1D							F (112 b or c)		F (112 b or c)	
Trinitro-m-cresol		0216	1.1D							F (112 b or c)		F (112 b or c)	
Trinitronaphthalene		0217	1.1D							F (112 b or c)		F (112 b or c)	
Trinitrophenetole		0218	1.1D							F (112 b or c)		F (112 b or c)	
Trinitrophenol	, dry or wetted with less than 30% water, by mass	0154	1.1D					A208		F (112 a, b, or c)		F (112 a, b, or c)	
Trinitrophenylmethylnitramine		0208	1.1D							F (112 b or c)		F (112 b or c)	
Trinitroresorcinol	, dry or wetted with less than 20% water, or mixture of alcohol and water, by mass	0219	1.1D							F (112 a, b, or c)		F (112 a, b, or c)	

Trinitroresorcinol, wetted	with not less than 20% water, or mixture of alcohol and water, by mass	0394	1.1D							F (112 a)		F (112 a)	
Trinitrotoluene	, dry or wetted with less than 30% water, by mass	0209	1.1D					A208		F (112 b or c)		F (112 b or c)	
Trinitrotoluene and hexanitrostilbene mixture		0388	1.1D							F (112 b or c)		F (112 b or c)	
Trinitrotoluene and trinitrobenzene mixture		0388	1.1D							F (112 b or c)		F (112 b or c)	
Trinitrotoluene mixture containing trinitrobenzene and hexanitrostilbene		0389	1.1D							F (112 b or c)		F (112 b or c)	
Tritonal		0390	1.1D							F (112 b or c)		F (112 b or c)	
Urea nitrate	, dry or wetted with less than 20% water, by mass	0220	1.1D					A209		F (112 a, b, or c)		F (112 a, b, or c)	
Warheads, rocket	with bursting charge †	0286	1.1D							F (130)		F (130)	
Warheads, rocket	with bursting charge †	0369	1.1F							F (130)		F (130)	
Warheads, rocket	with bursting charge †	0287	1.2D							F (130)		F (130)	
Warheads, rocket	with burster or expelling charge †	0370	1.4D							F (130)		130	75 KG
Warheads, rocket	with burster or expelling charge †	0371	1.4F							F (130)		F (130)	

Warheads, torpedo	with bursting charge †	0221	1.1D							F (130)		F (130)	
Zirconium picramate	, dry or wetted with less than 20% water, by mass	0236	1.3C							F (114 a or b)		F (114 a or b)	

Special Packing Provisions for Dangerous Goods of Class 1

1.1 General Requirements

1.1.1 The general packing requirements of 4;1 must be met.

1.1.2 All packaging for Class 1 explosives must be so designed and constructed that:

a) they will protect the explosives, prevent them from escaping and cause no increase in the risk of unintended ignition or initiation when subjected to normal conditions of transport including foreseeable changes in temperature, humidity and pressure;
b) the complete package can be handled safely in normal conditions of transport; and
c) packages will withstand any loading imposed on them by foreseeable stacking to which they will be subject during transport so that they do not add to the risk presented by the explosives, the containment function of the packagings is not harmed, and they are not distorted in a way or to an extent which will reduce their strength or cause instability of a stack

1.1.3 All explosives substances and articles, as prepared for transport, must have been classified in accordance with the procedures detailed in 2;1.5.

General Packing Provisions

2.1.1 The general provisions detailed below are in additions to those in Part 4, Chapter 1.

2.1.2 The closure device of packaging containing liquid explosives must ensure a double protection against leakage.

2.1.3 The closure device of metal drums must include a suitable gasket; if a closure device includes a screw – thread, the ingress of explosive substances into the screw – thread must be prevented.

2.1.4 Packagings for water soluble substances must be water – resistant.

2.1.5 When the packaging includes double envelope filled with water which may freeze during transport, a sufficient quantity of an anti- freeze agent must be added to the water to prevent freezing. Anti – freeze that could create a fire hazard because of its inherent flammability must not be used.

2.1.6 Nails, staples and other closure devices made of metal without protective covering must not penetrate to the inside of the outer packaging unless the inner packaging adequately protects the explosives against contact with the metal.

2.1.7 Inner packaging, fittings and cushioning materials and the placing of explosive substances or articles in packages must be accomplished in a manner which prevents the

explosive substance or articles from becoming loose in the outer packaging under normal conditions of transport. Metallic components of articles must be prevented from making contact with metal packagings. Articles containing explosive substances not enclosed in an outer casing must be separated from each other in order to prevent friction and impact. Padding, trays, partitioning the inner or outer packaging, mouldings or receptacles may be used for this purpose.

2.1.8 Packagings must be made of materials compatible with, and impermeable to, the explosives contained in the package, so that neither interaction between the explosives and the packaging materials, nor leakage, causes the explosive to become unsafe to transport, or the hazard division or compatibility group to change.

2.1.9 The ingress of explosive substances into the recesses of seamed metal packagings must be prevented.

2.1.10 Plastic packagings must not be liable to generate or accumulate sufficient static electricity so that a discharge could cause the packaged explosive substances or articles to initiate, ignite or function

2.1.11 Explosive substances must not be packed in inner or outer packagings where the difference in internal and external pressures, due to thermal or other effects, could cause an explosion or rupture of the package

2.1.12 Whenever loose explosive substances or the explosive substance of an uncased or partly cased article may come into contact with the inner surface of metal packagings (1A2, 1B2, 4A,4B and metal receptacles), the metal packaging must be provided with an inner liner or coating (see 1.1.3)._

2.1.13 Packing Instruction 101 may be used for any explosive provided the package has been approved by an appropriate national authority regardless of whether the packaging complies with the packing instruction assignment in the Dangerous Goods List.

2.1.14 Electro –explosive devices must be adequately protected against electro – magnetic radiation and stray currents.

2.1.15 Large and robust explosive articles, normally intended for military use, without their means of initiation or with their means of initiation containing at least two effective protective features, may be carried unpackaged. When such articles have propelling charges or are self-propelled, their ignition systems must be protected against stimuli encountered during normal conditions of transport. A negative result in Test Series 4 on an unpackaged article indicates that the article can be considered for transport unpackaged. Such unpackaged articles may be fixed to cradles or contained in crates or other suitable handling, storage or launching devices in such a way that they will not become loose during normal conditions of transport.

2.1.16 Where such large explosive articles are, as part of their operational safety and suitability tests, subject to test regimes that meet the intentions of these Instructions and such tests have been successfully undertaken, the appropriate national authority may approve such articles to be transported under these instructions.

Note 1 – The term receptacles used in the Inner and Intermediate packaging columns of this table includes boxes , bottles, cans, drums, jars and tubes, including any means of closure.

Note 2 – Reels are devices made of plastic, wood, fibreboard, metal or other suitable material comprising a central spindle with, or without, sidewalls at each end of the spindle. Articles and substance can be wound onto the spindle and may be retained by side walls.

Note 3 – Trays are sheets or metal, plastics, wood fibreboard or other suitable material which are placed in the inner, intermediate or outer packaging and achieve a close –fit in such packaging. The surface of the tray may be shaped so that packagings or articles can be inserted, held secure and separated from each other.

SPECIAL PROVISIONS

Class 1

TI's	UN	
A1		This commodity may be transported on passenger aircraft, only with the prior approval of the appropriate authority of the State of Origin under the written conditions established by that authority. The conditions must include the quantity limitations and packing requirements and this must comply with S-3;1. 2.2 Of the Supplement. A copy of the document of approval , showing the quantity limitations and the packing requirements, must accompany the consignment. The commodity may be carried on cargo aircraft in accordance with columns 12 and 13 of table 3-1. When States, other than the State of Origin, have notified ICAO that they require prior approval of shipments made under this special provision , approval must also be obtained from these states.
A2		This commodity may be transported on passenger aircraft and cargo aircraft, only with the prior approval of the appropriate approval of the State of Origin under the written conditions established by the authority. Where States, other than the State of Origin, have notified ICAO that they require prior approval of shipments made under this special provision, approval must also be obtained from the States of transit, over flight and destinations and of the State of the Operator, as appropriate. In each case the conditions must include the quantity limitations and packing requirements and these must comply with S3-;1.2.3 of the Supplement. A copy of the document(s) of approval, showing the quantity limitations and the packaging requirements must accompany the consignment.
A22		The classification of this substance will vary with particle size and packaging, but borderlines have not been experimentally determined. The appropriate classification must be made using the procedure for the classification of explosives.
A24		The total quantity of explosive substance contained in the shaped charges and the detonating cord must not exceed 10 kg per assembled perforating gun.
A32		Air bag inflators, air bag modules or seat belt pretensioners installed in conveyances or in completed conveyance components such as steering columns, door panels, seats, etc. which are not capable of inadvertent activation are not subject to these instructions. The words "not restricted" and the special provision A32 must be provided on the air waybill when an air waybill is issued.
A56		This entry applies to articles which contain Class 1 explosive substances and which may also contain dangerous goods of other classes. These articles are used as lifesaving vehicle air bag inflators or air bag modules or seat belt pretentioners.
A62	(178)	This designation must be used only when no other appropriate designation exists in the list and then only with the approval of the appropriate authority of the State of Origin
A132	(204)	Articles containing smoke-producing substance(s) corrosive according to the criteria for Class must be labeled with a "Corrosive" subsidiary risk label.
S206		Unless it can be demonstrated by testing that the sensitivity of the substance in its frozen state is no greater than in its liquid state, the substance must remain liquid during normal transport conditions. It must not freeze at temperatures above !15°C.
S207		The word *agent* may be used instead of *explosive* when approved by the appropriate authorities of all the States concerned

S208 This substance may be classified in Division 4.1 provided it is with not less than 10 per cent water by mass and the quantity per package does not exceed 500 g.

S209 This substance may be classified in Division 4.1 provided it is with not less than 10 per cent water by mass and the quantity per package does not exceed 11.5 kg.

S210 The phlegmatized substance must be significantly less sensitive than dry PETN.

S211 This substance, when containing less alcohol, water or phlegmatizer than specified, must not be transported unless specifically authorized by the appropriate national authority.

S212 Any explosives, blasting, type C containing chlorates, must be segregated from explosives containing ammonium nitrate or other ammonium salts.

S213 Nitrocellulose with not less than 25 per cent alcohol by mass or with not less than 18 per cent plasticizing substance by mass and not more than 12.6 per cent nitrogen by dry mass, packed in receptacles so constructed that explosion by reason of increased internal pressure is not possible, may be appropriately classified in Division 4.1 — UN number 2556 or 2557.

S217 Lactose or glucose or similar materials, may be used as a phlegmatizer provided that the substance contains not less than 90 per cent, by mass, of phlegmatizer. The appropriate national authority may authorize these mixtures to be classified in Division 4.1 on the basis of a Series 6(c) test on at least three packages as prepared for transport. Mixtures containing at least 98 per cent, by mass, of phlegmatizer are not subject to these Instructions. Packages containing mixtures with not less than 90 per cent, by mass, of phlegmatizer need not bear a “Toxic” subsidiary risk label.

A222 Samples of new or existing explosive substances or articles may be carried only under the conditions specifically designated by the appropriate authorities of all States concerned for purposes including testing, classification, research and development, quality control or as a commercial sample. Explosive samples which are not wetted or desensitized must be limited to 10 kg in small packages as specified by the appropriate national authorities. Explosive samples which are wetted or desensitized must be limited to 25 kg.

A223 This substance is toxic by inhalation. Refer to Appendix 7.

CLASS 1 PACKING INSTRUCTIONS

Packing Instruction 101
Passenger aircraft
Only packaging which are approved by the competent authority may be used. The State's distinguishing sign for motor vehicles in international traffic of the country for which the authority acts, must be marked on the transport documents as follows: "Packaging approved by the competent authority of …"

Packing Instructions 110(a)

General requirements

Part 4, Chapter 1.1,2,3 requirements must be met, including:

Packaging	
Inner Packaging	*Intermediate packaging*
Bags: Plastic Rubber Textile Textile, plastic coated or lined Textile, rubberized	**Bags:** Plastic Rubber Textile, plastic coated or lined Textile, rubberized
	Receptacles : Metal Plastic

ADDITIONAL PACKING REQUIREMENTS

The intermediate packaging must be filled with water saturated material such as an anti-freeze solution or wetted cushioning.

OUTER PACKAGINGS

Drums

Plastics, removable head
(1H2)
Steel (1A2)

ADDITIONAL PACKING REQUIREMENTS

Outer packaging must be filled with water saturated material such as an anti-freeze solution or wetted cushioning. Outer packaging must be constructed and sealed to prevent evaporation of the wetting solutions except for UN0224 when carried dry.

Packing Instructions 110(b)

General requirements

Part 4, Chapter 1.1,2,31.1,2,3 requirements must be met, including:

Packaging	
Inner Packaging	*Intermediate packaging*
Bags: Rubber, conductive Plastics, conductive	**Dividing partitions:** Metal Wood Plastic Fibreboard
Receptacles: Metal Wood Rubber, conductive Plastics, conductive	

ADDITIONAL PACKING REQUIREMENTS

For UN0074, UN0113, UN0114, UN0129, UN0130, UN0135,UN0224 the following conditions must be met:

Inner packagings must not contain more than 50g of explosive substance (quantity corresponding to dry substance)

Compartments between dividing partitions must not contain more than one inner packaging, firmly fitted;

OUTER PACKAGINGS

Boxes

natural wood, sift-proof wall
(4C2)
plywood (4D)
reconstituted wood (4F)

ADDITIONAL PACKING REQUIREMENTS

For UN0074, UN0113, UN0114, UN0129, UN0130, UN0135,UN0224 the following

conditions must be met:

The outer packaging may be partitioned up to 25 compartments

Packing Instructions 111

General requirements

Part 4, Chapter 1.1,2,3 requirements must be met, including:

Packaging	
Inner Packaging	*Intermediate packaging*
Bags: Paper, waterproofed Plastics Textile, rubberized	Not necessary
Sheets: Plastic Textile, rubberized	

ADDITIONAL PACKING REQUIREMENTS

For UN0159, inner packagings are not required when metal (1A2 or 1B2) or plastic (1H2) drums are used as outer packaging.

OUTER PACKAGINGS

Boxes	*Drums*
Aluminum (4B)	Aluminum, removable head (1B2)
Fibreboard (4G)	Fibreboard (1G)
Natural wood, ordinary (4C1)	Plastic, removable head (1H2)
Natural wood, sift-proof (4C2)	Plywood (1D)
Plastic, expanded (4H1)	Steel, removable head (1A2)
Plastic, solid (4H2)	
Plywood (4D)	
Reconstituted wood (4F)	
Steel (4A)	

Packing Instructions 112(a)

General requirements

Part 4, Chapter 1.1,2,3 requirements must be met, including:
Compatibility requirements

— This packing instruction applies to solid wetted, 1.1D

Packaging	
Inner Packaging	*Intermediate packaging*
Bags: Paper, multiwall, water resistant Plastics Textile Textile, rubberized Woven plastics	**Bags:** Plastics Textile, plastic coated or lined
Receptacles: Metal Plastics	**Receptacles:** Metal Plastics

ADDITIONAL PACKING REQUIREMENTS

Intermediate packagings are not required if leak proof removable head drums are used as the outer packaging

For UN0004, UN0076, UN0078, UN0154, 0219, and 0394, packagings must be lead free

For UN0072 and UN0226 intermediate packagings are not required

OUTER PACKAGINGS

Boxes	*Drums*
Aluminum (4B)	Aluminum, removable head (1B2)
Fibreboard (4G)	Fibreboard (1G)
Natural wood, ordinary (4C1)	Plastic, removable head (1H2)
Natural wood, sift-proof (4C2)	Plywood (1D)
Plastic, expanded (4H1)	Steel, removable head (1A2)
Plastic, solid (4H2)	
Plywood (4D)	
Reconstituted wood (4F)	
Steel (4A)	

Packing Instructions 112(b)

General requirements

Part 4, Chapter 1.1,2,3 requirements must be met, including:
Compatibility requirements

— This packing instruction applies to solid dry, other than powder 1.1D

Packaging	
Inner Packaging	*Intermediate packaging*
Bags: Paper, kaft Paper, multiwall, water resistant Plastics Textile Textile, rubberised Woven plastics	**Bags (UN0150 only):** Plastics Textile, plastic coated or lined

ADDITIONAL PACKING REQUIREMENTS

For UN0004, UN0076, UN0078, UN0154, UN0216, UN0219 and UN0386 packings must be lead free

For UN0209, bags, sift-proof (5H2) are recommended for flake or prilled TNT in the dry state and a maximum net mass of 30 kg.

For UN0222 inner packagings are not required when the outer packaging is a bag

OUTER PACKAGINGS

Boxes	*Drums*	*Bags*
Aluminum (4B)	Aluminum, removable head (1B2)	Paper, multiwall, water resistant (5M2)
Fibreboard (4G)	Fibre (1G)	Plastics, film (5H4)
Natural wood, ordinary (4C1)	Plastic, removable head (1H2)	Textile, water resistant (5L3)
Natural wood, sift-proof (4C2)	Plywood (1D)	Textile, sift-proof (5L2)
Plastic, expanded (4H1)	Steel, removable head (1A2)	Woven plastics, sift-proof (5H2)
Plastic, solid (4H2)		Woven plastics, water – resistant (5H3)
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

Packing Instructions 112(c)

General requirements

Part 4, Chapter 1.1,2,3 requirements must be met, including:
Compatibility requirements

— This packing instruction applies to solid dry powder 1.1D

Packaging	
Inner Packaging	*Intermediate packaging*
Bags: Paper, multiwall, water resistant Plastics Woven plastics	**Bags:** Paper, multiwall, water resistant with inner lining plastics
Receptacles: Metal Plastics Wood fibreboard	**Receptacles:** Metal Plastics

ADDITIONAL PACKING REQUIREMENTS

Inner packagings are not required if drums are used as the outer packaging

The packaging must be sift-proof

For UN0004, UN0076, UN0078, UN0154, UN0216, UN0219 and UN0386 packings must be lead free

For UN0209, bags, sift-proof (5H2) are recommended for flake or prilled TNT in the dry state and a maximum net mass of 30 kg

For UN0504, metal packagings must not be used

OUTER PACKAGINGS

Boxes	*Drums*
Fibreboard (4G)	Aluminum, removable head (1B2)
Natural wood, ordinary (4C1)	Fibre (1G)
Natural wood, sift-proof (4C2)	Plastic, removable head (1H2)
Plastic, solid (4H2)	Plywood (1D)
Plywood (4D)	Steel, removable head (1A2)
Reconstituted wood (4F)	
Steel (4A)	

Packing Instructions 113

General requirements

Part 4, Chapter 1.1,2,3 requirements must be met, including:

Packaging	
Inner Packaging	*Intermediate packaging*
Bags: Paper, Plastics Textile, rubberised	Not necessary
Receptacles: Fibreboard Metal Plastics Wood	

ADDITIONAL PACKING REQUIREMENTS

Packaging must be sift-proof

For UN0094 and UN0305, no more than 50g of substance must be packed in an inner packaging

For UN0027, inner packagings are not necessary when drums are used as the outer packaging

For UN0028, paper kraft or waxed paper sheets may be used as inner packagings

OUTER PACKAGINGS

Boxes	*Drums*
Aluminum (4B)	Aluminum, removable head (1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood, ordinary (4C1)	Plastic, removable head (1H2)
Natural wood, sift-proof (4C2)	Plywood (1D)
Plastic, solid (4H2)	Steel, removable head (1A2)
Plywood (4D)	
Reconstituted wood (4F)	
Steel (4A)	

Packing Instructions 114(a)

General requirements

Part 4, Chapter 1.1,2,3 requirements must be met, including:

Packaging	
Inner Packaging	*Intermediate packaging*
Bags: Plastics, woven Plastics Textile	**Bags:** Plastics Textile, plastic coated or lined
Receptacles: Metal Plastic	**Receptacles:** Metal Plastic

ADDITIONAL PACKING REQUIREMENTS

Intermediate packagings are not required if leakproof removable head drums are used as the outer packaging

For UN 0077, 0132, 0234, 0235 and 0236, packagings shall be lead free

For UN 0342, inner packagings are not required when metal (1A2 or 1B2) or plastics (1H2) drums are used as outer packages

OUTER PACKAGINGS

Boxes	*Drums*
Fibreboard (4G)	Aluminum, removable head (1B2)
Natural wood, ordinary (4C1)	Fibreboard (1G)
Natural wood, sift-proof (4C2)	Plastic, removable head (1H2)
Plastic, solid (4H2)	Plywood (1D)
Plywood (4D)	Steel, removable head (1A2)
Reconstituted wood (4F)	
Steel (4A)	

Packing Instructions 115

General requirements

Part 4, Chapter 1.1,2,3 requirements must be met, including:

Packaging	
Inner Packaging	*Intermediate packaging*
Receptacles: Plastics	**Bags:** Plastics in metal receptacles
	Drums: Metal

ADDITIONAL PACKING REQUIREMENTS

For UN 0144, intermediate packagings are not required, metal receptacles may be used as inner packagings, absorbent cushioning material must be inserted, fibreboard boxes (4G) may be used as outer packaging and aluminum drums, removable head (1B2) must not be used.

For UN0075, UN0143, UN0495 and UN0497, when boxes are used as the outer packagings, inner packagings must have taped screw cap closures and be not more than 5 litres capacity each. Inner packagings must be surrounded with non-combustible absorbent cushioning material. The amount of absorbent cushioning material must be sufficient to absorb the liquid contents. Metal receptacles must be cushioned from each other. Net mass of propellant is a limited to 30 kg for each package when outer packagings are boxes.

For UN0075, UN0143, UN0495 and UN0497, when drums are used as the outer packaging and when intermediate packagings are drums, they must be surrounded with non- combustible cushioning material in a quantity sufficient to absorb the liquid contents. A composite packaging consisting of a plastic receptacle in a metal drum may be used instead of the inner and intermediate packagings. The net volume or propellant in each package must not exceed 120 litres. Drums can only be used as intermediate packagings when drums are used as outer packagings.

For UN0075, UN0143, UN0495 and UN0497 bags must be used as intermediate packaging when boxes used as outer packagings.

OUTER PACKAGINGS

Boxes	*Drums*
Natural wood, ordinary (4C1)	Aluminum, removable head (1B2)
Natural wood, sift-proof (4C2)	Fibre (1G)
Plywood (4D)	Plastic, removable head (1H2)
Reconstituted wood (4F)	Plywood (1D)
	Steel, removable head (1A2)

Packing Instructions 116

General requirements

Part 4, Chapter 1.1,2,3 requirements must be met, including:

Packaging	
Inner Packaging	*Intermediate packaging*
Bags: Paper, water and oil resistant Plastics Textile, plastic coated or lined Woven plastics, sift –proof	Not necessary
Receptacles: Fibreboard, water resistant Metal Plastics Wood, sift-proof	
Sheets: Paper, water resistant Paper, waxed Plastics	

ADDITIONAL PACKING REQUIREMENTS

For UN0082, UN0241, UN0331 and 0332, inner packagings are not required if leakproof removable head drums are used as the outer packaging or when the explosive is contained in a material impervious to liquid.

UN0081, inner packagings are not required when contained in rigid plastics which is impervious to nitric esters

For UN0331, inner packaging are not required when bags (5H2), (5H3), or (5H4) are used as outer packagings

OUTER PACKAGINGS

Boxes	*Drums*	*Bags*	*Jerricans*
Aluminum (4B)	Aluminum, removable head (1B2)	Paper, mulitwall, water resistant (5M2)	Plastics, removable head (3H2)
Fibreboard (4G)	Fibre (1G)	Plastics, film (5H4)	Steel, removable hear (3A2)
Natural wood, ordinary (4C1)	Plastic, removable head (1H2)	Textile, sift-proof (5L2)	
Natural wood, sift-proof (4C2)	Plywood (1D)	Textile, water resistant (5L3)	
Plastic, solid (4H2)	Steel, removable head (1A2)	Woven plastics (5H1)	
Plywood (4D)			
Reconstituted wood (4F)			
Steel (4A)			

ADDITIONAL PACKING REQUIREMENTS

For UN0082, UN0241, UN0331 and UN0332 bags (5H2 or 5H3) may be used as outer packagings

For UN0081, bags must not be used as outer packagings

Packing Instruction 130

Passenger and Cargo aircraft only

General requirements

Part 4, Chapter 1.1, ,2,3, requirements

Packaging				
Material	*Inner Packaging*	*Intermediate packaging*	*Total net Quantity for PASSENGER*	*Total net Quantity for CARGO*
UN 0240, 0297,0300, 0301,0303, 0338, 0339, 0344,0347, 0362,0363, 0370,0412, 0425,0435, 0437,0438, 0453, 0459	Not necessary	Not necessary	Forbidden	75 Kg
UN 0012, 0014, 0345, 0460			25 Kg	100 Kg
UN0186			Forbidden	220 Kg

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

The following applies to UN Nos. 0006, 0009, 0010, 0015, 0016, 0018, 0019, 0034, 0035, 0038, 0039, 0048, 0056, 0137, 0138, 0168, 0169, 0171, 0181, 0182, 0183, 0186, 0221, 0243, 0244, 0245, 0246, 0254, 0280, 0281, 0286, 0287, 0297, 0299, 0300, 0301, 0303, 0321, 0328, 0329, 0344, 0345, 0346, 0347, 0362, 0363, 0370, 0412, 0424, 0425, 0434, 0435, 0436, 0437, 0438, 0451, 0488 and 0502: Large and robust explosives articles, normally intended for military use, without their means of initiation or with their means of initiation containing at least two effective protective features, may be carried unpackaged. When such articles have propelling charges or are self-propelled, their ignition systems must be protected against stimuli encountered during normal conditions of transport. A negative result in Test Series 4 on an unpackaged article indicates that the article can be considered for transport unpackaged. Such unpackaged articles may be fixed to cradles or contained in crates or other suitable handling devices.

[UN0238 is listed in TIs BUT NOT in UN, UN0502 has been added as it is in UN but not TIs]

[All the UN nos. marked in red are Forbidden/Forbidden BUT appear in the current PI]

OUTER PACKAGINGS

Boxes	*Drums*
Aluminum (4B)	Aluminum (1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Plastic (1H2)
Plastic (4H1, 4H2)	Plywood (1D)
Plywood (4D)	Steel (1A2)
Reconstituted wood (4F)	
Steel (4A)	

Packing Instruction 131

Cargo aircraft

General requirements

Part 4, Chapter 1.1, ,2,3, requirements must be met

Packaging		
Material	*Total Quantity per Package PASSENGER*	*Total Quantity per Package CARGO*
UN 0255, 0267, 0361	Forbidden	75 Kg
UN 0455, 0456, 0500	25 Kg	100 Kg

INNER PACKAGINGS OF COMBINATION PACKAGINGS

Bags	*Receptacles*	*Reels*
Paper,kraft	Fibreboard	
Plastics	Metal	
	Plastics	
	wood	

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

For UN Nos. 0029, 0267, and 0455, bags and reels must not be used as inner packaging

OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes	*Drums*
Aluminum (4B)	Aluminum (1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Plastic (1H2)
Plastic (4H1, 4H2)	Plywood (1D)
Plywood (4D)	Steel (1A2)
Reconstituted wood (4F)	
Steel (4A)	

Packing Instructions 132(a)

General requirements

Part 4, Chapter 1.1,2,3 requirements must be met, including:

Compatibility requirements

— This packing instruction applies to articles consisting of closed metal, plastics, or fibreboard casings that contain a detonating explosive, or consisting of plastics – bonded detonating explosive

Packaging	
Inner Packaging	*Intermediate packaging*
Not necessary	Not necessary

OUTER PACKAGINGS

Boxes
Aluminum (4B)
Fibreboard (4G)
Natural wood, ordinary (4C1)
Natural wood, sift-proof
(4C2)
Plastic, solid (4H2)
Plywood (4D)
Reconstituted wood (4F)
Steel (4A)

Packing Instructions 132(b)

General requirements

Part 4, Chapter 1.1,2,3 requirements must be met, including:

Compatibility requirements

— This packing instruction applies to articles without closed casings

Packaging	
Inner Packaging	*Intermediate packaging*
Receptacles: Fibreboard Metal Plastics	Not necessary
Sheets: Plastic Paper	

OUTER PACKAGINGS

Boxes
Aluminum (4B)
Fibreboard (4G)
Natural wood, ordinary (4C1)
Natural wood, sift-proof (4C2)
Plastic, solid (4H2)
Plywood (4D)
Reconstituted wood (4F)
Steel (4A)

Packing Instruction 133

Passenger and Cargo aircraft

General requirements

Part 4, Chapter 1.1, ,2,3, requirements must be met

Packaging		
Material	*Total Quantity per Package PASSENGER*	*Total Quantity per Package CARGO*
UN 0306, 0320, 0365, 0378,	Forbidden	75 Kg
UN0044, UN0366,UN0376	25 Kg	100 Kg

INNER PACKAGINGS OF COMBINATION PACKAGINGS

Trays fitted with dividing partitions	*Receptacles*
Fibreboard	Fibreboard
Wood	Metal
Plastics	Plastics
	Wood

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Receptacles are only required as intermediate packaging when the inner packaging are trays

For UN Nos. 0043, 0212, and 0225, 0268, 0306, trays must not be used as inner packaging

OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes

Aluminum (4B)
Fibreboard (4G)
Natural wood (4C1, 4C2)
Plastic (, 4H2)
Plywood (4D)
Reconstituted wood (4F)
Steel (4A)

Packing Instruction 134

Passenger and cargo only

General requirements

Part 4, Chapter 1.1, 2,3, requirements must be met

Packaging		
Material	*Total Quantity per Package PASSENGER*	*Total Quantity per Package CARGO*
UN 0275, 0276, 0278	Forbidden	75 kg
UN 0070, 0173, 0174, 0323	25Kg	100 Kg

INNER PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Bags	*Receptacles*	*Sheets*	*Tubes*
Water resistant	Fibreboard	Fibreboard, corrugated	fibreboard
	Metal		
	Plastics		
	Wood		

OUTER PACKAGINGS

Boxes	*Drums*
Aluminum (4B)	Aluminum (1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Plastics (1H2)
Plastics (4H1, 4H2)	Steel (1A2)
Plywood (4D)	Plywood (1D)
Reconstituted wood (4F)	
Steel (4A)	

Packing Instruction 135

Passenger and Cargo aircraft

General requirements

Part 4, Chapter 1.1,1.1.9,2,3,3.1-3.3 requirements must be met

Packaging		
Material	*Total Quantity per Package PASSENGER*	*Total Quantity per Package CARGO*
UN 0050, 0054, 0092, 0093, 0191, 0195, 0197, 0312, 0336, 0403, 0431, 0493, 0503, 0505	Forbidden	75 Kg
UN0193,UN0337, UN0373, UN0404, UN 0405, UN0432, UN 0506	25 Kg	100 kg

INNER PACKAGINGS OF COMBINATION PACKAGINGS

Bags	*Receptacles*	*Sheets*
Plastic	Fibreboard	plastic
Paper	Metal	paper
	Plastics	
	Wood	

OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes	*Drums*
Aluminum (4B)	Aluminum, removable head (1B2)
Fibreboard (4G)	Fibreboard (1G)
Natural wood (4C1, 4C2)	Plywood (1D)
Plastic (4H1, 4H2)	Plastics, removable head (1H2)
Plywood (4D)	Steel, removable head (1 A2)
Reconstituted wood (4F)	
Steel (4A)	

Packing Instruction 136

Passenger and Cargo aircraft

General requirements

Part 4, Chapter 1.1,1.1.9,2,3,3.1-3.3 requirements must be met

Packaging		
Material	*Total Quantity per Package PASSENGER*	*Total Quantity per Package CARGO*
UN 0379, UN 0446	Forbidden	75 Kg
UN0055	25 Kg	100 kg

INNER PACKAGINGS OF COMBINATION PACKAGINGS

Bags	*Boxes*	*Dividing Partitions in the outer packaging*
Plastic	Fibreboard	
Textile		
	Plastics	
	Wood	

OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes	*Drums*
Aluminum (4B)	Aluminum, removable head (1B2)
Fibreboard (4G)	Fibreboard (1G)
Natural wood (4C1, 4C2)	Plastics, removable head (1H2)
Plastic (4H2)	Plywood (1D)
Plywood (4D)	Steel, removable head (1 A2)
Reconstituted wood (4F)	
Steel (4A)	

Packing Instruction 137

Passenger and Cargo aircraft

General requirements

Part 4, Chapter 1.1, 2,3, requirements must be met

Packaging		
Material	*Total Quantity per Package PASSENGER*	*Total Quantity per Package CARGO*
UN0440, 0444	Forbidden	75 Kg
UN0441, 0445	25 Kg	100 Kg

INNER PACKAGINGS OF COMBINATION PACKAGINGS

Bags	*Dividing partitions in the outer packaging*	*Tubes*	*Boxes*
Plastic		Fibreboard	fibreboard
		Metal	
		plastics	

ADDITIONAL PACKING REQUIREMENTS

For UN Nos. 0059, 0439, 0440, and 0441, when the shaped charges are packed singly, the conical cavity must face downwards and the package marked “THIS SIDE UP”. When the shaped charges are packed in pairs, the conical cavities must face inwards to minimize the jetting effect in the event of accidental initiation.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes	*Drums*
Aluminum (4B)	Aluminum, removable head (1B2)
Fibreboard (4G)	Fibreboard (1G)
Natural wood (4C1, 4C2)	Plastics, removable head (1H2)
Plastic (4H2)	Plywood (1D)
Plywood (4D)	Steel, removable head (1 A2)
Reconstituted wood (4F)	
Steel (4A)	

Packing Instruction 138

Cargo aircraft

General requirements

Part 4, Chapter 1.1,1.1.9,2,3,3.1-3.3 requirements must be met

Packaging		
Material	*Total Quantity per Package PASSENGER*	*Total Quantity per Package CARGO*
UN 0237	Forbidden	75 Kg

INNER PACKAGINGS OF COMBINATION PACKAGINGS

Bags
Plastic

ADDITIONAL PACKING REQUIREMENTS

If the ends of the articles are sealed, inner packaging are not necessary

OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes	*Drums*
Aluminum (4B)	Aluminum, removable head (1B2)
Fibreboard (4G)	Fibreboard (1G)
Natural wood (4C1, 4C2)	Plastics, removable head (1H2)
Plastic (4H2)	Plywood (1D)
Plywood (4D)	Steel, removable head (1A2)
Reconstituted wood (4F)	
Steel (4A)	

Packing Instruction 139

Cargo aircraft

General requirements

Part 4, Chapter 1.1, ,2,3, requirements must be met

Packaging		
Material	*Total Quantity per Package PASSENGER*	*Total Quantity per Package CARGO*
UN 0104, UN 0289	Forbidden	75 Kg

INNER PACKAGINGS OF COMBINATION PACKAGINGS

Bags	*Receptacles*	*Reels*	*Sheets*
Plastic	Fibreboard		Paper
	Metal		Plastics
	Plastic		
	Wood		

ADDITIONAL PACKING REQUIREMENTS

For UN Nos. 0065, 0102, 0104, 0289 and 0290, the ends of the detonating cord must be sealed, for example, by a plug firmly fixed so that the explosive cannot escape. The ends of flexible detonating cord must be fastened securely.

For UN 0065 and UN 0289, inner packaging are not required when they are in coils

OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes	*Drums*
Aluminum (4B)	Aluminum, removable head (1B2)
Fibreboard (4G)	Fibreboard (1G)
Natural wood (4C1, 4C2)	Plastics, removable head (1H2)
Plastic (4H2)	Plywood (1D)
Plywood (4D)	Steel, removable head (1A2)
Reconstituted wood (4F)	
Steel (4A)	

Packing Instruction 140

Passenger and Cargo aircraft

General requirements

Part 4, Chapter 1.1, ,2,3, requirements must be met

Packaging		
Material	*Total Quantity per Package PASSENGER*	*Total Quantity per Package CARGO*
UN0066, 0103	Forbidden	75 Kg
UN0105	25 Kg	100 Kg
UN 0101	Forbidden	Forbidden

INNER PACKAGINGS OF COMBINATION PACKAGINGS

Bags	*Reels*	*Sheets*
Plastic		Paper, kraft
		plastics

ADDITIONAL PACKING REQUIREMENTS

For UN0105, no inner packaging are required if the ends are sealed

OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes	*Drums*
Aluminum (4B)	Aluminum, removable heads (1B2)
Fibreboard (4G)	Fibreboard (1G)
Natural wood (4C1, 4C2)	Plastics, removable (1H2)
Plastic (4H2)	Plywood (1D)
Plywood (4D)	Steel, removable (1A2)
Reconstituted wood (4F)	
Steel (4A)	

Packing Instruction 141

Passenger and Cargo aircraft

General requirements

Part 4, Chapter 1.1, ,2,3 requirements must be met

Packaging		
Material	*Total Quantity per Package PASSENGER*	*Total Quantity per Package CARGO*
UN0257, 0317, 0410, 0452	Forbidden	75 Kg
UN0110, 0367, 0368	25 Kg	100 Kg

INNER PACKAGINGS OF COMBINATION PACKAGINGS

Receptacles	*Trays, fitted with dividing partitions*	*Dividing partitions in the outer packaging*
Fibreboard	Plastics	
Metal	wood	
Plastics		
Wood		

OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes	*Drums*
Aluminum (4B)	Aluminum, removable heads (1B2)
Fibreboard (4G)	Fibreboard (1G)
Natural wood (4C1, 4C2)	Plastics, removable (1H2)
Plastic (4H2)	Plywood (1D)
Plywood (4D)	Steel, removable (1A2)
Reconstituted wood (4F)	
Steel (4A)	

Packing Instruction 142

Passenger and Cargo aircraft

General requirements

Part 4, Chapter 1.1,1.1.9,2,3,3.1-3.3 requirements must be met

Packaging		
Material	*Total Quantity per Package PASSENGER*	*Total Quantity per Package CARGO*
UN 0325	Forbidden	75 Kg
UN0131, 0454	25 Kg	100 Kg

INNER PACKAGINGS OF COMBINATION PACKAGINGS

Bags	*Receptacles*	*Trays, fitted with dividing partitions*	*Sheets*
Plastic	Fibreboard	plastics	Paper
Paper	Metal		
	plastics		
	wood		

OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes	*Drums*
Aluminum (4B)	Aluminum, removable heads (1B2)
Fibreboard (4G)	Fibreboard (1G)
Natural wood (4C1, 4C2)	Plastics, removable (1H2)
Plastic (4H2)	Plywood (1D)
Plywood (4D)	Steel, removable (1A2)
Reconstituted wood (4F)	
Steel (4A)	

Packing Instruction 143

Cargo aircraft

General requirements

Part 4, Chapter 1.1,2,3requirements must be met

Packaging		
Material	*Total Quantity per Package PASSENGER*	*Total Quantity per Package CARGO*
UN 0491	Forbidden	75 Kg

INNER PACKAGINGS OF COMBINATION PACKAGINGS

Bags	*Receptacles*	*Trays, fitted with dividing partitions*
Plastic	Fibreboard	wood
Paper, Kraft	Metal	Plastics
Textile	plastics	
Textile, rubberized		

ADDITIONAL PACKING REQUIREMENTS

For UN Nos. 0271, 0272, 0415 and 0491, when metal packaging are used, metal packaging must be so constructed that the risk of explosion, by reason of increase in internal pressure from internal or external causes is prevented

Instead of the above inner and outer packaging, composite packaging (6HH2) (plastic receptacle with outer solid box) may be used

OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes	*Drums*
Aluminum (4B)	Aluminum, removable heads (1B2)
Fibreboard (4G)	Fibreboard (1G)
Natural wood (4C1, 4C2)	Plastics, removable (1H2)
Plastic (4H2)	Plywood (1D)
Plywood (4D)	Steel, removable (1A2)
Reconstituted wood (4F)	
Steel (4A)	

Packing Instructions 144

General requirements

Part 4, Chapter 1.1,2,3 requirements must be met, including:

Packaging		
Inner Packaging	*Intermediate packaging*	*Dividing Partitions*
Receptacles: Fibreboard Metal Plastics	Not necessary	

ADDITIONAL PACKING REQUIREMENTS

For UN0248 and UN0249 packaging must be protected against the ingress or water. When water activated contrivances are transported unpackaged, they must be provided with at least two independent protective features which prevent ingress of water.

OUTER PACKAGINGS

Boxes
Aluminum (4B)
Natural wood, ordinary (4C1) with metal liner
Plastics, expanded (4H1)
Plastic, solid (4H2)
Plywood (4D) with metal liner
Reconstituted wood (4F) with metal liner
Steel (4A)

Drums
Aluminum, removable head (1B2)
Plastic, removable head (1H2)

Steel, removable head (1A2)

Class 2 Table

Name		UN No.	Class or division	Sub-sidiary risk	PG	State variations (EMPTY)	Labels (EMPTY)	Special provisions	Excepted Quantities (EMPTY)	Passenger aircraft		Cargo aircraft	
										Packing Instruction	Max.net quantity per package	Packing Instruction	Max.net quantity per package
1		2	3	4	5	7	6	8	9	10	11	12	13
	Hydrogen in a metal hydride storage system contained in equipment		3468	2.1				A1, A143				214	100 KG G
	Hydrogen in a metal hydride storage system packed with equipment		3468	2.1				A1, A143				214	100 KG G
	Chlorine		1017	2.3	5.1, 8				A2		See 213		See 213
	Oxygen, compressed		1072	2.2	5.1				A202		200	75 KG	200	150 KG
	Acetylene, dissolved		1001	2.1					A1		F (200)	F (5 KG)	200	15 KG
	Acetylene, solvent free		3374	2.1					A1		F (200)	F (5 KG)	200	15 KG
	Aerosols	, flammable, corrosive, containing substances in Class 8, Packing Group II	1950	2.1	8									
	Aerosols	, flammable, containing substances in Division 6.1, Packing Group II	1950	2.1	6.1									

	Aerosols	, flammable (engine starting fluid)	1950	2.1					A1, A145, A153		F (203)	F (75 KG)	203	150 KG
	Aerosols	, non-flammable, containing substances in Class 8, Packing Group II	1950	2.2	8									
	Aerosols	, non-flammable, containing substances in Division 6.1, Packing Group II (other than tear gas devices)	1950	2.2	6.1									
	Aerosols	, non-flammable, (tear gas devices)	1950	2.2	6.1				A1, A145, A153		F (212)	F (75 KG)	212	50 KG
	Aerosols	, flammable, containing toxic gas	1950	2.3	2.1									
	Aerosols	, non-flammable, containing toxic gas	1950	2.3										
	Air, refrigerated liquid		1003	2.2	5.1				A1		F (202)	F (75 KG)	202	150 KG

	Ammonia solution	, relative density less than 0.880 at 15\'baC in water, with more than 35% but not more than 50% ammonia	2073	2.2					A1		F (200)	F (75 KG)	200	150 KG
	Ammonia solution	, relative density less than 0.880 at 15°C in water, with more than 50% ammonia	3318	2.3	8				A2		See 213		See 213	
	Ammonia, anhydrous		1005	2.3	8				A2		See 213		See 213	
	Arsine		2188	2.3	2.1				A2		See 213		See 213	
	Boron trichloride		1741	2.3	8				A2		See 213		See 213	
	Boron trifluoride		1008	2.3	8				A2		See 213		See 213	
	Bromine chloride		2901	2.3	5.1, 8				A2		See 213		See 213	
	Bromotrifluoroethylene		2419	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Butadienes and hydrocarbon mixture, stabilized	, containing more than 40% butadienes	1010	2.1					A1				200	150 KG
	Butadienes, stabilized		1010	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Butane		1011	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Butylene		1012	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Carbon monoxide, compressed		1016	2.3	2.1				A2		See 213		See 213	
	Carbonyl fluoride		2417	2.3	8				A2		See 213		See 213	

	Carbonyl sulphide		2204	2.3	2.1				A2		See 213		See 213	
	Chlorine pentafluoride		2548	2.3	5.1, 8				A2		See 213		See 213	
	Chlorine trifluoride		1749	2.3	5.1, 8				A2		See 213		See 213	
1-	**Chloro-1,1-difluoroethane**		2517	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Chloropicrin and methyl bromide mixture	with more than 2% chloropicrin	1581	2.3					A2		See 213		See 213	
	Chloropicrin and methyl chloride mixture		1582	2.3					A2		See 213		See 213	
	Coal gas, compressed †		1023	2.3	2.1				A2		See 213		See 213	
	Compressed gas, flammable, n.o.s.*		1954	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Compressed gas, toxic, corrosive, n.o.s.*		3304	2.3	8				A2		See 213		See 213	
	Compressed gas, toxic, flammable, corrosive, n.o.s.*		3305	2.3	2.1, 8				A2		See 213		See 213	
	Compressed gas, toxic, flammable, n.o.s.*		1953	2.3	2.1				A2		See 213		See 213	
	Compressed gas, toxic, n.o.s.*		1955	2.3					A2		See 213		See 213	
	Compressed gas, toxic, oxidizing, corrosive, n.o.s.*		3306	2.3	5.1, 8				A2		See 213		See 213	
	Compressed gas, toxic, oxidizing, n.o.s.*		3303	2.3	5.1				A2		See 213		See 213	
	Cyanogen		1026	2.3	2.1				A2		See 213		See 213	
	Cyanogen chloride, stabilized		1589	2.3	8				A2		See 213		See 213	
	Cyclobutane		2601	2.1					A1		F (200)	F (5 KG)	200	150 KG

	Cyclopropane		1027	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Deuterium, compressed		1957	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Diborane		1911	2.3	2.1				A2		See 213		See 213	
	Dichlorosilane		2189	2.3	2.1, 8				A2		See 213		See 213	
1,1-	**Difluoroethane**		1030	2.1					A1		F (200)	F (5 KG)	200	150 KG
1,1-	**Difluoroethylene**		1959	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Difluoromethane		3252	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Dimethyl ether		1033	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Dimethylamine, anhydrous		1032	2.1					A1		F (200)	F (5 KG)	200	150 KG
2,2-	**Dimethylpropane**		2044	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Dinitrogen tetroxide		1067	2.3	5.1, 8				A2		See 213		See 213	
	Ethane		1035	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Ethane, refrigerated liquid		1961	2.1										
	Ethyl chloride		1037	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Ethyl chloride		1037	2.1					A1		or1		or	
	Ethyl chloride		1037	2.1					A1		or2		214	0.3 KG
	Ethyl fluoride		2453	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Ethyl methyl ether		1039	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Ethylacetylene, stabilized		2452	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Ethylamine		1036	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Ethylene		1962	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Ethylene oxide		1040	2.3	2.1				A2, A131		See 213		See 213	
	Ethylene oxide and carbon dioxide mixture	, with more than 9% but not more than 87% ethylene	1041	2.1					A1		F (200)	F (5 KG)	200	25 KG

		oxide												
	Ethylene oxide and carbon dioxide mixture	, with more than 87% ethylene oxide	3300	2.3	2.1				A2		See 213		See 213	
	Ethylene oxide with nitrogen	up to a total pressure of 1 MPa at 50°C	1040	2.3	2.1				A2					
	Ethylene, acetylene and propylene mixture, refrigerated liquid	containing at least 71.5% ethylene with not more than 22.5% acetylene and not more than 6% propylene	3138	2.1										
	Ethylene, refrigerated liquid		1038	2.1										
	Fertilizer ammoniating solution	with free ammonia	1043	2.2					A1		F (200)	F (75 KG)	200	150 KG
	Fluorine, compressed		1045	2.3	5.1, 8				A2		See 213		See 213	
	Gas cartridges	(toxic) without a release device, non-refillable	2037	2.3					A2		See 213		See 213	

	Gas cartridges	(toxic & corrosive) without a release device, non-refillable	2037	2.3	8				A2		See 213		See 213	
	Gas cartridges	(toxic & flammable) without a release device, non-refillable	2037	2.3	2.1				A2		See 213		See 213	
	Gas cartridges	(toxic, flammable & corrosive) without a release device, non-refillable	2037	2.3	2.1, 8				A2		See 213		See 213	
	Gas cartridges	(toxic & oxidizing) without a release device, non-refillable	2037	2.3	5.1				A2		See 213		See 213	
	Gas cartridges	(toxic, oxidizing & corrosive) without a release device, non-refillable	2037	2.3	5.1, 8				A2		See 213		See 213	
	Gas sample, non-pressurized, toxic, flammable, n.o.s.	, not refrigerated liquid	3168	2.3	2.1				A1		F (206)	F (1 L)	206	1 L

	Gas sample, non-pressurized, toxic, n.o.s.	, not refrigerated liquid	3169	2.3					A1		F (206)	F (1 L)	206	1 L
	Gas, refrigerated liquid, flammable, n.o.s.*		3312	2.1										
	Gas, refrigerated liquid, oxidizing, n.o.s.*		3311	2.2	5.1				A2		F (202)	F (75 KG)	F (202)	F (150 KG)
	Germane		2192	2.3	2.1				A2		See 213		See 213	
	Hexaethyl tetraphosphate and compressed gas mixture		1612	2.3					A2		See 213		See 213	
	Hexafluoroacetone		2420	2.3	8				A2		See 213		See 213	
	Hydrocarbon gas mixture, compressed, n.o.s.*		1964	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Hydrocarbon gas mixture, liquefied, n.o.s.*		1965	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Hydrogen and methane mixture, compressed		2034	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Hydrogen bromide, anhydrous		1048	2.3	8				A2		See 213		See 213	
	Hydrogen chloride, anhydrous		1050	2.3	8				A2		See 213		See 213	
	Hydrogen chloride, refrigerated liquid		2186	2.3	8									
	Hydrogen in a metal hydride storage system		3468	2.1					A1, A143				214	100 KG G
	Hydrogen iodide, anhydrous		2197	2.3	8				A2		See 213		See 213	

	Hydrogen selenide, anhydrous		2202	2.3	2.1				A2		See 213		See 213	
	Hydrogen sulphide		1053	2.3	2.1				A2		See 213		See 213	
	Hydrogen, compressed		1049	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Hydrogen, refrigerated liquid		1966	2.1										
	Insecticide gas, flammable, n.o.s.*		3354	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Insecticide gas, toxic, flammable, n.o.s.*		3355	2.3	2.1				A2		See 213		See 213	
	Insecticide gas, toxic, n.o.s.*		1967	2.3					A2		See 213		See 213	
	Isobutane		1969	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Isobutylene		1055	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Liquefied gas, flammable, n.o.s.*		3161	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Liquefied gas, toxic, corrosive, n.o.s.*		3308	2.3	8				A2		See 213		See 213	
	Liquefied gas, toxic, flammable, corrosive, n.o.s.*		3309	2.3	2.1, 8				A2		See 213		See 213	
	Liquefied gas, toxic, flammable, n.o.s.*		3160	2.3	2.1				A2		See 213		See 213	
	Liquefied gas, toxic, n.o.s.*		3162	2.3					A2		See 213		See 213	
	Liquefied gas, toxic, oxidizing, corrosive, n.o.s.*		3310	2.3	5.1, 8				A2		See 213		See 213	
	Liquefied gas, toxic, oxidizing, n.o.s.*		3307	2.3	5.1				A2		See 213		See 213	

	Methane, compressed		1971	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Methane, refrigerated liquid	with high methane content	1972	2.1										
	Methyl bromide	with not more than 2% chloropicrin	1062	2.3					A2		See 213		F (207)	F (25 KG)
	Methyl chloride		1063	2.1					A1		F (200)	F (5 KG)	200	100 KG
	Methyl chloride and methylene chloride mixture		1912	2.1					A1, A52		F (200)	F (5 KG)	200	150 KG
	Methyl fluoride		2454	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Methyl mercaptan		1064	2.3	2.1				A2		See 213		See 213	
	Methylacetylene and propadiene mixture, stabilized	†	1060	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Methylamine, anhydrous		1061	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Methylchlorosilane		2534	2.3	2.1, 8				A2		See 213		See 213	
	Natural gas, compressed	with high methane content	1971	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Natural gas, refrigerated liquid	with high methane content	1972	2.1										
	Nitric oxide and dinitrogen tetroxide mixture		1975	2.3	5.1, 8				A2		See 213		See 213	
	Nitric oxide and nitrogen dioxide mixture		1975	2.3	5.1, 8				A2		See 213		See 213	
	Nitric oxide, compressed		1660	2.3	5.1, 8				A2		See 213		See 213	
	Nitrogen dioxide		1067	2.3	5.1, 8				A2		See 213		See 213	

	Nitrogen trioxide		2421	2.3	5.1, 8				A2		See 213		See 213	
	Nitrosyl chloride		1069	2.3	8				A2		See 213		See 213	
	Nitrous oxide, refrigerated liquid		2201	2.2	5.1				A2		F (202)	F (75 KG)	F (202)	F (150 KG)
	Oil gas, compressed	†	1071	2.3	2.1				A1		See 213		200	25 KG
	Oxygen difluoride, compressed		2190	2.3	5.1, 8				A2		See 213		See 213	
	Oxygen, refrigerated liquid		1073	2.2	5.1				A2		F (202)	F (75 KG)	F (202)	F (150 KG)
	Perchloryl fluoride		3083	2.3	5.1				A2		See 213		See 213	
	Perfluoro(ethyl vinyl ether)		3154	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Perfluoro(methyl vinyl ether)		3153	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Petroleum gases, liquefied		1075	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Phosgene		1076	2.3	8				A2		See 213		See 213	
	Phosphine		2199	2.3	2.1				A2		See 213		See 213	
	Phosphorus pentafluoride		2198	2.3	8				A2		See 213		See 213	
	Propadiene, stabilized		2200	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Propane		1978	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Propylene		1077	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Receptacles, small, containing gas	(toxic) without a release device, non-refillable	2037	2.3					A2		See 213		See 213	
	Receptacles, small, containing gas	(toxic, flammable & corrosive) without a release device,	2037	2.3	8				A2		See 213		See 213	

		non-refillable												
	Receptacles, small, containing gas	(toxic & flammable) without a release device, non-refillable	2037	2.3	2.1				A2		See 213		See 213	
	Receptacles, small, containing gas	(toxic & corrosive) without a release device, non-refillable	2037	2.3	2.1, 8				A2		See 213		See 213	
	Receptacles, small, containing gas	(toxic & oxidizing) without a release device, non-refillable	2037	2.3	5.1				A2		See 213		See 213	
	Receptacles, small, containing gas	(toxic, oxidizing & corrosive) without a release device, non-refillable	2037	2.3	5.1, 8				A2		See 213		See 213	
	Refrigerant gas R 1132a		1959	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Refrigerant gas R 142b		2517	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Refrigerant gas R 143a		2035	2.1					A1		F (200)	F (5 KG)	200	150 KG

	Refrigerant gas R 152a		1030	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Refrigerant gas R 161		2453	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Refrigerant gas R 32		3252	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Refrigerant gas R 40		1063	2.1					A1		F (200)	F (5 KG)	200	100 KG
	Refrigerant gas R 41		2454	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Refrigerating machines	containing flammable, non-toxic, liquefied gas	3358	2.1					A103					
	Selenium hexafluoride		2194	2.3	8				A2		See 213		See 213	
	Silane		2203	2.1					A2		F (202)	F (5 KG)	F (202)	F (150 KG)
	Silicon tetrafluoride		1859	2.3	8				A2		See 213		See 213	
	Stibine		2676	2.3	2.1				A2		See 213		See 213	
	Sulphur dioxide		1079	2.3	8				A2		See 213		See 213	
	Sulphur tetrafluoride		2418	2.3	8				A2					
	Sulphuryl fluoride		2191	2.3					A2		See 213		See 213	
	Tellurium hexafluoride		2195	2.3	8				A2		See 213		See 213	
	Tetrafluoroethylene, stabilized		1081	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Tire assemblies inflated, unserviceable, damaged or above maximum rated pressure		0000	2.2					A59					
	Trifluoroacetyl chloride		3057	2.3	8				A2		See 213		See 213	

	Trifluorochloroethylene, stabilized		1082	2.3	2.1				A2		See 213		See 213	
1,1,1-	**Trifluoroethane**		2035	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Trimethylamine, anhydrous		1083	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Tungsten hexafluoride		2196	2.3	8				A2		See 213		See 213	
	Tyre assemblies inflated, unserviceable, damaged or above maximum rated pressure		0000	2.2					A59					
	Vinyl bromide, stabilized		1085	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Vinyl chloride, stabilized		1086	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Vinyl fluoride, stabilized		1860	2.1					A1		F (200)	F (5 KG)	200	150 KG
	Vinyl methyl ether, stabilized		1087	2.1					A1		F (200)	F (5 KG)	200	150 KG

Special Packing Provisions for Dangerous Goods of Class 2

1.1 General requirements

1.1.1 This section provides general requirements applicable to the use of cylinders and closed cryogenic receptacles for the transport of Class 2 gasses (e.g. UN 1072 **Oxygen, compressed**). Cylinders and closed cryogenic receptacles must be constructed and closed so as to prevent any loss of contents which might be caused under normal conditions of transport, including by vibration, or by changes in temperature, humidity or pressure (resulting from change in altitude, for example).

1.1.2 Parts of cylinders and closed cryogenic receptacles that are in direct contact with dangerous goods must not be affected or weakened by those dangerous goods and must not cause a dangerous effect (e.g. catalysing a reaction or reacting with the dangerous goods). In addition to the requirements specified in the relevant packing instruction, which take precedence, the applicable provisions of ISO 11114-1:1997 and ISO 11114-2:2000 must be met.

1.1.3 Cylinders and closed cryogenic receptacles, including their closures, must be selected that are able to contain a gas or a mixture of gases according to the requirements or 6;5.1.2 and the requirements or the specific packing instructions of this Part.

1.1.4 Refillable cylinders must not be filled with a gas or gas mixture different from that previously contained unless the necessary operations for change of gas service have been performed. The change of service for compressed and liquefied gases must be accordance with ISO 11621:1997, as applicable. In addition, a cylinder that previously contained a Class 8 corrosive substance or a substance of another class with a corrosive subsidiary risk must not be authorized for the transport of a Class 2 substance unless the necessary inspection and testing as specified in 6;5.1.6 have been performed .

1.1.5 Prior to filling, the filler must perform an inspection of the cylinder or closed cryogenic receptacle and ensure that the cylinder or closed cryogenic receptacle is authorized for the gas to be transported and that the provisions of these Instructions have been met. Shut off valves must be closed after filling and remain closed during transport. The shipper must verify that the closures and equipment are not leaking.

1.1.6 Cylinders and closed cryogenic receptacles must be filled according to the working pressures, filling ratios and provisions specified in the appropriate packing instruction for the specific substance. Reactive gases and gas mixtures must be filled to a pressure such that if complete decomposition of the gas occurs, the working pressure of the cylinder must not be exceeded.

1.1.7 Cylinders and closed cryogenic receptacles, including their closures, must conform to the design, construction, inspection and testing requirements detailed in 6;5. When outer packagings are prescribed, the cylinders must be firmly secured therein. Unless otherwise specified in the

detailed packing instructions, one or more inner packaging may be enclosed in an outer packaging.

1.1.8 Valves must be designed and constructed in such a way that they are inherently able to withstand damage without release of the contents or must be protected from damage, which could cause inadvertent release of the contents of the cylinder and closed cryogenic receptacle, by one of the following methods:

a) Valves are placed inside the neck of the cylinder and closed cryogenic receptacles and protected by a threaded plug or cap;
b) Valves are protected by caps. Caps must possess vent holes of a sufficient cross-sectional area to evacuate the gas if leakage occurs at the valves;
c) Valves are protected by shrouds or guards,
d) Not used; or
e) Cylinders and closed cryogenic receptacles are transported in an outer packaging. The packaging as prepared for transport must be capable of meeting the drop test specified in 6;4.3 at the Packing Group I performance level.

For cylinders and closed cryogenic receptacles with valves as described in b) and c), the requirements of ISO 11117:1998 must be met; for valves with inherent protection, the requirements of Annex B of ISO 10297:1999 must be met.

1.1.9 Non refillable cylinder and closed cryogenic receptacles must:

a) be transported in an outer packaging, such as a box, or crate, or in shrink – wrapped trays or stretch – wrapped trays;
b) not used;
c) not be repaired after being put into service.

1.1.10 Refillable cylinders, other than closed cryogenic receptacles, must be periodically inspected according to the provisions of 6;5.1.6 and Packing Instruction 200. Cylinders and closed cryogenic receptacles must not be filled after they become due for periodic inspection but may be transported after the expiry of the time limit.

1.1.11 Repairs must be consistent with the fabrication and testing requirements of the applicable design and construction standards and are only permitted as indicated in the relevant periodic inspection standards specified in 6;5.2.4. Cylinders, other than the jacket of closed cryogenic receptacles, must not be subject to repairs of any of the following:

a) weld cracks or other weld defects;
b) cracks in walls
c) leaks or defects in the material of the wall, head or bottom.

1.1.12 Cylinders and closed cryogenic receptacles must not be offered for filling:

a) when damaged to such an extent that the integrity of the cylinder and closed cryogenic receptacle or it service equipment may be affected;

b) unless the cylinder and closed cryogenic receptacle and its service equipment have been examined and found to be in good working order; or
c) unless the required certification, retest, and filling markings are legible.

1.1.13 Filled cylinders and closed cryogenic receptacles must not be offered for transport:

a) when leaking
b) when damaged to such an extent that the integrity of the cylinder and closed cryogenic receptacle or its service equipment may be affected;
c) unless the cylinder and closed cryogenic receptacle and its service equipment have been examined and found to be in good working order; or
d) unless the required certification, retest, and filling markings are legible.

PACKING INSTRUCTIONS FOR CLASS 2

Packing Instruction 200

For cylinders, the general packing requirements of 1.1 and 4.1.1 must be met.

Cylinders, constructed as specified in 6;5 are authorized for the transport of a specific substance when specified in the following tables (Table 1 and Table 2). Cylinders other than UN marked and certified cylinders may be used if the design, construction, testing, approval and markings conform to the requirements of the appropriate national authority in which they are approved and filled. The substances contained must be permitted in cylinders and permitted for air transport according to these Instructions. Cylinders for which prescribed periodic tests have become due must not be charged and offered for transport until such retests have been successfully completed. Valves must be suitably protected or must be designed and constructed in such a manner that they are able to withstand damage without leakage as specified in Annex B of ISO 10297:1999. Cylinders with capacities of one litre or less must be packaged in outer packaging constructed of suitable material of adequate strength and design in relation to the packaging capacity and its intended use, and secured or cushioned so as to prevent significant movement within the outer packaging during normal conditions of transport. For some substances, the special packing provisions may prohibit a particular type of cylinder. The following requirements must be met:

1) Pressure relief devices must be fitted on cylinders used for the transport of UN 1013 **Carbon dioxide** and UN 1070 **Nitrous oxide**. Other cylinders must be fitted with a pressure relief device if specified by the appropriate national authority of the country of use. The type of pressure relief device, the set to discharge pressure and relief capacity of pressure relief devices, if required, must be specified by the appropriate national authority of the country of use. Manifolding of cylinders is not permitted.
2) The following two tables cover compressed gases (Table 1) and liquefied and dissolved gases (Table 2). They provide:

    a) the UN number, name and description, and classification of the substance;
    b) the LC_{50} for toxic substances;
    c) the types of cylinders authorized for the substance, shown by the letter "X";
    d) the maximum test period for periodic inspection of the cylinders;
    e) the minimum test pressure of the cylinders;
    f) the maximum working pressure of the cylinders for compressed gases (where no value is given, the working pressure must not exceed two-thirds of the test pressure) or the maximum filling ratio(s) dependent on the test pressure(s) for liquefied and dissolved gases;
    g) special packing provisions that are specific to a substance.

3) In no case must cylinders be filled in excess of the limit permitted in the following requirements:

    a) For compressed gases, the working pressure must be not more than two-thirds of the test pressure of the cylinders. Restrictions to this upper limit on working pressure are imposed by special packing provision "o". In no case must the internal pressure at 65°C exceed the test pressure.

b) For high pressure liquefied gases, the filling ratio must be such that the settled pressure at 65°C does not exceed the test pressure of the cylinders.

The use of test pressures and filling ratios other than those in the table is permitted provided that the above criterion is met, except where special packing provision "o" applies.

For high pressure liquefied gases and gas mixtures for which relevant data are not available, the maximum filling ratio (FR) must be determined as follows:

$$FR = 8.5 \times 10^{-4} \times d_g \times P_h$$

where FR = maximum filling ratio
d_g = gas density (at 15°C, 1 bar)(in g/l)
P_h = minimum test pressure (in bar).

If the density of the gas is unknown, the maximum filling ratio must be determined as follows:

$$FR = \frac{P_h \times MM \times 10^{-3}}{R \times 338}$$

where FR = maximum filling ratio
P_h = minimum test pressure (in bar)
MM = molecular mass (in g/mol)
R = 8.31451×10^{12} bar.l/mol.K (gas constant).

For gas mixtures, the average molecular mass is to be taken, taking into account the volumetric concentrations of the various components.

c) For low pressure liquefied gases, the maximum mass of contents per litre of water capacity (filling factor) must equal 0.95 times the density of the liquid phase at 50°C; in addition, the liquid phase must not fill the cylinder at any temperature up to 60°C. The test pressure of the cylinder must be at least equal to the vapour pressure (absolute) of the liquid at 65°C, minus 100 kPa (1 bar).

For low pressure liquefied gases for which filling data is not provided in the table, the maximum filling ratio must be determined as follows:

$$FR = (0.0032 \times BP - 0.24) \times d_l$$

where FR = maximum filling ratio
BP = boiling point (in Kelvin)
d_l = density of the liquid at boiling point (in kg/l).

d) For UN 1001, **Acetylene, dissolved**, and UN 3374 **Acetylene, solvent free**, see p).

4) Gas mixtures containing any of the following gases must not be offered for transport in aluminium alloy cylinders unless approved by the appropriate national authority of the State of Origin and the State of the Operator:

UN 1037 **Ethyl chloride**
UN 1063 **Methyl chloride**
UN 1063 **Refrigerant gas R 40**
UN 1085 **Vinyl bromide, stabilized**
UN 1086 **Vinyl chloride, stabilized**
UN 1860 **Vinyl fluoride, stabilized**
UN 1912 **Methyl chloride and methylene chloride mixture**

5) Keys for the column "Special packing provisions":

Material compatibility

a) Aluminium alloy cylinders are forbidden.
b) Copper valves are forbidden.
c) Metal parts in contact with the contents must not contain more than 65 per cent copper.
d) When steel cylinders are used, only those bearing the "H" mark are permitted.

Gas specific provisions:

l) UN 1040 **Ethylene oxide** may also be packed in hermetically sealed glass ampoules or metal inner packagings suitably cushioned in fibreboard, wooden or metal boxes meeting the Packing Group I performance level. The maximum quantity permitted in any glass inner packaging is 30 g, and the maximum quantity permitted in any metal inner packaging is 200 g. After filling, each inner packaging must be determined to be leak-tight by placing the inner packaging in a hot water bath at a temperature, and for a period of time, sufficient to ensure that an internal pressure equal to the vapour pressure of ethylene oxide at 55°C is achieved. The maximum net mass in any outer packaging must not exceed 2.5 kg. When cylinders are used, they must be of the seamless or welded steel types that are equipped with suitable pressure relief devices. Each cylinder must be tested for leakage with an inert gas before each refilling and must be insulated with three coats of heat retardant paint or in any equally efficient manner. The maximum net quantity per cylinder must not exceed 25 kg.

m) Cylinders must be filled to a working pressure not exceeding 5 bar.

o) In no case must the working pressure or filling ratio shown in the table be exceeded.

p) For UN 1001 **Acetylene, dissolved**, and UN 3374 **Acetylene, solvent free**: cylinders must be filled with a homogeneous monolithic porous mass; the working pressure and the quantity of acetylene must not exceed the values prescribed in the approval or in ISO 3807-1:2000 or ISO 3807-2:2000, as applicable.

For UN 1001 **Acetylene, dissolved**, cylinders must contain a quantity of acetone or suitable solvent as specified in the approval (see ISO 3807-1:2000 or ISO 3807-2:2000, as applicable); cylinders fitted with pressure relief devices must be transported vertically.

The test pressure of 52 bar applies only to cylinders conforming to ISO 3807-2:2000.

ra) Ethyl chloride may be carried in securely sealed glass ampoules (IP.8) containing not more than 5 g of ethyl chloride with a ullage of not less than 7.5 per cent at 21°C. Ampoules must be cushioned with efficient non-combustible material in partitioned cartons with not more than 12 ampoules per carton. The cartons must be tightly packed to prevent movement in wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or plastic boxes (4H1, 4H2) that meet the performance testing requirements of 6;4 at the Packing Group II performance level. Not more than 300 g of ethyl chloride is permitted per package.

s) Aluminium alloy cylinders must be:

— Equipped only with brass or stainless steel valves; and
— Cleaned in accordance with ISO 11621:1997 and not contaminated with oil.

Periodic inspection:

u) The interval between periodic tests may be extended to 10 years for aluminium alloy cylinders when the alloy of the cylinder has been subjected to stress corrosion testing as specified in ISO 7866:1999.

v) The interval between periodic inspections for steel cylinders may be extended to 15 years if approved by the appropriate national authority of the country of use.

Requirements for N.O.S. descriptions and for mixtures:

z) The construction materials of the cylinders and their accessories must be compatible with the contents and must not react to form harmful or dangerous compounds therewith.

The test pressure and filling ratio must be calculated in accordance with the relevant requirements of PI 200.

The necessary steps must be taken to prevent dangerous reactions (i.e. polymerization or decomposition) during transport. If necessary, stabilization or addition of an inhibitor may be required.

Note.— For the carriage of oxygen to provide life support to aquatic animals, see Note 7 of the Introductory Notes to this Part.

Table 1. COMPRESSED GASES

UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m^3	Cylinders	Test period, years	Test pressure, bar*	Maximum working pressure, bar*	Special packing provisions*
1002	**Air, compressed**	2.2			X	10			
1006	**Argon, compressed**	2.2			X	10			
1046	**Helium, compressed**	2.2			X	10			
1049	**Hydrogen, compressed**	2.1			X	10			d
1056	**Krypton, compressed**	2.2			X	10			
1065	**Neon, compressed**	2.2			X	10			
1066	**Nitrogen, compressed**	2.2			X	10			
1071	**Oil gas, compressed**	2.3	2.1		X	5			
1072	**Oxygen, compressed**	2.2	5.1		X	10			s
1954	**Compressed gas, flammable, n.o.s.**	2.1			X	10			z
1956	**Compressed gas, n.o.s.**	2.2			X	10			z
1957	**Deuterium, compressed**	2.1			X	10			d
1964	**Hydrocarbon gas mixture,**	2.1			X	10			z

	compressed, n.o.s.								
1971	**Methane, compressed or natural gas, compressed** with high methane content	2.1			X	10			
2034	**Hydrogen and methane mixture, compressed**	2.1			X	10			
3156	**Compressed gas, oxidizing, n.o.s.**	2.2	5.1		X	10			z
* Where the entries are blank, the working pressure must not exceed two-thirds of the test pressure.									

Table 2. LIQUEFIED GASES AND DISSOLVED GASES

UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m^3	Cylinders	Test period, years	Test pressure, bar	Filling ratio	Special packing provisions
1001	**Acetylene, dissolved**	2.1			X	10	60 52		c, p
1009	**Bromotrifluoromethane (refrigerant gas R 13b1)**	2.2			X	10	42 120 250	1.13 1.44 1.60	
1010	**Butadienes, stabilized** (1,2-butadiene)	2.1			X	10	10	0.59	
1010	**Butadienes, stabilized** (1,3-butadiene)	2.1			X	10	10	0.55	z
1010	**Butadienes and hydrocarbon mixture, stabilized** containing more than 40% butadienes	2.1			X	10			v z
1011	**Butane**	2.1			X	10	10	0.52	v
1012	**Butylene** (butylenes mixture)	2.1			X	10	10	0.50	z
1012	**Butylene** (1-butylene)	2.1			X	10	10	0.53	
1012	**Butylene** (cis-2-butylene)	2.1			X	10	10	0.55	

UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m^3	Cylinders	Test period, years	Test pressure, bar	Filling ratio	Special packing provisions
1012	**Butylene** (trans-2 butylene)	2.1			X	10	10	0.54	
1013	**Carbon dioxide**	2.2			X	10	190 250	0.68 0.76	
1018	**Chlorodifluoromethane (refrigerant gas R 22)**	2.2			X	10	27	1.03	
1020	**Chloropentafluoroethane (refrigerant gas R 115)**	2.2			X	10	25	1.05	
1021	**1-Chloro-1,2,2,2-tetrafluoroethane (refrigerant gas R 124)**	2.2			X	10	11	1.20	
1022	**Chlorotrifluoromethane (refrigerant gas R 13)**	2.2			X	10	100 120 190 250	0.83 0.90 1.04 1.11	
1027	**Cyclopropane**	2.1			X	10	18	0.55	
1028	**Dichlorodifluoromethane (refrigerant gas R 12)**	2.2			X	10	16	1.15	
1029	**Dichlorofluoromethane (refrigerant gas R 21)**	2.2			X	10	10	1.23	
1030	**1,1-Difluoroethane (Refrigerant gas R 152 a)**	2.1			X	10	16	0.79	
1032	**Dimethylamine, anhydrous**	2.1			X	10	10	0.59	b
1033	**Dimethyl ether**	2.1			X	10	18	0.58	
1035	**Ethane**	2.1			X	10	95 120 300	0.25 0.30 0.40	
1036	**Ethylamine**	2.1			X	10	10	0.61	b
1037	**Ethyl chloride**	2.1			X	10	10	0.80	a, ra
1039	**Ethyl methyl ether**	2.1			X	10	10	0.64	
1041	**Ethylene oxide and**	2.1			X	10	190	0.66	

UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m^3	Cylinders	Test period, years	Test pressure, bar	Filling ratio	Special packing provisions
	carbon dioxide mixture with more than 9% ethylene oxide but not more than 87%						250	.75	
1043	**Fertilizer ammoniating solution** with free ammonia	2.2			X	5			b, z
1055	**Isobutylene**	2.1			X	10	10	0.52	
1058	**Liquefied gases,** non-flammable, charged with nitrogen, carbon dioxide or air	2.2			X	10	Test pressure = 1.5 × working pressure		
1060	**Methylacetylene and propadiene mixture, stabilized**	2.1			X	10			c, z
1060	**Methylacetylene and propadiene mixture, stabilized** (propadiene with 1% to 4% methylacetylene)	2.1			X	10	22	0.52	c
1061	**Methylamine, anhydrous**	2.1			X	10	13	0.58	b
1063	**Methyl chloride (refrigerant gas R 40)**	2.1			X	10	17	0.81	a
1070	**Nitrous oxide**	2.2	5.1		X	10	180 225 250	0.68 0.74 0.75	
1075	**Petroleum gases, liquefied**	2.1			X	10			v, z
1077	**Propylene**	2.1			X	10	27	0.43	
1078	**Refrigerant gas, n.o.s.**	2.2			X	10			z

UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m^3	Cylinders	Test period, years	Test pressure, bar	Filling ratio	Special packing provisions
1080	**Sulphur hexafluoride**	2.2			X	10	70 140 160	1.06 1.34 1.38	
1081	**Tetrafluoroethylene, stabilized**	2.1			X	10	200		m, o
1083	**Trimethylamine, anhydrous**	2.1			X	10	10	0.56	b
1085	**Vinyl bromide, stabilized**	2.1			X	10	10	1.37	a
1086	**Vinyl chloride, stabilized**	2.1			X	10	12	0.81	a
1087	**Vinyl methyl ether, stabilized**	2.1			X	10	10	0.67	
1858	**Hexafluoropropylene (refrigerant gas R 1216)**	2.2			X	10	22	1.11	
1860	**Vinyl fluoride, stabilized**	2.1			X	10	250	0.64	a
1912	**Methyl chloride and methylene chloride mixture**	2.1			X	10	17	0.81	a
1952	**Ethylene oxide and carbon dioxide mixture** with not more than 9% ethylene oxide	2.2			X	10	190 250	0.66 0.75	
1958	**1,2-dichloro-1,1,2,2-tetrafluoroethane (refrigerant gas R 114)**	2.2			X	10	10	1.30	
1959	**1,1-difluoroethylene (refrigerant gas R 1132a)**	2.1			X	10	250	0.77	
1962	**Ethylene**	2.1			X	10	225 300	0.34 0.38	
1965	**Hydrocarbon gas mixture, liquefied, n.o.s.**	2.1			X	10			v, z

UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m^3	Cylinders	Test period, years	Test pressure, bar	Filling ratio	Special packing provisions
1968	**Insecticide gas, n.o.s.**	2.2			X	10			z
1969	**Isobutane**	2.1			X	10	10	0.49	v
1973	**Chlorodifluoromethane and chloropentafluoroethane mixture** with fixed boiling point, with approximately 49% chlorodifluoromethane **(refrigerant gas R 502)**	2.2			X	10	31	1.01	
1974	**Chlorodifluorobromo-methane (refrigerant gas R 12b1)**	2.2			X	10	10	1.61	
1976	**Octafluorocyclobutane (refrigerant gas R C318)**	2.2			X	10	11	1.32	
1978	**Propane**	2.1			X	10	23	0.43	v
1982	**Tetrafluoromethane (refrigerant gas R 14)**	2.2			X	10	200 300	0.71 0.90	
1983	**1-chloro-2,2,2-trifluoroethane (refrigerant gas R 133a)**	2.2			X	10	10	1.18	
1984	**Trifluoromethane (refrigerant gas R 23)**	2.2			X	10	190 250	0.88 0.96	
2035	**1,1,1-trifluoroethane (refrigerant gas R 143a)**	2.1			X	10	35	0.73	
2036	**Xenon**	2.2			X	10	130	1.28	
2044	**2,2-dimethylpropane**	2.1			X	10	10	0.53	
2073	**Ammonia solution,** relative density less	2.2							

UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m^3	Cylinders	Test period, years	Test pressure, bar	Filling ratio	Special packing provisions
	than 0.880 at 15°C in water,								
	with more than 35% but not more than 40% ammonia				X	5	10	0.80	b
	with more than 40% but not more than 50% ammonia				X	5	12	0.77	b
2193	**Hexafluoroethane (refrigerant gas R 116)**	2.2			X	10	200	1.13	
2200	**Propadiene, stabilized**	2.1			X	10	22	0.50	
2419	**Bromotrifluoroethylene**	2.1			X	10	10	1.19	
2422	**Octafluorobut-2-ene (refrigerant gas R 1318)**	2.2			X	10	12	1.34	
2424	**Octafluoropropane (refrigerant gas R 218)**	2.2			X	10	25	1.04	
2451	**Nitrogen trifluoride**	2.2	5.1		X	10	200	0.50	
2452	**Ethylacetylene, stabilized**	2.1			X	10	10	0.57	c
2453	**Ethyl fluoride (refrigerant gas R 161)**	2.1			X	10	30	0.57	
2454	**Methyl fluoride (refrigerant gas R 41)**	2.1			X	10	300	0.63	
2517	**1-chloro-1,1-difluoroethane (refrigerant gas R 142b)**	2.1			X	10	10	0.99	
2599	**Chlorotrifluoromethane and trifluoromethane azeotropic mixture** with approximately	2.2			X	10	31 42 100	0.12 0.17 0.64	

UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m^3	Cylinders	Test period, years	Test pressure, bar	Filling ratio	Special packing provisions
	60% chlorotrifluoromethane (refrigerant gas R 503)								
2601	**Cyclobutane**	2.1			X	10	10	0.63	
2602	**Dichlorodifluoro-methane and difluoroethane azeotropic mixture** with approximately 74% dichlorodifluoromethane (refrigerant gas R 500)	2.2			X	10	22	1.01	
3070	**Ethylene oxide and dichlorodifluoro-methane mixture** with not more than 12.5% ethylene oxide	2.2			X	10	18	1.09	
3153	**Perfluoro(methyl vinyl ether)**	2.1			X	10	20	0.75	
3154	**Perfluoro(ethyl vinyl ether)**	2.1			X	10	10	0.98	
3157	**Liquefied gas, oxidizing, n.o.s.**	2.2	5.1		X	10			z
3159	**1,1,1,2-tetrafluoroethane (refrigerant gas R 134a)**	2.2			X	10	18	1.05	
3161	**Liquefied gas, flammable, n.o.s.**	2.1			X	10			z
3163	**Liquefied gas, n.o.s.**	2.2			X	10			z
3220	**Pentafluoroethane (refrigerant gas R 125)**	2.2			X	10	49 35	0.95 0.87	
3252	**Difluoromethane (refrigerant gas R 32)**	2.1			X	10	48	0.78	

UN No.	Name and description	Class or Division	Subsidiary risk	LC_{50} ml/m^3	Cylinders	Test period, years	Test pressure, bar	Filling ratio	Special packing provisions
3296	**Heptafluoropropane (refrigerant gas R 227)**	2.2			X	10	13	1.21	
3297	**Ethylene oxide and chlorotetrafluoroethane mixture** with not more than 8.8% ethylene oxide	2.2			X	10	10	1.16	
3298	**Ethylene oxide and pentafluoroethane mixture** with not more than 7.9% ethylene oxide	2.2			X	10	26	1.02	
3299	**Ethylene oxide and tetrafluoroethane mixture** with not more than 5.6% ethylene oxide	2.2			X	10	17	1.03	
3337	**Refrigerant gas R 404a**	2.2			X	10	36	0.82	
3338	**Refrigerant gas R 407a**	2.2			X	10	32	0.94	
3339	**Refrigerant gas R 407b**	2.2			X	10	33	0.93	
3340	**Refrigerant gas R 407c**	2.2			X	10	30	0.95	
3354	**Insecticide gas, flammable, n.o.s.**	2.1			X	10			z
3374	**Acetylene, solvent free**	2.1			X	5	60 52		c, p

Packing Instruction 201

Passenger and cargo aircraft

For UN 1057 lighters and lighter refills

General requirements

Part 4, Chapter 1 requirements must be met

1) **Compatibility requirements**

— Hydrocarbon gas-powered small devices, including replacement cartridges, and lighters for cigarettes and lighters refills must comply with the requirements of the country in which they are filled. They must be provided with protection against inadvertent discharge. Lighters must not contain more than 10g of liquefied petroleum gas. Hydrocarbon gas –powered small devices and lighter refills must not contain more than 65g liquefied petroleum gas. The liquid portion of gas must not exceed 1500kpa at 55ºC.

2) **Closure requirements**

—The articles, including closures, must be capable of withstanding an internal pressure of twice the pressure in the fuel vessel at 55ºC.

Packaging

Total quantity per package -- passenger	*Total quantity per package --- Cargo*
1 Kg	*15 Kg*

ADDITIONAL PACKING REQUIREMENTS

—Where refill cartridges are in the form of aerosol dispensers, the pressure in the aerosol must not exceed 1500kPa at 55ºC and the requirements of Part 6 3.2.7 must be met.

—Articles which meet the above requirements are permitted only when the valve and ignition mechanism are designed or securely sealed, taped or otherwise fastened to prevent operation of leakage of contents during transport

—Articles permitted under this packing instruction may also include, within the same outer packaging, replacement cartridges exceeding 65g each, containing liquefied petroleum gas, provided such cartridge comply with all the requirements of Packing Instruction 200, they are not manifold or connected to the article and they cannot cause the failure of functioning of the article during transport. Such consignments must be carried on cargo aircraft.

OUTER PACKAGINGS

Packing Group II

Boxes

Fibreboard (4G)
Natural wood (4C1, 4C2)
Plastics (4H1, 4H2)
Plywood (4D)
Reconstituted wood (4F)

****PI 202 includes parts of the new UN P203. See ST/SG/AC.10/36/Add.1**

Packing Instruction 202

Passenger and cargo aircraft

General requirements

This instruction applies to Class 2 refrigerated liquefied gases in open and closed cryogenic receptacles.

For closed cryogenic receptacles, the general requirements of 4;1 and 4;4 must be met

1) Compatibility requirements (open cryogenic receptacles)

— Open cryogenic receptacles must be metal or glass vacuum insulated vessels or flasks vented to the atmosphere to prevent any increase in pressure within the package and must be designed and constructed to permit the release of the gas.
— The use of safety relief valves, check valves, frangible discs or similar devices in the vent lies is not permitted
— The open receptacle must have a secure base and must be designed so that it will remain stable and will not topple under normal conditions of transport
— Receptacles must be equipped with devices which prevent the release of liquid
— Fill and discharge openings must be protected against the entry of foreign materials which might increase the internal pressure
— The capacity shall be not more than 450 litres
— The receptacle shall have a double wall construction with the space between the inner and outer wall being evacuated (vacuum insulation). The insulation shall prevent the formation of hoar frost on the exterior of the receptacle

2) Compatibility requirements (closed cryogenic receptacles)

– Closed cryogenic receptacles constructed as specified in 6;5 are authorized for the transport of refrigerated liquefied gases
– The closed cryogenic receptacles must be so insulated that they do not become coated with frost
– Air, argon, carbon dioxide, helium, krypton, nitrogen, nitrous oxide, oxygen, trifluoromethane and xenon refrigerated liquids may be carried to the extent permitted in these Instructions and in packaging meeting the requirements as set. These requirements also apply to empty packaging unless all parts are at ambient temperatures.
– Test Pressure
  - Refrigerate liquids must be filled in closed cryogenic receptacles with the following minimum test pressures:
    a) For closed cryogenic receptacles with vacuum insulation, the test pressure must not be less than 1.3 times the sum of the maximum internal pressure of the filled receptacle, including during filling and discharge, plus 100 kPa(1 bar);
    b) For other closed cryogenic receptacles, the test must not be less than 1.3 times the maximum internal pressure of the filled receptacle taking into account the pressure developed during filling and discharge
– Degree of Filling
  - For flammable refrigerated liquefied gases the degree of filling shall remain below the level at which, if the contents were raised to the temperature at which the vapour pressure equalled the opening pressure of the relief valve, the volume of liquid phase would reach 98 percent of the water capacity at that temperature
  - For non flammable, non toxic refrigerated liquefied gases the volume of liquid phase at the filling temperature and at a pressure of 100 kPa (1 bar) shall not exceed 98 percent of the water capacity of the pressure receptacle.

– Pressure – relief devices
  - Every closed cryogenic receptacle, having a nominal capacity in excess of 550L, must be provided with at least 2 pressures – relief devices. The pressure – relief device must be of the type that will resist dynamic forces including surge.
  - Closed cryogenic receptacles, having a nominal capacity of 550L or less, must be provided with at least 1 pressure- relief device, and may in addition have a frangible disc in parallel with the spring

loaded device in order to meet the requirements of 6;5.1.3.6.5. the pressure – relief device must be of the type that will resist dynamic forces including surge.

3) **Closure requirements (closed cryogenic receptacles)**

—Materials used to ensure the leakproofness of the joints or for the maintenance of the closure must be compatible with the contents. In the case of receptacles intended for the transport of oxidizing gases (i.e. with a subsidiary risk of 5.1), these materials must not react with these gases in a dangerous manner.

Open Cryogenic receptacles

Packaging Material	*Maximum water Capacity*
Metal	50L
Glass	5L

ADDITIONAL PACKING REQUIREMENTS FOR OPEN CRYOGENIC RECEPTACLES

- The glass vessel or flask must be protected by shock absorbent material or structure and placed in a strong outer packaging that permits the release of the gas. The package must be designed so that the upright position of the glass vessel or flask is guaranteed under normal conditions of transport. Packaging must conform to the requirements of 6;3.1 and meet Packing Group II performance test requirements in accordance with 6;4 and be marked in compliance with 6;2
- Materials which are in direct contact with the dangerous goods shall not be affected or weakened by the dangerous goods intended to be transported and shall not cause a dangerous effect, e.g. catalysing a reaction or reacting with the dangerous goods.

ADDITIONAL PACKING REQUIREMENTS FOR CLOSED CRYOGENIC RECEPTACLES

—The pressure –relief devices must meet the requirements of 6;5.1.3.6.4 and 6;5.1.3.6.5

—Insulated packaging containing refrigerated liquid nitrogen fully absorbed in a porous material and intended for transport, at low temperature, of non dangerous products are not subject to these Instructions provided the design of the insulated packaging would not allow the build – up pressure within the container and would not permit the release of any refrigerated liquid nitrogen irrespective of the orientation of the insulted packaging.

Packing Instruction 203

Passenger and cargo aircraft for UN 1950 and 2037

General requirements

Part 4, Chapter 1 requirements must be met

1) **Compatibility requirements (metal aerosols and non –refillable receptacles containing gas (gas cartridges)**
   The receptacles must be constructed and tested in accordance with the requirements of Part6; 3.2.7 and 8
2) **Closure requirements**
   — the liquid content must not completely fill the closed receptacle at 55ºC

1) **Compatibility requirements (Plastic Aerosols (IP.7C))**
   —The pressure in the container may not exceed 970 kPa at 55ºC
   —Each receptacle must be leak tested in accordance with the provisions of 6;3.2.8.1.6.

2) **Closure requirements**
   — The contents must not completely fill the closed receptacle at 55ºC

1) **Compatibility requirements (All aerosols)**
   —the valves, if fitted must be protected by a cap or other suitable means during transport
   —receptacles must be tightly packed, so as to prevent movement

PACKAGING		**SINGLE PACKAGING**
Packaging Material	*Maximum Quantity*	
Non- refillable metal aerosols and non –refillable receptacles containing gas (gas cartridge)	1000ml	
Non –refillable plastic aerosols	120ml	NO
Non –refillable plastic aerosols when propellant is a non flammable, non toxic gas and the contents are not dangerous goods in accordance with the provisions of the Technical Instructions	500ml	

ADDITIONAL PACKING REQUIREMENTS FOR ALL AEROSOLS

—Packagings must meet the Packing Group II

OUTER PACKAGINGS

Boxes

Fibreboard (4G)
Natural wood (4C1, 4C2)
Plastics (4H1, 4H2)
Plywood (4D)
Reconstituted wood (4F)

Packing Instruction Y203

Limited quantities

Passenger and cargo aircraft for UN 1950 and 2037

General requirements

Part 3, Chapter 4 requirements must be met

1) **Compatibility requirements (Metal aerosols and non –refillable receptacles containing gas (gas cartridges)**
The receptacles must be constructed and tested in accordance with the requirements of Part6; 3.2.7 and 8

2) **Closure requirements**

— the liquid content must not completely fill the closed receptacle at 55ºC

1) **Compatibility requirements (Plastic Aerosols (IP.7C))**
—The pressure in the container may not exceed 970 kPa at 55ºC
—Each receptacle must be leak tested in accordance with the provisions of 6;3.2.8.1.6.

2) **Closure requirements**
— The contents must not completely fill the closed receptacle at 55ºC

1) **Compatibility requirements (All aerosols)**
—the valves, if fitted must be protected by a cap or other suitable means during transport
—receptacles must be tightly packed, so as to prevent movement

PACKAGING		**SINGLE PACKAGING**
Packaging Material	*Maximum Quantity*	
Non- refillable metal aerosols and non –refillable receptacles containing gas (gas cartridge)	1000ml	
Non –refillable plastic aerosols	120ml	NO
Non –refillable plastic aerosols when propellant is a non flammable, non toxic gas and the contents are not dangerous goods in accordance with the provisions of the Technical Instructions	500ml	

ADDITIONAL PACKING REQUIREMENTS FOR ALL AEROSOLS

—receptacles must be tightly packed, so as to prevent movement, in wooden boxes (4C1, 4C2), plywood boxes (4D), reconstituted wood boxes (4F), fibreboard boxes (4G) or plastic boxes (4H1, 4H2) of Packing Group II

OUTER PACKAGINGS

Boxes

Wooden
Fibreboard
Plastics
Plywood
Reconstituted wood

Packing Instruction 204

Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met

1) **Compatibility requirements**

—the pressure in the aerosol must not exceed 970 kPa at 55ºC
—the liquid contents must not completely fill the closed receptacle at 55ºC
—one aerosol out of each lot of 500 or less must be heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55ºC, without evidence of leakage, distortion or other defect.
—The valves must be protected by a cap or other suitable means during transport
—Aerosols must be tightly packed, so as to prevent movement

Packaging

Packing Conditions	*Inner packaging*	*Quantity*
Aerosols, non flammable, containing biological products or a medical preparation, which will be deteriorated by a heat test	Inner non – refillable receptacles	575 ml

OUTER PACKAGINGS

Packing Group II

Boxes

Fibreboard (4G)
Natural wood (4C1, 4C2)
Plastics (4H1, 4H2)
Plywood (4D)
Reconstituted wood (4F)

Packing Instruction Y204

Limited quantities

Passenger and cargo aircraft

General requirements

Part 3, Chapter 4 requirements must be met, including:

1) **Compatibility requirements**

—the pressure in the aerosol must not exceed 970 kPa at 55ºC
—the liquid contents must not completely fill the closed receptacle at 55ºC
—one aerosol out of each lot of 500 or less must be heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55ºC, without evidence of leakage, distortion or other defect.

2) **Closure requirements**

—the valves must be protected by a cap or other suitable means during transportation

	Packaging		**SINGLE PACKAGING**
Packing Conditions	*Inner packaging*	*Quantity*	
Aerosols, non flammable, containing biological products or a medical preparation, which will be deteriorated by a heat test	Inner non – refillable receptacles	575 ml	NO

ADDITIONAL PACKING REQUIREMENTS

Aerosols must be tightly packed and, so as to prevent movement, in one of the boxes listed below

OUTER PACKAGINGS

Packing Group II

Boxes
Fibreboard
Wooden
Plastics
Plywood

Reconstituted wood

Packing Instruction 206

Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— A gas sample may only be accepted for transport as a non – pressurized gas providing it is at a pressure corresponding to ambient atmospheric pressure at the time the containment system is closed and this must not exceed 105 kPa absolute

Packaging

Packaging Conditions	*Inner Material*	*Inner quantity*
Non pressurized gas – must be contained in hermetically sealed glass or metal	Glass	1L .5L
	Metal	1L 1L
"Gas sample, non - pressurized ,flammable, n.o.s" shipped as **CARGO ONLY**	Glass or Metal	2.5 L

ADDITIONAL PACKING REQUIREMENTS

Inner packaging(s) must be packed so as to prevent movement

OUTER PACKAGINGS

Packing Group II

Boxes	*Drums*
Fibreboard (4G)	Aluminum (1B2)
Natural wood (4C1, 4C2)	Steel (1A2)
Plastics (4H1, 4H2)	
Plywood (4D)	
Reconstituted wood (4F)	

Packing Instruction 207

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) Compatibility requirements

— methyl bromide or methyl bromide with not more than 2 per cent by volume choropicrin may be offered for transport when packaged as follows:

Packaging	
Inner packaging material	*Inner quantity*
Metal cans (IP.3), tin plated or lined with suitable material and with concave pressure ends	0.5Kg

ADDITIONAL PACKING REQUIREMENTS

Cylinders for compressed gas as authorised for methyl bromide with valves and fittings protected by a cap or other suitable device. Filling density must provide a minimum ullage (outage) of 12 per cent at 21C. if cylinders are not protected by a cap or other suitable device (e.g fire extinguishers) they must be securely packed in strong packaging.

OUTER PACKAGINGS

Packaging Group II

Boxes	*Drums*
Fibreboard (4G)	Aluminum (1B2)
Natural wood (4C1, 4C2)	Fibre (1G)
Plastics (4H2, 4H1)	Jerricans (3A2)
Plywood (4D)	Plywood (1D)
Reconstituted wood (4F)	Steel (1A2)

ADDITIONAL PACKING REQUIREMENTS

Filling density must provide a minimum ullage (outage) of 12 per cent at 21C.

The cans must be capable of withstanding an interior gauge pressure of 900 kPa.

Packing Instruction 208

Passenger and cargo aircraft

UN3164

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Articles, pressurized pneumatic or hydraulic containing a non –flammable, non – liquefied and non- toxic gas and constructed from materials which will not fragment under pressure must follow the flowing requirements.

a) when installed in construction equipment and assembled machinery, articles must be designed and constructed with a burst of pressure not less than 5 times their charged pressure at 21º C when shipped

b) when tightly packed to prevent movement in strong outer packagings and charged to not more than 1380 kPa at 21ºC, the following conditions also apply

1) each article must have a fluid space not exceeding 41 L under stored pressure

2) each article must be tested without failure or damage to at least 3 times its charged pressure at 21º C but not less than 830 kPa before each refilling and re-shipment

c) when tightly packed to prevent movement in strong outer packaging and charged with a pressure exceeding 1380 kPa at21ºC the following conditions also apply:

1) each article must have a fluid space not exceeding 41L under stored pressure

2) each article must be tested without failure or damage to at least 3 times its charged pressure at 21ºC, but not less than 830 kPa before initial shipment and before each refilling and re-shipment

3) each article must be designed and constructed with a burst pressure of not less than 5 times its charged pressure at 21ºC when shipped

ADDITIONAL PACKING REQUIREMENTS

Labeling, marking, dangerous goods transport documentation and information to pilot- in-command are not required

Packing Instruction 211

Passenger and cargo aircraft

UN2857

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

—Refrigerating machines or components containing non – toxic liquefied gases or Ammonia Solution (UN2672) must meet the following requirements:
—each cylinder must be equipped with a safety device meeting the requirements of a recognized national standard
—cylinders must be manufactured, inspected and tested in accordance with a recognized UN or national standard
—all parts subject to refrigerant pressure during shipment must be tested in accordance with a recognized UN or national standard
—the liquid portion of the refrigerant, if any, must not completely fill any pressure vessel at 55ºC
—the amount of refrigerant, if liquefied, must not exceed the filling density prescribed by applicable State regulations

2) **Closure requirements**

— Each cylinder must be equipped with a shut off valve at watch opening except openings used for safety devices and with no other connection. These valves must be closed prior to and during transport

Packaging

Packaging Conditions	*Inner Quantity*	*Total Net Quantity*
Non toxic liquefied gases-Division 2.2 gas without subsidiary risk	450 Kg	910 Kg
Ammonia (UN2672)	25 Kg	45 Kg

Packing Instruction 212

Passenger and cargo aircraft

UN1950 Tear gas devices

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

—the liquid content must not completely fill the closed receptacle at 55ºC
—each aerosol must have been heated until the pressure in the aerosol is equivalent to the equilibrium pressure of the contents at 55ºC, without evidence of leakage, distortion or other defect.

2) **Closure requirements**

— the valves must be protected by a cap or other suitable means during transport

Packaging

Packaging conditions	*Temperature*	*Inner Quantity*	*Pressure*	*Packaging material*	*Net Outer Quantity*
Aerosols, non-flammable, which are tear gas devices are permitted in inner non-refillable metal receptacles	55ºC	1000 ml	1500k Pa	Must withstand without bursting a pressure of at least 1.5 times the equilibrium pressure of the contents at 55ºC	50 Kg
			<1105 kPa	IP.7, IP.7A,IP.B metal receptacle	
			1105kPa >1245k Pa	IP.7A, IP.7B metal receptacle	
			>1245k Pa	IP.7B metal receptacle	

ADDITIONAL PACKING REQUIREMENTS

IP.7B metal receptacle having a minimum burst pressure of 1800 kPa may be equipped with an inner capsule charged with a non- flammable, non- toxic compressed gas to provide the propellant function. In this case, the pressures indicated in a),b),c), or d) do not apply to the pressure with the capsule. The quantity of gas contained in the capsule must be so limited such that the minimum burst pressure of the receptacle would not be exceeded if the entire gas content of the capsule were released into an aerosol.

Aerosols must be individually placed into spiral wound tubes fitted with metal ends or a double –faced fibreboard box with suitable padding, which must be tightly packed in outer packagings

OUTER PACKAGINGS

Packing Group II

Boxes
Fibreboard (4G)
Natural wood (4C1, 4C2)
Plastics (4H1, 4H2)
Plywood (4D)
Reconstituted wood (4F)

Packing Instruction 213
Passenger and cargo aircraft
UN1044

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

- Fire extinguishers with compressed or liquefied gas must be packed in strong outer packaging so that they cannot be accidentally activated.
- Fire extinguishers may include installed actuating cartridges (cartridges, power devices of Division 1.4C or 1.4S), without changing the classification of Division 2.2, provided the total quantity of deflagrating (propellant) explosives does not exceed 3.2 g per extinguishing unit.

Packing Instruction 214
Passenger and cargo aircraft for UN 3468

General requirements

This instruction applies to storage system containing hydrogen absorbed in a metal hydride (UN3468) individually or when combined in equipment and apparatus when transported on cargo aircraft.

1) **Compatibility requirements**

- The storage systems must be constructed and marked by the manufacturer indicating they meet the requirements of Annex B of IEC PAS 62282-6-1.
- Storage systems employing cylinders other than UN marked and certified cylinders may be used if the design, construction, testing, approval and markings conform to the requirements of the appropriate national authority of the State in which they are approved and filled.
- Storage systems for which prescribed periodic tests have become due must not be filled and offered for transport unit such retests have been successfully completed.
- Storage systems with a water capacity of less than 1 L must be packaged in ridged outer packaging constructed of suitable material of adequately secured or cushioned so as to prevent damage during normal conditions of transport.
- Storage systems must be filled in accordance with procedures provided by the manufacturer of the system in accordance with clause B4.17.2 of IEC PAS 62282-6-1

Packing Instruction 215

Passenger and cargo aircraft for UN3478 and 3479

General requirements

Part 4, Chapter 1.1.1, 1.1.2, and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

—Substances must be compatible with their packagings as required by 4; 1.1.3

Packaging

UN number and proper shipping name	*Quantity - Passenger*	*Quantity - Cargo*
UN3478 Fuel Cell cartridges containing Liquefied flammable gas UN3479 Fuel Cell cartridges containing hydrogen in metal hydride	1Kg of fuel cell cartridges	15 Kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

- Fuel cell cartridges must be securely cushioned in the outer packaging
- Packaging must meet the Packing Group II performance requirements

OUTER PACKAGINGS

Packing Group II

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Steel (3A2)
Fibreboard (4G)	Fibreboard (1G)	Plastics (3H2)
Natural wood (4C1,4C2)	Plastic (1H2)	Aluminium (3B2)
Plastic (4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction 216

Passenger and cargo aircraft for UN3478 and 3479 (contained in equipment) only

General requirements

Part 4, Chapter 1.1.1, 1.1.2, and 1.1.7 requirements must be met, including:

1) **Compatibility requirements**

—Substances must be compatible with their packagings as required by 4; 1.1.3

Packaging

UN number and proper shipping name	*Quantity - Passenger*	*Quantity - Cargo*
UN3478 Fuel Cell cartridges contained in equipment , containing liquefied flammable gas UN3479 Fuel Cell cartridges contained in equipment, containing hydrogen in metal hydride	1Kg of fuel cell cartridges	15 Kg of fuel cell cartridges

ADDITIONAL PACKING REQUIREMENTS

- Fuel cell cartridges that are contained in equipment must be protected against short circuit and the equipment must be protected against inadvertent operation
- Equipment must be securely cushioned in the outer packaging
- Fuel cell systems must not charge batteries during transportation
- On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC PAS 62282-6-1 Ed. 1 pr a standard approved by the appropriate authority of the State of Origin

OUTER PACKAGINGS

Packing Group II

Boxes	*Drums*	*Jerricans*
	Strong outer packaging	

NOTE THIS IS THE SAME NUMBER AS IS CURRENTLY IN THE TECHNICAL INSTRUCTIONS AND THAT IT NEEDS TO BE CHANGED

Packing Instructions 213

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

— Small quantities of gases in Division 2.3, including mixtures of gases, may be carried in an aircraft under the following conditions:

Packaging	
Inner packaging material	*Inner quantity*
Glass cylinder meeting the packing instructions of PI200 or IP8 glass ampoule, provided it is compatible with the gas	100g

ADDITIONAL PACKING REQUIREMENTS

Maximum quantity of gas permitted per package must be determined using the following formula:

Permitted mass $\leq 10^{-3}$ (RMM) (LC50)
Where
RMM = relative molecular mass
LC50 expressed in mL/m3 as defined in Part 2, Chapter 6 of the Technical Instructions
Permitted Mass expressed in grams

For mixture of toxic gases, where the LC50 fo the mixture or its mass per unit volume at NTP are unknown, the following formula must be used to determine the permitted mass of the mixture:

$$\frac{\text{Mass of component 1}}{10^{-3}\,(RMM)_1(LC)_1} + \frac{\text{Mass of component 2}}{10^{-3}\,(RMM)_2(LC)_2} + \frac{\text{mass of component n}}{10^{-3}\,(RMM)n(LC_{50})_n}$$

where

NTP is normal temperature and pressure
(RMM)= relative molecular mass of component 1…n

This latter formula makes no allowance for any synergistic effect of the mixture and it should not be used where the toxic effects are other that additive

OUTER PACKAGINGS

The glass ampoule or gas cylinder must be tightly packed as to prevent movement in an outer metal pressure vessel containing inert absorbent and cushioning material. The outer metal pressure vessels must be designed to contain the total quantity of gas in case of leakage of the ampoule or cylinder. The outer metal pressure vessel must meet the requirements of Packing Instruction 200. Special care must be taken to prevent corrosion of the inner wall of the outer metal pressure vessels.

The outer metal pressure vessel must be tightly packed, so as to prevent movement, in a strong outside packaging.

Classes 3-9 Table

Name	UN No.	Class or division	Sub-sidiary risk	PG	Labels (EMPTY)	State variations (EMPTY)	Special provisions	Excepted Quantities (EMPTY)	Passenger aircraft		Cargo aircraft	
									Packing Instruction	Max.net quantity per package	Packing Instruction	Max.net quantity per package
1	2	3	4	5	6	7	8	9	10	11	12	13
1-Chloropropane	1278	3		II			A1		F (353)	F (5 L)	364	60 L
2-Chloroethanal	2232	6.1		I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
2-Methyl-2-heptanethiol	3023	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
5-tert-Butyl-2,4,6-trinitro-m-xylene (musk xylene)	2956	4.1		III			A20, A200, A215					
Acetaldehyde	1089	3		I			A1		F (350)	F (0.5 L)	361	30 L
Acetone cyanohydrin, stabilized	1541	6.1		I			A1, A223		F (651)	F (0.5 L)	657	2.5 L
Acrolein, stabalized	1092	6.1	3	I			A223		F	F	F	F
Acrylonitrile, stabilized	1093	3	6.1	I			None		F	F	361	30 L
Aircraft hydraulic power unit fuel tank (containing a mixture of anhydrous hydrazine and methyl hydrazine) (M86 fuel)	3165	3	6.1, 8	I			A1, A48		F (350)	F (0.5 L)	373	42 L
Alcohols, flammable, toxic, n.o.s. *	1986	3	6.1	I			A3		F	F	361	30 L
Aldehydes, flammable, toxic, n.o.s. *	1988	3	6.1	I			A3		F	F	361	30 L
Alkali metal alloy, liquid, n.o.s.	1421	4.3		I			A84		F	F	480	1.0 L
Alkali metal amalgam, liquid	1389	4.3		I			A84		F	F	480	1.0 L
Alkali metal amalgam, solid	3401	4.3		I			A84		F	F	487	15 KG
Alkali metal dispersion	1391	4.3		I			A84, A147		F	F	480	1.0 L
Alkaline earth metal amalgam, liquid	1392	4.3		I			A85		F	F	480	1.0 L
Alkaline earth metal amalgam, solid	3402	4.3		I			A85		F	F	487	15 KG
Alkaline earth metal dispersion	1391	4.3		I			A84, A147		F	F	480	1.0 L
Allyl alcohol	1098	6.1	3	I			A223		F	F	F	F
Allyl bromide	1099	3	6.1	I			None		F	F	361	30 L
Allyl chloride	1100	3	6.1	I			None		F	F	361	30 L
Allyl chloroformate	1722	6.1	3, 8	I			A223		F	F	F	F
Allyl formate	2336	3	6.1	I			None		F	F	361	30 L
Allyl isothiocyanate, stabilized	1545	6.1	3	II			A1		F (654)	F (5 L)	661	60.0 L
Allylamine	2334	6.1	3	I			A223		F	F	F	F
Allyltrichlorosilane, stabilized	1724	8	3	II			A1		F (851)	F (1 L)	855	30 L

Aluminium borohydride	2870	4.2	4.3	I			None		F	F	F	F
Aluminium borohydride in devices	2870	4.2	4.3	I			None		F	F	F	F
Aluminium hydride	2463	4.3		I			None		F	F	487	15 KG
Aluminium phosphide	1397	4.3	6.1	I			None		F	F	487	15 KG
Aluminium phosphide pesticide	3048	6.1		I			A128		F (665)	F (1 KG)	672	15 KG
Ammonium nitrate, liquid	2426	5.1					A129		F	F	F	F
Ammunition, tear-producing, non-explosive without burster or expelling charge, non-fuzed	2017	6.1	8	II			A1		F (668)	F (15 KG)	679	50 KG
Ammunition, toxic, non-explosive without burster or expelling charge, non-fuzed	2016	6.1		II			A1		F (669)	F (25 KG)	679	75 KG
Amyltrichlorosilane	1728	8		II			A1		F (851)	F (1 L)	855	30 L
Antimony pentafluoride	1732	8	6.1	II			A1		F (851)	F (1 L)	855	30 L
Arsenic trichloride	1560	6.1		I			A223		F	F	F	F
Arsenical pesticide, liquid, flammable, toxic, * flash point less than 23°C	2760	3	6.1	I			A40		F	F	F	F
Azodicarbonamide	3242	4.1		II			A60		F (450)	F (15 KG)	F (453)	F (50 KG)
Barium alloys, pyrophoric	1854	4.2		I			None		F	F	F	F
Barium azide, wetted with 50% or more water, by weight	1571	4.1	6.1	I			A40		F	F	456	0.5 KG
Batteries, containing sodium †	3292	4.3		II			A94		F (483)	F (15 KG)	492	NO LIMIT
Benzyl chloroformate	1739	8		I			A1		F (850)	F (0.5 L)	854	2.5 L
Bipyridilium pesticide, liquid, flammable, toxic, * flash point less than 23°C	2782	3	6.1	I			A4		F	F	361	30 L
Blue asbestos	2212	9		II			A61		F	F	F	F
Bombs, smoke, non-explosive with corrosive liquid, without initiating device	2028	8		II			None		F	F	866	50 KG
Boron tribromide	2692	8		I			A2, A223		F (850)	F (0.5 L)	855	30 L
Boron trifluoride dimethyl etherate	2965	4.3	3, 8	I			None		F	F	480	1.0 L
Bromine	1744	8	6.1	I			A2		F (850)	F (0.5 L)	855	30 L

Bromine solution	1744	8	6.1	I			A2		F (850)	F (0.5 L)	855	30 L
Bromoacetone	1569	6.1	3	II			A2, A223		F (654)	F (5 L)	F (661)	F (60 L)
Bromobenzyl cyanides, liquid	1694	6.1		I			A1, A29		F (651)	F (0.5 L)	658	2.5 L
Brown asbestos	2212	9		II			A61		F	F	F	F
Butyltrichlorosilane	1747	8	3	II			A1		F (851)	F (1 L)	855	30 L
Caesium	1407	4.3		I			None		F	F	487	15 KG
Calcium alloys, pyrophoric	1855	4.2		I			None		F	F	F	F
Calcium carbide	1402	4.3		I			None		F	F	487	15 KG
Calcium hydride	1404	4.3		I			None		F	F	487	15 KG
Calcium phosphide	1360	4.3	6.1	I			None		F	F	487	15 KG
Calcium, pyrophoric	1855	4.2		I			None		F	F	F	F
Carbamate pesticide, liquid, flammable, toxic * flash point less than 23°C	2758	3	6.1	I			A4		F	F	361	30 L
Carbon disulphide	1131	3	6.1	I			None		F	F	F	F
Carbon, animal or vegetable origin	1361	4.2		II			A2, A3		F	F	F	F
Carbon, animal or vegetable origin	1361	4.2		III			A2, A3		F	F	F	F
Celluloid, scrap	2002	4.2		III			A2, A3		F (473)	F (25 kg)	F (475)	F (100 KG)
Chemical sample, toxic	3315	6.1		I			A106		F (665)	F (1 KG)	F (672)	F (15 KG)
Chloric acid, aqueous solution with < 10% chloric acid	2626	5.1		II			A2		F (550)	F (1 L)	F (554)	F (5 L)
Chloroacetic acid, molten	3250	6.1	8	II			None		F	F	F	F
Chloroacetone, stabalized	1695	6.1	3, 8	I			A223		F	F	F	F
Chloroacetonitrile	2668	6.1	3	II			A2, A223		F (654)	F (5 L)	F (661)	F (60 L)
Chloroacetophenone, liquid	3416	6.1		II			A1		F (654)	F (5 L)	661	60.0 L
Chloroacetophenone, solid	1697	6.1		II			A1		F (669)	F (25 KG)	674	100 KG
Chloroacetyl chloride	1752	6.1	8	I			A2, A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Chlorophenyltrichlorosilane	1753	8		II			A1		F (851)	F (1 L)	855	30 L
Chloropicrin	1580	6.1		I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Chloropicrin mixture, n.o.s.	1583	6.1		I			A2		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Chloropicrin mixture, n.o.s.	1583	6.1		II			A3		F (653)	F (1 L)	F (659)	F (5 L)
Chloropicrin mixture, n.o.s.	1583	6.1		III			A137		F (655)	F (60 L)	F (663)	F (220 L)
Chloroprene, stabilized	1991	3	6.1	I			None		F	F	361	30 L

Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.	2988	4.3	3, 8	I			None		F	F	480	1.0 L
Chlorosulphonic acid	1754	8		I			A223		F (850)	F (0.5 L)	855	30 L
Copper based pesticide, liquid, flammable, toxic, * flash point less than 23°C	2776	3	6.1	I			A4		F	F	361	30 L
Copra	1363	4.2		III			A2, A48		F (473)	F (25 kg)	F (475)	F (100 KG)
Corrosive liquid, oxidizing, n.o.s. *	3093	8	5.1	I			None		F	F	854	2.5 L
Corrosive liquid, water-reactive, n.o.s. *	3094	8	4.3	I			None		F	F	F	F
Cotton waste, oily	1364	4.2		III			A2, A48		F (473)	F (25 kg)	F (475)	F (100 KG)
Cotton, wet	1365	4.2		III			A2, A48		F (473)	F (25 kg)	F (475)	F (100 KG)
Coumarin derivative pesticide, liquid, flammable, toxic * flashpoint less than 23°C	3024	3	6.1	I			A48, A4		F	F	361	30 L
Crotonaldehyde, stabilized	1143	6.1	3	I			A2, A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Cyanogen bromide	1889	6.1	8	I			A2		F (665)	F (1 KG)	F (672)	F (15 KG)
Cyclohexenyltrichlorosilane	1762	8		II			A1		F (851)	F (1 L)	855	30 L
Cyclohexyl isocyanate	2488	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Cyclohexyltrichlorosilane	1763	8		II			A1		F (851)	F (1 L)	855	30 L
Decaborane	1868	4.1	6.1	II			A1		F (450)	F (15 KG)	453	50 KG
Desensitized explosive, solid, n.o.s.	3380	4.1		I			A133		F	F	F	F
Desensitized explosives, liquid, n.o.s.	3379	3		I			A133		F	F	F	F
Dichlorodimethyl ether, symmetrical	2249	6.1	3	I			None		F	F	F	F
Dichlorophenyltrichlorosilane	1766	8		II			A1		F (851)	F (1 L)	855	30 L
Diethyldichlorosilane	1767	8	3	II			A1		F (851)	F (1 L)	855	30 L
Diketene, stabilized	2521	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Dimethyl sulphate	1595	6.1	8	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Dimethylhydrazine, symmetrical	2382	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Dimethylhydrazine, unsymmetrical	1163	6.1	3, 8	I			A223		F	F	F	F
Dinitrotoluenes, molten	1600	6.1		II			None		F	F	F	F
Diphenylamine chloroarsine	1698	6.1		I			None		F	F	F	F
Diphenylchloroarsine, solid	3450	6.1		I			None		F (665)	F (1 KG)	672	50 kg

Diphenylcholoroarsine, liquid	1699	6.1		I			None		F (652)	F (1 L)	F (658)	15 KG
Diphenyldichlorosilane	1769	8		II			A1		F (851)	F (1 L)	855	30 L
Dipicryl sulphide, wetted with 10% or more water, by weight	2852	4.1		I			A40		F	F	451	0.5 KG
Dodecyltrichlorosilane	1771	8		II			A1		F (851)	F (1 L)	855	30 L
Elevated temperature liquid, flammable, n.o.s., with flash point above 60.5°C, at or above its flash point	3256	3		III			None		F	F	F	F
Elevated temperature liquid, n.o.s.	3257	9		III			A205		F	F	F	F
Elevated temperature solid, n.o.s.	3258	9		III			A205		F	F	F	F
Engines, internal combustion	3166	9					A67, A70, A87, A118, A134		F	F	F (951)	
Epibromohydrin	2558	6.1	3	I			None		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Ethyl bromoacetate	1603	6.1	3	II			A2		F (654)	F (5 L)	F (661)	F (60 L)
Ethyl chloroformate	1182	6.1	3, 8	I			A223		F	F	F	F
Ethyl chlorothioformate	2826	8	3	II			A223		F (851)	F (1 L)	F (855)	F (30 L)
Ethyl Isocyanate	2481	3	6.1	I			None		F	F	361	30 L
Ethyl mercaptan	2363	3		I			A1		F (350)	F (0.5 L)	F (360)	F (2.5 L)
Ethyl Nitrite	1194	3	6.1	I			A2		F (350)	F (0.5 L)	F (360)	F (2.5 L)
Ethyldichloroarsine	1892	6.1		I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Ethyldichlorosilane	1183	4.3	3, 8	I			None		F	F	480	1.0 L
Ethylene chlorohydrin	1135	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Ethylene dibromide	1605	6.1		I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Ethylene oxide and propylene oxide mixture 30% or less ethylene oxide	2983	3	6.1	I			None		F	F	361	30 L
Ethyleneimine, stabalized	1185	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Ethylphenyldichlorosilane	2435	8		II			A1		F (851)	F (1 L)	855	30 L
Fabrics, animal, n.o.s., with oil	1373	4.2		III			A2		F (473)	F (25 kg)	F (475)	F (100 KG)
Fabrics, synthetic, n.o.s., with oil	1373	4.2		III			A2		F (473)	F (25 kg)	F (475)	F (100 KG)
Fabrics, vegetable, n.o.s., with oil	1373	4.2		III			A2		F (473)	F (25 kg)	F (475)	F (100 KG)
Fibres, animal, n.o.s., with oil	1373	4.2		III			A2		F (473)	F (25 kg)	F (475)	F (100

												KG)
Fibres, synthetic, n.o.s., with oil	1373	4.2		III			A2		F (473)	F (25 kg)	F (475)	F (100 KG)
Fibres, vegetable, n.o.s., with oil	1373	4.2		III			A2		F (473)	F (25 kg)	F (475)	F (100 KG)
Flammable liquid, toxic, corrosive, n.o.s. *	3286	3	6.1, 8	I			None		F	F	360	2.5 L
Flammable liquid, toxic, n.o.s. *	1992	3	6.1	I			A3		F	F	361	30 L
Flammable solid,organic, molten, n.o.s.	3176	4.1		II			None		F	F	F	F
Flammable solid,organic, molten, n.o.s.	3176	4.1		III			None		F	F	F	F
Flammable solid,oxidizing, n.o.s.	3097	4.1	5.1	II			A3		F	F	F	F
Flammable solid,oxidizing, n.o.s.	3097	4.1	5.1	III			A3		F	F	F	F
Hafnium powder, dry	2545	4.2		I			A3		F	F	F	F
Hexachlorocyclopentadiene	2646	6.1		I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Hexadecyltrichlorosilane	1781	8		II			A1		F (851)	F (1 L)	855	30 L
Hexyltrichlorosilane	1784	8		II			A1		F (851)	F (1 L)	855	30 L
Hydrazine, aqueous solution with more than 37% by weight	2030	8	6.1	I			A1, A36, A147		F (850)	F (0.5 L)	855	30 L
Hydrazine, aqueous solution with more than 37% by weight	2030	8	6.1	II			A1, A36, A147		F (851)	F (1 L)	855	30 L
Hydrobromic acid 49% or less strength	1788	8		II			A2		F (851)	F (1 L)	855	30 L
Hydrocyanic acid, aqueous solution <20% hydrogen cyanide	1613	6.1		I			None		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Hydrofluoric acid and sulphuric acid mixture	1786	8	6.1	I			A1		F (850)	F (0.5 L)	854	2.5 L
Hydrogen cyanide, aqueous solution <20% hydrogen cyanide	1613	6.1		I			None		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Hydrogen cyanide, solution in alcohol <45% hydrogen cyanide	3294	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Hydrogen cyanide, stabalized <3% water	1051	6.1	3	I			A223		F	F	F	F
Hydrogen fluoride, anhydrous	1052	8	6.1	I			A2, A223		F (850)	F (0.5 L)	855	30 L
Hydrogen peroxide, aqueous solution >40% <60%	2014	5.1	8	II			A2, A75		F (550)	F (1 L)	F (554)	F (5 L)

Hydrogen peroxide, aqueous solution stabilized >60%	2015	5.1	8	I			None		F	F	F (553)	F (2.5 L)
Hydrogen peroxide, stabilized	2015	5.1	8	I			None		F	F	F (553)	F (2.5 L)
Hyrogen cyanide, stabalized <3% water and absorbed in porous material	1614	6.1		I			A2, A223		F	F	F	F
Iodine monochloride	1792	8		II			A1		F (859)	F (15 KG)	863	50 KG
Iron oxide, spent	1376	4.2		III			A2, A3		F (473)	F (25 KG)	F (475)	F (100 KG)
Iron pentacarbonyl	1994	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Iron sponge, spent	1376	4.2		III			A2, A3		F (473)	F (25 KG)	F (475)	F (100 KG)
Isopropyl chloroformate	2407	6.1	3, 8	I			A2, A223		F	F	F	F
Isosorbide-5-mononitrate	3251	4.1		III			A20, A110		F	F	F (454)	F (100 kg)
Lithium	1415	4.3		I			II		F	F	487	15 KG
Lithium aluminium hydride	1410	4.3		I			None		F	F	487	15 KG
Lithium aluminium hydride, ethereal	1411	4.3	3	I			None		F	F	480	1.0 L
Lithium borohydride	1413	4.3		I			None		F	F	487	15 KG
Lithium hydride	1414	4.3		I			None		F	F	487	15 KG
Lithium nitride	2806	4.3		I			None		F	F	488	15 KG
Magnesium alloys powder	1418	4.3	4.2	I			A3		F	F	488	15 KG
Magnesium aluminium phosphide	1419	4.3	6.1	I			None		F	F	487	15 KG
Magnesium hydride	2010	4.3		I			None		F	F	487	15 KG
Magnesium phosphide	2011	4.3	6.1	I			None		F	F	487	15 KG
Magnesium powder	1418	4.3	4.2	I			A3		F	F	488	15 KG
Matches, fusee	2254	4.1		III			A2, A125		F (451)	F (25 kg)	460	100 KG
Matches, strike anywhere	1331	4.1		III			A2, A125					
Mercaptan mixture, liquid, flammable, toxic, n.o.s. *	1228	3	6.1	II			A1, A3, A36		F (352)	F (1 L)	374	60.0 L
Mercury based pesticide, liquid, flammable, toxic, * flash point less than 23°C	2778	3	6.1	I			A4		F	F	361	30 L
Metal catalyst, dry	2881	4.2		I			A3, A36		F	F	F	F
Metal catalyst, dry	2881	4.2		II			A3, A36		F (471)	F (15 KG)	477	50 KG
Metal catalyst, wetted	1378	4.2		II			A1		F (471)	F (15 KG)	477	50 KG

Metal hydrides, water-reactive, n.o.s. *	1409	4.3		I			None		F	F	487	15 KG
Metallic substance, water-reactive, n.o.s. *	3208	4.3		I			A3		F	F	487	15 KG
Metallic substance, water-reactive, self-heating, n.o.s. *	3209	4.3	4.2	I			A3		F	F	487	15 KG
Methacrylonitrile, stabalized	3079	3	6.1	I			A223		F	F	F	F
Methanesulphonyl chloride	3246	6.1	8	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Methoxymethyl isocyanate	2605	3	6.1	I			A223		F	F	F	F
Methyl bromide and ethylene dibromide mixture, liquid	1647	6.1		I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Methyl chloroacetate	2295	6.1	3	I			None		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Methyl chloroformate	1238	6.1	3, 8	I			A223		F	F	F	F
Methyl chloromethyl ether	1239	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Methyl iodide	2644	6.1		I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Methyl isocyanate	2480	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Methyl isothiocyanate	2477	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Methyl magnesium bromide in ethyl ether	1928	4.3	3	I			None		F	F	480	1.0 L
Methyl orthosilicate	2606	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Methyl vinyl ketone, stabalized	1251	6.1	3, 8	I			A223		F	F	F	F
Methyldichlorosilane	1242	4.3	3, 8	I			None		F	F	480	1.0 L
Methylhydrazine	1244	6.1	3, 8	I			A223		F	F	F	F
Methyltrichlorosilane	1250	3	8	I			A1		F (350)	F (0.5 L)	360	2.5 L
Motor fuel anti-knock mixture	1649	6.1		I			A1, A47			F (1 L)		30 L
musk xylene (5-tert-Butyl-2,4,6-trinitro-m-xylene)	2956	4.1		III			A20, A200, A215					
Naphthalene, molten	2304	4.1		III			None		F	F	F	F
n-Butyl chloroformate	2743	6.1	3, 8	II			A223		F	F	F	F
n-Butyl isocyanate	2485	6.1	3	I			A2, A223		F	F	F	F
Nickel carbonyl	1259	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Nitrating acid mixture with 50% or less nitric acid	1796	8		II			A34		F (851)	F (1 L)	855	30 L
Nitrating acid mixture with more than 50% nitric acid	1796	8	5.1	I			A34		F	F	854	2.5 L

Nitrating acid mixture, spent with 50% or less nitric acid	1826	8		II			A34		F (851)	F (1 L)	855	30 L
Nitrating acid mixture, spent with more than 50% nitric acid	1826	8	5.1	I			A34		F	F	854	2.5 L
Nitric acid other than red fuming, with 70% or less but more than 20% nitric acid	2031	8		II			A34		F (851)	F (1 L)	855	30 L
Nitric acid other than red fuming, with more than 70% nitric acid	2031	8	5.1	I			A34		F	F	854	2.5 L
Nitric acid, red fuming	2032	8	5.1, 6.1	I			A223		F	F	F	F
Nitriles, flammable, toxic, n.o.s. *	3273	3	6.1	I			None		F	F	361	30 L
Nitroglycerin mixture desensitized, solid, n.o.s. * with more than 2% but not more than 10% nitroglycerin, by weight	3319	4.1					A1, A68		F	F	F	F
Nitroglycerin mixture, desensitized with <30% nitro by mass	3343	3					A17, A204		F	F	F	F
Nitroglycerin mixture, desensitized with <30% nitro by mass	3357	3		II			A17		F	F	F	F
Nitroglycerin solution in alcohol with 5% or less but more than 1% nitroglycerin	3064	3		II			None		F (352)	F (1 L)	362	5 L
Nitrohydrochloric acid	1798	8		I			A1		F (850)	F (0.5 L)	854	2.5 L
Nitromethane	1261	3		II			A1, A39		F (352)	F (1 L)	No Limit	
Nonyltrichlorosilane	1799	8		II			A1		F (851)	F (1 L)	855	30 L
n-Propyl chlororformate	2740	6.1	3, 8	I			A223		F	F	F	F
n-Propyl isocyanate	2482	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Octadecyltrichlorosilane	1800	8		II			A1		F (851)	F (1 L)	855	30 L
Octyltrichlorosilane	1801	8		II			A1		F (851)	F (1 L)	855	30 L
Organic peroxide type C, liquid, temperature controlled	3113	5.2					A203		F	F	F	F
Organic peroxide type C, solid, temperature controlled	3114	5.2					A203		F	F	F	F
Organic peroxide type D, liquid, temperature controlled	3115	5.2					A2, A150, A203		F	F	F	F

Organic peroxide type D, solid, temperature controlled	3116	5.2					A2, A203		F	F	F	F
Organic peroxide type E, liquid, temperature controlled	3117	5.2					A2, A203		F	F	F	F
Organic peroxide type E, solid, temperature controlled	3118	5.2					A2, A203		F	F	F	F
Organic peroxide type F, liquid, temperature controlled	3119	5.2					A2, A203		F	F	F	F
Organic peroxide type F, solid, temperature controlled	3120	5.2					A2, A203		F	F	F	F
Organochlorine pesticide, liquid, flammable, toxic * flash point less than 23°C	2762	3	6.1	I			A4		F (350)	F (0.5 L)	361	30 L
Organometallic substance, liquid, pyrophoric	3392	4.2		I			None		F	F	F	F
Organometallic substance, liquid, pyrophoric, water reactive	3394	4.2	4.3	I			None		F	F	F	F
Organometallic substance, liquid, water-reactive *	3398	4.3		I			A3		F	F	480	1.0 L
Organometallic substance, liquid, water-reactive, flammable *	3399	4.3	3	I			A3		F	F	F (494)	F (1 L)
Organometallic substance, solid, pyrophoric	3391	4.2		I			None		F	F	F	F
Organometallic substance, solid, pyrophoric, water reactive	3393	4.2	4.3	I			None		F	F	F	F
Organometallic substance, solid, water-reactive *	3395	4.3	4.2	I			A3		F	F	487	15 KG
Organometallic substance, solid, water-reactive, flammable *	3396	4.3	4.1	I			A3		F	F	488	15 KG
Organometallic substance, solid, water-reactive, self-heating *	3397	4.3	4.2	I			A3		F	F	488	15 KG
Organophosphorus pesticide, liquid, flammable, toxic, * flash point less than 23°C	2784	3	6.1	I			A4		F	F	361	30 L
Organotin pesticide, liquid, flammable, toxic * flash point less than 23°C	2787	3	6.1	I			A4		F	F	361	30 L
Oxidizing liquid, corrosive, n.o.s. *	3098	5.1	8	I			A3		F	F	F (553)	F (2.5 L)

Oxidizing liquid, n.o.s. *	3139	5.1		I			A3		F	F	553	2.5 L
Oxidizing solid, flammable, n.o.s.	3137	5.1	4.1	I			None		F	F	F	F
Oxidizing solid, self-heating, n.o.s.	3100	5.1	4.2	I			None		F	F	F	F
Oxidizing solid, self-heating, n.o.s.	3100	5.1	4.2	II			None		F	F	F	F
Oxidizing solid, water-reactive, n.o.s.	3121	5.1	4.3	I			None		F	F	F	F
Oxidizing solid, water-reactive, n.o.s.	3121	5.1	4.3	II			None		F	F	F	F
Oxygen generator, chemical (including when contained in associated equipment e.g. passenger service units (PSUs), protective breathing equipment (PBE), etc) †	3356	5.1		II			A1, A111, A116, A144, A201		F (565)	F (25 KG G)	F (565)	F (25 KG G)
Paper, unsaturated oil treated	1379	4.2		III			A2, A48		F (473)	F (25 KG)	F (475)	F (100 KG)
Pentaborane	1380	4.2	6.1	I			A223		F	F	F	F
Pentaerythrite tetranitrate mixture, densensitized, solid, n.o.s.	3344	4.1					None		F	F	F	F
Perchloric acid, 50% or less acid, by weight	1802	8	5.1	II			A1		F (851)	F (1 L)	855	30 L
Perchloric acid, 72% or less but more than 50% acid, by weight	1873	5.1	8	I			None		F	F	F (553)	F (2.5 L)
Perchloromethyl mercaptan	1670	6.1		I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Pesticide, liquid, flammable, toxic, n.o.s. * flash point less than 23°C	3021	3	6.1	I			A4		F	F	361	30 L
Phenol, molten	2312	6.1		II			None		F	F	F	F
Phenoxyacetic acid derivative pesticide, liquid, flammable, toxic * flash point less than 23°C	3346	3	6.1	I			A4		F	F	361	30 L
Phenyl isocyanate	2487	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Phenyl mercaptan	2337	6.1	3	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Phenylcarbylamine chloride	1672	6.1		I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Phenylphosphorus dichloride	2798	8		II			A1		F (851)	F (1 L)	855	30 L
Phenylphosphorus thiodichloride	2799	8		II			A1		F (851)	F (1 L)	855	30 L
Phenyltrichlorosilane	1804	8		II			A1		F (851)	F (1 L)	855	30 L
Phosphorus oxybromide	1939	8		II			A1		F (859)	F (15	863	50 KG

										KG)		
Phosphorus oxybromide, molten	2576	8		II			None		F	F	F	F
Phosphorus oxychloride	1810	8		II			A2, A223		F (851)	F (1 L)	855	30 L
Phosphorus pentabromide	2691	8		II			A1		F (859)	F (15 KG)	863	50 KG
Phosphorus pentachloride	1806	8		II			A1		F (859)	F (15 KG)	863	50 KG
Phosphorus tribromide	1808	8		II			A1		F (851)	F (1 L)	855	30 L
Phosphorus trichloride	1809	6.1	8	I			A223		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Phosphorus, white, dry	1381	4.2	6.1	I			None		F	F	F	F
Phosphorus, white, in solution	1381	4.2	6.1	I			None		F	F	F	F
Phosphorus, white, molten	2447	4.2	6.1	I			None		F	F	F	F
Phosphorus, white, under water	1381	4.2	6.1	I			None		F	F	F	F
Phosphorus, yellow, dry	1381	4.2	6.1	I			None		F	F	F	F
Phosphorus, yellow, in solution	1381	4.2	6.1	I			None		F	F	F	F
Phosphorus, yellow, under water	1381	4.2	6.1	I			None		F	F	F	F
Plastics, nitrocellulose-based, self-heating, n.o.s.	2006	4.2		III			A2		F (473)	F (25 KG)	F (475)	F (100 KG)
Potassium	2257	4.3		I			A1		F	F (1 KG)	487	15 KG
Potassium borohydride	1870	4.3		I			None		F	F	487	15 KG
Potassium metal alloys, liquid	1420	4.3		I			A1		F	F (1 KG)	480	1.0 L
Potassium metal alloys, solid	3403	4.3		I					F	F	487	15 KG
Potassium peroxide	1491	5.1		I			A1		F (557)	F (1 KG)	561	15 KG
Potassium phosphide	2012	4.3	6.1	I			None		F	F	487	15 KG
Potassium sodium alloys, liquid	1422	4.3		I			None		F	F	480	1.0 L
Potassium sodium alloys, solid	3404	4.3		I			None		F	F	487	15 KG
Potassium superoxide	2466	5.1		I			A1		F (557)	F (1 KG)	561	15 KG
Propionitrile	2404	3	6.1	II			A1		F (352)	F (1 L)	364	60.0 L
Propyltrichlorosilane	1816	8	3	II			A1		F (851)	F (1 L)	855	30 L
Pyrethroid pesticide, liquid, flammable, toxic * flash point less than 23°C	3350	3	6.1	I			A4		F	F	361	30 L
Pyrophoric alloy, n.o.s.	1383	4.2		I			None		F	F	F	F
Pyrophoric liquid, inorganic, n.o.s.	3194	4.2		I			None		F	F	F	F
Pyrophoric liquid, organic, n.o.s.	2845	4.2		I			None		F	F	F	F
Pyrophoric metal, n.o.s.	1383	4.2		I			None		F	F	F	F

Pyrophoric solid, inorganic, n.o.s.	3200	4.2		I			None		F	F	F	F
Pyrophoric solid, organic, n.o.s.	2846	4.2		I			None		F	F	F	F
Rubidium	1423	4.3		I			None		F	F	487	15 KG
Seed cake with <1.5% oil and <11% moisture	2217	4.2		III			A2, A55		F (473)	F (25 KG)	F (475)	F (100 KG)
Seed cake with >1.5% oil and >11% moisture	1386	4.2		III			A2, A48, A216		F (473)	F (25 KG)	F (475)	F (100 KG)
Selenic acid	1905	8		I			A1		F (858)	F (1 KG)	862	25 KG
Self-heating solid, oxidizing, n.o.s.	3127	4.2	5.1	II			A2		F	F	F	F
Self-reactive liquid type B*	3221	4.1					A215		F	F	F	F
Self-reactive liquid type B, temperature controlled*	3231	4.1					A214, A215		F	F	F	F
Self-reactive liquid type C, temperature controlled*	3233	4.1					A214		F	F	F	F
Self-reactive liquid type D, temperature controlled*	3235	4.1					A214		F	F	F	F
Self-reactive liquid type E, temperature controlled*	3237	4.1					A214		F	F	F	F
Self-reactive liquid type F, temperature controlled*	3239	4.1					A214		F	F	F	F
Self-reactive solid Type B*	3222	4.1					A215		F	F	F	F
Self-reactive solid Type B, temperature controlled*	3231	4.1					A214, A215		F	F	F	F
Self-reactive solid Type C, temperature controlled*	3234	4.1					A214		F	F	F	F
Self-reactive solid Type D, temperature controlled*	3236	4.1					A214		F	F	F	F
Self-reactive solid Type E, temperature controlled*	3238	4.1					A214		F	F	F	F
Self-reactive solid Type F, temperature controlled*	3240	4.1					A214		F	F	F	F
Silver picrate, wetted	1347	4.1		I			A40		F	F	F	F
Sludge acid †	1906	8		II			A1		F (851)	F (1 L)	855	30 L
Sodium	1428	4.3		I			A1		F	F (1 KG)	487	15 KG
Sodium aluminium hydride	2835	4.3		II			A1		F (483)	F (15 KG)	489	50 KG
Sodium borohydride	1426	4.3		I			None		F	F	487	15 KG

Sodium hydride	1427	4.3		I			None		F	F	487	15 KG
Sodium peroxide	1504	5.1		I			A1		F (557)	F (1 KG)	561	15 KG
Sodium phosphide	1432	4.3	6.1	I			None		F	F	487	15 KG
Sodium picramate, wetted with 20% or more water, by weight	1349	4.1		I			A1, A40		F	F	459	15 KG
Sodium superoxide	2547	5.1		I			A1		F (557)	F (1 KG)	561	15 KG
Stannic phosphides	1433	4.3	6.1	I			None		F	F	487	15 KG
Strontium phosphide	2013	4.3	6.1	I			None		F	F	487	15 KG
Substituted nitrophenol pesticide, liquid, flammable, toxic, * flash point less than 23°C	2780	3	6.1	I			A4		F	F	361	30 L
Sulphur chlorides	1828	8		I			A1		F (850)	F (0.5 L)	854	2.5 L
Sulphur chlorides	1828	8		I			A1		F (850)	F (0.5 L)	854	2.5 L
Sulphur trioxide, stabilized	1829	8		I			A2, A223		F (858)	F (1 KG)	F (862)	F (25 KG)
Sulphur, molten	2448	4.1		III			None		F	F	F	F
Sulphuric acid, fuming †	1831	8	6.1	I			A2		F (850)	F (0.5 L)	855	30 L
Sulphuric acid, spent †	1832	8		II			A1, A34		F (851)	F (1 L)	855	30 L
Sulphuryl chloride	1834	8		I			A223		F (850)	F (0.5 L)	855	30 L
Tear gas candles	1700	6.1	4.1	II			A1		F (668)	F (15 KG)	679	50 KG
Tear gas substance, liquid, n.o.s.	1693	6.1		II			A2, A36		F	F	659	5 L
Tear gas substance, solid, n.o.s.	3448	6.1		I			A1, A36		F	F	672	15 KG
Tear gas substance, solid, n.o.s.	3448	6.1		II			A1, A36		F (669)	F (5 KG)	674	25 KG
tert-Butyl hypochlorite	3255	4.2	8	I			None		F	F	F	F
tert-Butyl isocyanate	2484	6.1	3	I			None		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Tetramethylsilane	2749	3		I			A1		F (350)	F (0.5 L)	361	5 L
Thiocarbamate pesticide, liquid, flammable, toxic, * flash point less than 23°C	2772	3	6.1	I			A4		F	F	361	30 L
Thionyl chloride	1836	8		I			A2		F (850)	F (0.5 L)	855	30 L
Thiophosgene	2474	6.1		II			A113, A223		F (654)	F (5 L)	F (661)	F (60 L)
Thiophosphoryl chloride	1837	8		II			A2, A223		F (851)	F (1 L)	F (855)	F (30 L)
Titanium powder, dry	2546	4.2		I			A3		F	F	F	F
Titanium trichloride mixture, pyrophoric	2441	4.2	8	I			None		F	F	F	F
Titanium trichloride, pyrophoric	2441	4.2	8	I			None		F	F	F	F

Toxic by inhalation liquid n.o.s.	3381	6.1		I			None		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Toxic by inhalation liquid n.o.s.	3382	6.1		I			None		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Toxic by inhalation liquid, corrosive n.o.s.	3389	6.1	8	I			None		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Toxic by inhalation liquid, corrosive n.o.s.	3390	6.1	8	I			None		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Toxic by inhalation liquid, flammable n.o.s.	3383	6.1	3	I			None		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Toxic by inhalation liquid, flammable n.o.s.	3384	6.1	3	I			None		F (651)	F (0.5 L)	F (657)	F (2.5 L)
Triazine pesticide, liquid, flammable, toxic, * flash point less than 23°C	2764	3	6.1	I			A4		F	F	361	30 L
Tributylphosphane	3254	4.2		I			None		F	F	F	F
Trichloroacetyl chloride	2442	8		II			A2, A223		F (851)	F (1 L)	F (855)	F (30 L)
Trichlorosilane	1295	4.3	3, 8	I			None		F	F	F (480)	F (1 L)
Trimethylacetyl chloride	2438	6.1	3, 8	I			A223		F	F	F	F
Vanadium oxytrichloride	2443	8		II			A1		F (851)	F (1 L)	855	30 L
Vanadium tetrachloride	2444	8		I			A1		F (850)	F (0.5 L)	854	2.5 L
Vehicles, flammable gas powered	3166	9					A67, A70, A87, A118, A120, A134		F	F	F (951)	
Water-reactive liquid, corrosive, n.o.s. *	3129	4.3	8	I			A3		F	F	480	1.0 L
Water-reactive liquid, n.o.s. *	3148	4.3		I			A3		F	F	480	1.0 L
Water-reactive liquid, toxic, n.o.s. *	3130	4.3	6.1	I			A3		F	F	480	1.0 L
Water-reactive solid, corrosive, n.o.s. *	3131	4.3	8	I			A3		F	F	488	15 KG
Water-reactive solid, flammable, n.o.s. *	3132	4.3	4.1	I			A3		F	F	488	15 KG
Water-reactive solid, n.o.s. *	2813	4.3		I			A3		F	F	488	15 KG
Water-reactive solid, oxidizing, n.o.s. *	3133	4.3	5.1	II			A2		F	F	F	F
Water-reactive solid, oxidizing, n.o.s. *	3133	4.3	5.1	III			A3		F	F	F	F
Water-reactive solid, self-heating, n.o.s. *	3135	4.3	4.2	I			A3		F	F	488	15 KG

Water-reactive solid, toxic, n.o.s. *	3134	4.3	6.1	I			A3		F	F	488	15 KG
Xylyl bromide, liquid	1701	6.1		II			A1		F (654)	F (5 L)	661	60.0 L
Zinc dust	1436	4.3	4.2	I			A3		F	F	488	15 KG
Zinc phosphide	1714	4.3	6.1	I			None		F	F	487	15 KG
Zinc powder	1436	4.3	4.2	I			A3		F	F	488	15 KG
Zirconium powder, dry	2008	4.2		I			A3		F	F	F	F
Zirconium scrap	1932	4.2		III			A2, A3		F (473)	F (25 KG)	F (475)	F (100 KG)
Zirconium suspended in a flammable liquid †	1308	3		I			A1, A3, A108		F (350)	F (0.5 L)	361	5 L
Ammonium nitrate emulsion, intermediate for blasting explosives	3375	5.1							F	F	F	F
Ammonium nitrate gel, intermediate for blasting explosives	3375	5.1							F	F	F	F
Ammonium nitrate suspension, intermediate for blasting explosives	3375	5.1							F	F	F	F
Bromine trifluoride	1745	5.1	8	I			A2, A223		F (522)	F (0.5 L)	F (501)	F (2.5 L)
Bromine pentafluoride	1746	5.1	6.1, 8	I			A2, A223		F (522)	F (0.5 L)	F (501)	F (2.5 L)
Crotonaldehyde	1143	6.1	3	I			A2, A219		F	F	F	F
Hydrazine, anhydrous with more than 37% by weight	2029	8	3, 6.1	i					F	F	854	2.5 L
Hydrocarbons, liquid, n.o.s.	3295	3		I			A3, A224		302	1 L	303	30 L
Hydrocarbons, liquid, n.o.s.	3295	3		II			A3, A224		305	5 L	307	60 L
Hydrocarbons, liquid, n.o.s.	3295	3		III			A3, A224		309	10 L	310	220 L
Iodine pentafluorida	2495	5.1	6.1, 8	I					F	F	F (553)	F (2.5 L)
Isopropyl isocyanate	2483	3	6.1	I			A223		F (350)	F (0.5 L)	F (360)	F (2.5 L)
Kerosene	1223	3		III			A224		F (355)	F (60 L)	366	220 L
Maleic anhydride, molten	2215	8		III					F	F	F	F
4-Nitrophenylhydrazine, with not less than 30% water, by mass	3376	4.1					A2		F	F	F	F
Sulphuryl fluoride	2191	2.3					A2		See 213		See 213	
Tetranitromethane	1510	5.1	6.1	I			A223		F	F	F	F
Titanium tetrachloride	1838	8		II			A2, A223		F (851)	F (1 L)	855	30 L
	3387	For inclusion in Supplement – DG that is not included in the current supplement										
	3388											
	3385											

	3386	
	3122	
	3123	

PROPOSAL 2

Below is the format in which the new generic packing instructions would follow. This is just a representation and should this panel decide that this method/format is satisfactory, packing instructions for all classes can be completed for the November meeting.

Exceptions to the generic packing instruction can be placed in the table as shown below (sample 1), or they can be placed in separate table but located within that packing instruction (as can be seen in sample 2) or lastly they can be placed into a separate packing instruction (sample 3).

Sample 1

Packing Instruction Class 3

Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

- substances must be compatible with their packaging as required by 4;1.1.3
- Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk

2) **Closure requirements**
   - Closure requirements must meet the requirements of 4;1.1.4.

Packaging						
Packing Instruction	*Packing Group*	*Inner packaging*	*Passenger Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Cargo Inner packaging quantity (per receptacle)*	*Total quantity per package*
S001	I	Glass	0.5L	1L	1L	5L
		Plastic	F		F	
		Metal	1L		5L	
S002	II	Glass	1 L	5L	2.5L	60L
		Plastic	2.5 L		5L	
		Metal	2.5 L		10L	
Exceptions						
UN2363	I	Glass	0.5L	1L	1L	30L
		Plastic	0.5L		F	
		Metal	0.5L		2.5L	

ADDITIONAL PACKING REQUIREMENTS

Packing Group I
- Inner Packaging must be packed with absorbent material and placed in a rigid leak proof receptacle before packing in outer packaging

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboa d (4G)	Fibre (G)	Plastic (3H2)
Natural wood (4C1,4C2)	Other metal (1N2)	Steel (3A2)
Plastic (4H1, 4H2)	Plastic (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

Sample 2

Packing Instruction Class 3
Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

- substances must be compatible with their packaging as required by 4;1.1.3
- Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk

2) **Closure requirements**

- Closure requirements must meet the requirements of 4;1.1.4.

Packaging						
Packing Instruction	*Packing Group*	*Inner packaging*	*Passenger Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Cargo Inner packaging quantity (per receptacle)*	*Total quantity per package*
S001	I	Glass	0.5L	1L	1L	5L
		Plastic	F		F	
		Metal	1L		5L	
S002	II	Glass	1 L	5L	2.5L	60L
		Plastic	2.5 L		5L	
		Metal	2.5 L		10L	

Exceptions

Packaging						
Packing Instruction	*Packing Group*	*Inner packaging*	*Passenger Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Cargo Inner packaging quantity (per receptacle)*	*Total quantity per package*
UN2363	I	Glass	0.5L	1L	1L	30L
		Plastic	0.5L		F	
		Metal	0.5L		2.5L	
UN1194	I	Glass	Forbidden	Forbidden	1L	30L
		Plastic			F	
		Metal			2.5L	

ADDITIONAL PACKING REQUIREMENTS

Packing Group I
- Inner Packaging must be packed with absorbent material and placed in a rigid leak proof receptacle before packing in outer packaging

OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastic (3H2)
Natural wood (4C1,4C2)	Other metal (1N2)	Steel (3A2)
Plastic (4H1, 4H2)	Plastic (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

Sample 3

Packing Instruction Class 3 exceptions
Passenger and cargo aircraft

General requirements

Part 4, Chapter 1 requirements must be met, including:

1) **Compatibility requirements**

- substances must be compatible with their packaging as required by 4;1.1.3
- Metal packagings must be corrosion resistant or be protected against corrosion for substances with a Class 8 subsidiary risk

2) **Closure requirements**

- Closure requirements must meet the requirements of 4;1.1.4.

Packaging

Packing Instruction	*Packing Group*	*Inner packaging*	*Passenger Inner packaging quantity (per receptacle)*	*Total quantity per package*	*Cargo Inner packaging quantity (per receptacle)*	*Total quantity per package*
UN2363	I	Glass	0.5L	1L	1L	30L
		Plastic	0.5L		F	
		Metal	0.5L		2.5L	
UN1194	I	Glass	Forbidden	Forbidden	1L	30L
		Plastic			F	
		Metal			2.5L	

ADDITIONAL PACKING REQUIREMENTS

Packing Group I
- Inner Packaging must be packed with absorbent material and placed in a rigid leak proof receptacle before packing in outer packaging

OUTER PACKAGINGS

Boxes	Drums	Jerricans
Aluminium (4B)	Aluminium (1B2)	Aluminium (3B2)
Fibreboard (4G)	Fibre (1G)	Plastic (3H2)
Natural wood (4C1,4C2)	Other metal (1N2)	Steel (3A2)
Plastic (4H1, 4H2)	Plastic (1H2)	
Plywood (4D)	Plywood (1D)	
Reconstituted wood (4F)	Steel (1A2)	
Steel (4A)		

Applicable Templates and Checklists for Exemptions and Approvals