DGP-WG/11-WP/71
20/5/11

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

Atlantic City, United States, 4 to 8 April 2011

REPORT OF THE MEETING OF THE WORKING GROUP OF THE WHOLE

1. INTRODUCTION

1.1 The meeting of the Dangerous Goods Panel Working Group of the Whole (DGP-WG/11) was opened by Mr. Gus Sarcus, Fire Project Team Leader, Federal Aviation Authority Technical Center, Atlantic City on 4 April 2011. Mr. Geoff Leach was elected Chairperson of the meeting and Ms. Kristel Vermeersch was elected Vice-Chairperson. Mr. Leach, on behalf of the working group, thanked Mr. Sarcus for hosting the meeting.

1.2 Messrs. Sugimoto and Yanagawa thanked the panel for the good wishes and support offered to Japan following the recent earthquake and tsunami. Mr. Leach, on behalf of the panel, said that all members and advisers would continue to provide whatever assistance they could offer.

2. ATTENDANCE

2.1 The meeting was attended by the following panel members, advisers and observers:

Members	Advisers/Observers	State/International Organization
	M. Boehm Z. Welserheimb	Austria
A. Tusek	L. Willoughby	Australia
K. Vermeersch		Belgium
M. Paquette	D. Evans D. Lamarche D. Sylvestre T. Howard	Canada

Members	Advisers/Observers	State/International Organization
	J. Abouchaar T. Guo T. Nie X. Qing A. Song K. Wu S. Yan H. Zhao Q. Zhenhua	China
	L. Fong K. Wan	(Hong Kong)
J. Le Tonqueze		France
H. Brockhaus	G. Closhen M. Marx L. Michels B.-U. Wienecke	Germany
M. Gelsomino	C. Carboni	Italy
	A. Akinori K. Moriwaki H. Sugimoto K. Yanagawa	Japan
S-W. Park		Republic of Korea
T. Muller		the Netherlands
M. Evans		New Zealand
	D. Kurdchenko	Russian Federation
L. Calleja Barcena		Spain
	B. Henzen R. Joss	Switzerland
H. Al Muhairi	P. Balasubramanian P. King	United Arab Emirates

Members	Advisers/Observers	State/International Organization
G. Leach	H. Gilson	United Kingdom
J. McLaughlin	C. Betts C. Glasgow T. Kenny K. Miller D. Pfund M. Stevens	United States of America
D. Brennan	P. Oppenheimer	International Air Transport Association (IATA)
M. Rogers	J. Haynes	International Federation of Air Line Pilots' Associations (IFALPA)
K. Rooney		ICAO
	E. Sigrist	CEFIC
	A. Altemos B. Barrett N. McCulloch A. Stukas F. Wybenga	DGAC
	R. Wichert	Fuel Cell Council
	A. McCulloch	Global Express Association (GEA)
	S. Charlier T. van der Rijt C. Van Zijl	North Atlantic Treaty Organization (NATO)
	George Kerchner	The Rechargeable Battery Association (PRBA)

3. REVIEW OF THE REPORT

3.1 Agenda Item 1: Development of proposals, if necessary, for amendments to Annex 18 — *The Safe Transport of Dangerous Goods by Air*

3.1.1 Removal of State of Overflight from the Exemption Process (DGP-WG/11-WP/21)

3.1.1.1 The working group was invited to revisit issues raised at DGP/22 and by the Air Navigation Commission (ANC) in its review of the DGP/22 Report related to removing "State of Overflight" from the exemption process (paragraph 1.4 of the DGP/22 Report on Agenda Item 1). The Secretary informed the working group that the ANC, when reviewing the agenda for the DGP/23 meeting, queried whether appropriate legal consultations on the removal of "State of Oversight" from the exemption process had been carried out. It was explained that discussion of this issue would take place at DGP/23; this would permit legal and air traffic management officers to be present to facilitate the discussion.

3.1.1.2 Noting that the same problem had been raised more than twenty years ago at DGP/11 and that no solution had been found at that time, some members queried whether the issue was self imposed. It was pointed out that the key issue of relinquishing a degree of sovereignty over its airspace remained, Article 35 to the Convention being the basis for the requirement. In addition to a suggestion made at DGP/22 (that in the absence of a request for the State of Overflight to be included in the exemption process within a certain prescribed time, approval was to be considered granted), it was proposed consideration be given to limiting the requirement to high consequence dangerous goods, or to certain classes e.g. Classes 1 and 7. These ideas received general support.

3.1.1.3 Other members suggested that an improvement in coordination and facilitation might be a better approach. This would still permit States to have additional requirements as a condition of approval e.g. requesting certain routes be flown so as to avoid high density population areas.

3.1.1.4 Panel members were asked to provide comments to the Secretary so that a new paper could be presented to DGP/23.

3.1.2 State Approaches to Shipper Oversight (DGP-WG/11-IP/6)

3.1.2.1 During discussions on State oversight responsibilities at DGP-WG/10 (see DGP-WG/11-WP/1, paragraph 3.1.3), panel members with existing shipper inspection programmes in their States were asked to provide background information on their approaches, policies, and tools. Accordingly, the working group was provided with a presentation of the approach to inspections of shippers used in one State. This included a safety risk based prioritization of such inspections using knowledge of the shipper's operations through use of data collected from a variety of sources. It was suggested that interested members should discuss the paper intercessionally in order for a new paper to be prepared for DGP/23.

3.2 **Agenda Item 2: Development of recommendations for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2013-2014 Edition**

3.2.1 **Dangerous Goods not Subject to all of the Requirements of the Technical Instructions (DGP-WG/11-WP/43)**

3.2.1.1 DGP-WG/10 considered the extent to which the use of the phrase "not subject to [other additional requirements of] these Instructions" applied to the provisions concerning passengers and crew (DGP-WG/11-WP/1, paragraph 3.2.3). There was general agreement at WG/10 that in some cases the exception should also apply to dangerous goods carried as baggage while in others the exception should only be applied to dangerous goods carried as cargo, but the case was not always apparent.

3.2.1.2 A new paper was presented to the working group which included references to provisions in the Instructions where this exception is applied. An ad hoc working group reviewed the paper, deciding on the extent to which the applicable exception from the full requirements of the Instruction should apply. A new paper based on comments received will be prepared for DGP/23.

Part 1 — General

3.2.2 **Draft Amendments to the Technical Instructions to Align with the UN Recommendations — Part 1 (DGP-WG/11-WP/4)**

3.2.2.1 Draft amendments to Part 1, Chapters 1, 3, 4 and 5 were proposed to reflect the decisions taken by the UN and DGP/11. The following issues were raised during the discussion:

a) There were reservations with adding a new definition for salvage pressure receptacles, as it was felt that this type of packaging should not be permitted for transport by air. It was agreed that a reference to the Model Regulations would replace the definition along with a statement forbidding salvage pressure receptacles from air transport.

b) A consequential amendment to the definition for "State of Origin" was proposed for the sake of alignment with the proposed definition for "State of Destination" (see paragraph 3.2.3).

3.2.2.2 A number of other corrections were suggested which will be incorporated in the DGP/23 working paper. It was agreed that WP/4 would be further reviewed by panel members, and any discrepancies would also be incorporated in the DGP/23 working paper.

3.2.3 **Proposal to include the Definition of the State of Destination (DGP-WG/11-WP/19)**

3.2.3.1 A proposal to include a definition for "State of Destination" was discussed. Since the term is used throughout the Instructions, it was generally agreed that a definition would be beneficial in that it would help ensure consistent application of it. There were differences in opinion, however, on how the term should be defined. It was recognized that the final destination of a consignment might not always be in the same State as the airport at which the consignment was last unloaded. It was noted that the term had a different application in Part 2;9 whereby substances could be classified as environmentally

hazardous material if they met criteria in regulations established by the appropriate national authority in the State of destination. In this case the State of destination was the final destination of the consignment.

3.2.3.2 Three alternative amendments to the definition were proposed; the second was agreed, as was a consequential amendment to Part 2;9.2.1, clarifying the intent of the definition with regards to environmentally hazardous substances. A minor amendment to the definition for "State of Origin" was also agreed for the sake of consistency. The same amendment would apply to the definition in Annex 18.

3.2.4 Training of Operators not Carrying Dangerous Goods (DGP-WG/11-WP/44)

3.2.4.1 It was suggested that the absence of "mail or stores" in the title of Table 1-5 (Content of training courses for operators not carrying dangerous goods) could be interpreted to mean that dangerous goods training was not required for operators not carrying dangerous goods as stores or mail. Since the requirement in 1;4.2.7 included mail and stores, it was proposed that the Table 1-5 title be aligned with that requirement. It was further suggested that the use of the term "stores" had become redundant in both cases since the new definition for cargo included stores. The proposal was agreed, subject to the removal of "stores" from both 1;4.2.7 and Table 1-5, together with consequential amendments to the keys to Tables 1-4 and 1-5.

3.2.5 Recurrent Training for Cabin Crew (DGP-WG/11-WP/47)

3.2.5.1 A disparity between the recurrent training requirements in 1;4.2.3 and the training requirements for cabin crew members in relation to dangerous goods set out in Annex 6 was raised (Annex 6 — *Operation of Aircraft*, Part I — *International Commercial Air Transport — Aeroplanes* (paragraph 12.4 e) and Part III — *International Operations — Helicopters* (paragraph 10.3 e)). Annex 6 requires cabin crew to complete a recurrent training programme annually, compared to the twenty-four month requirement of the Instructions. It was suggested that a reference to the Annex 6 requirement along with an indication that a difference in frequency of training requirements existed be included in a note to 1;4.2.3.

3.2.5.2 It was agreed that the disparity should be addressed but that further background on the annual requirement in Annex 6 would be needed before a decision could be taken on how to address it. It was suggested that adding cross references in both Annex 6 and Annex 18 with a note to clarify that the most restrictive requirements must be met would be helpful. The Secretary would raise the issue with the Operations Panel (OPSP) through its secretary and report back to the panel at DGP/23.

3.2.6 Definitions for the Terms 'Undeclared' and 'Misdeclared' Dangerous Goods (DGP-WG/11-WP/53)

3.2.6.1 A proposal to add definitions for "misdeclared" and "undeclared" was discussed. The working group agreed it would be useful to include definitions, as there were a number of references to the terms in the Instructions yet their meaning was never explained. There was much discussion, however, on exactly how the terms should be defined.

3.2.6.2 "Undeclared" dangerous goods were defined by the proposer as dangerous goods offered for transport without the applicable transport document. He felt that using the presence of hazard labels or markings as an indication that a shipper has declared dangerous goods would place an unreasonable burden on the operator should it inadvertently carry a labelled or marked package without an accompanying transport document.

3.2.6.3 Two scenarios were used in the proposed definition for “misdeclared” dangerous goods, the first being dangerous goods which were incorrectly described on the transport document and the second being dangerous goods discovered after the acceptance check which did not comply with the Instructions.

3.2.6.4 Some members believed that defining “undeclared” simply in terms of the absence of a dangerous goods transport document was not only insufficient but was perhaps contradictory, given that operators were required to seek confirmation from shippers that cargo did not contain dangerous goods. It was suggested that this raised questions as to when an operator would be held accountable when transporting packages of dangerous goods, appropriately marked and labelled, but without accompanying documentation. Others suggested that enforcement personnel needed to consider the preponderance of evidence before them prior to taking any action, noting that documentation, or lack thereof, was only one aspect to be considered.

3.2.6.5 The proposals were supported by others who noted that the intent behind the definitions was to provide guidance to operators on the reporting requirements in 7;4.5. Following a query regarding the legal requirement in some States to report on items found during the acceptance check, it was suggested the note should be placed in square brackets with the intent of rewording it later. The proposals, as amended, were agreed.

PART 2 — Classification

3.2.7 **Draft Amendments to the Technical Instructions to Align with the UN Recommendations — Part 2 (DGP-WG/11-WP/5)**

3.2.7.1 Draft amendments to Part 2, Chapters 1, 2 and 6 were proposed to reflect the decisions taken by the UN. The following issues were raised during the discussion:

a) It was suggested that the new 2;1.5.2.4 contained a criterion for excluding an article from Class 1 which was not specific enough (2;1.5.2.4 d)). A member would prepare a proposal to clarify the criterion for DGP/23.

b) It was noted that a clause in the new exception for medical devices or equipment contaminated with or containing infectious substances stated that additional requirements may apply for air transport (2;6.3.2.3.7.1). A working group by correspondence would determine if any requirements should apply and report back to the DGP.

c) Editorial amendments were made to 2;6.3.2.3.7.2 to clarify what markings are required when overpacks are used.

It was agreed that WP/5 would be further reviewed by panel members, and any discrepancies would be incorporated in the DGP/23 working paper.

3.2.8 **Use of the Word 'Prohibited' in Parts 2 and 5 (DGP-WG/11-WP/18, DGP-WG/11-WP/22 and DGP-WG/11-WP/23)**

3.2.8.1 For the sake of consistency, a proposal to replace the word "prohibited" with "forbidden" in the following paragraphs was agreed:

— Part 2, Introductory Chapter, paragraph 5.3 a);

— Part 2;2.5.1 f); and

— Part 5;1.1 a).

Part 3 — Dangerous Goods List, Special Provisions and Limited and Excepted Quantities

3.2.9 **Amendments to the Technical Instructions to Align with the UN Recommendations — Part 3 (DGP-WG/11-WP/6)**

3.2.9.1 Draft amendments to Part 3, Chapters 1, 2, 3, 4 and 5 were proposed to reflect the decisions taken by the UN. The following issues were raised during the discussion:

a) It was agreed to replace "e-bikes" with "battery-assisted bicycles in Special Provision A21 for the sake of clarity.

b) It was agreed the proposed Special Provisions A188, A189 and A190 should not be included in the Instructions. UN SP 363 (the equivalent of A188) had been developed for land transport but was unnecessary for air since Engines, internal combustion were already fully regulated for air transport; A189 was unnecessary due to the list in Table 3-1 being alphabetical rather than numerical whilst UN SP 366 (A190) should be included in the packing instruction, yet to be developed.

c) The decision by the UN to make provision for *de minimis* quantities of dangerous goods, as proposed in 5.1.4 was discussed. It was recognized that it had been developed to address the need of pharmaceutical companies to send very small quantities (1 mL or 1 g) of new products containing dangerous goods for testing without the need for intermediate packaging, labelling or documentation. It was noted it should be clarified that this exception only applied when carried as cargo and that the provisions might be more appropriately placed in Part 1. It was agreed to place the proposed 5.1.4 in square brackets and a decision to be taken at DGP/23 regarding the optimal location.

3.2.9.2 A number of outstanding issues remained as a result of the discussions and would be addressed through new working papers for DGP/23. These were:

a) although the addition of limited quantity provisions for 1.4S explosives was agreed, it was noted that this would be an issue for trainers and acceptance staff to recognize that packages containing limited quantities of 1.4S explosives would bear both the 1.4S and limited quantity mark. A new paper for an appropriate packing instruction would be developed for DGP/23;

b) the inclusion of a new exception for life-saving appliances (UN Special Provision SP296) (Packing Instruction 955) — this would permit operators to move life jackets freely;

c) provisions for **Mercury contained in manufactured articles** (new UN No. 3506) — it was noted that an approach similar to that taken in A104 would be necessary in developing a special provision to cater for segregation requirements; and

d) quantity limits for Chemicals under pressure (new UN Nos. 3500, 3501, 3502, 3503, 3504, 3505, 3506 and 3507).

3.2.9.3 It was agreed that WP/6 would be further reviewed by panel members, and any discrepancies would be incorporated in the DGP/23 working paper.

3.2.10 **Special Provision A70 (DGP-WG/11-WP/16)**

3.2.10.1 A proposal to amend Special Provision A70 was made in order to clarify the requirement that residual fuel must not remain in the fuel system of bench-tested engines. The subject was first discussed at DGP-WG/10 (DGP-WG/11-WP/1, paragraph 3.2.11). It was suggested at that time that text which had been added to A70 to address purging of flammable gas powered engines could be used as a basis for developing similar text for the flammable liquid powered engines. The proposer, however, did not feel the text was appropriate for flammable liquid powered engines. Instead, he proposed that language consistent with Special Provision A50 be used whereby the condition for meeting A70 would be that there be no free liquid visible and that all fuel lines be sealed or securely connected to prevent any leakage. He also proposed a restructuring of A70 to further clarify the requirements.

3.2.10.2 There was support for the proposal in principle. It was suggested, however, that the amended text did not address the possibility that free fuel vapours could exist. It was felt that nullifying the hazard should be acceptable for meeting the requirements of the provision. The note under Part 4;1.1.15 allowed for purging and thorough flushing with a neutralizing agent as an acceptable method of nullifying the hazard. An amended proposal, incorporating this method, was agreed.

3.2.11 **Packing Group and Quantity Limits:**
UN 3334 Aviation Regulated Liquid, n.o.s.
UN 3335 Aviation Regulated Solid, n.o.s.
(DGP-WG/11-WP/17 and DGP-WG/11-WP/31)

3.2.11.1 It was noted that “no limit” was assigned to the maximum net quantity per package for UN 3334 and UN 3335 in Table 3-1. Packing Instruction 956, however, did indicate a quantity limit for UN 3335. It was suggested that other substances with similar properties do have limits imposed for both passenger and cargo aircraft. A proposal to align Table 3-1 with Packing Instruction 956 and to add a quantity limit to both Table 3-1 and Packing Instruction 964 for UN 3334 was therefore made.

3.2.11.2 A number of members questioned the introduction of quantity limits where presently none existed as this could lead to false declarations. Others felt that a limit was already indirectly imposed due to the size of the package type required for these substances. This was similar to the philosophy taken for environmentally hazardous material. It was therefore agreed to apply the same quantity limits set for environmentally hazardous material to UN 3334 and UN 3335 in Table 3-1 and the applicable packing instructions. An editorial amendment to include UN 3334 and UN 3335 in the headings of the applicable limited quantity packing instructions was also agreed.

3.2.11.3 The assignment of a packing group to both substances in Column 8 of Table 3-1 was questioned during the discussion. It was felt that this was inappropriate as there were no criteria for assigning packing groups to Class 9 substances. It was suggested that Packing Group III performance criteria should instead be specified in the packing instructions. A new paper would be prepared for DGP/23 which would include all possible inconsistencies.

3.2.12 **Table 3-1 Requirement for Gross Mass**
(DGP-WG/11-WP/37)

3.2.12.1 A proposal to consider removing reference to gross mass in Table 3-1 was revisited after first being discussed at DGP-WG/10. It was argued that:

a) there was no definitive advantage from a safety perspective to include the gross mass — it was originally adopted for wet batteries in order to remove the potential confusion for what constituted the "net" quantity of dangerous goods in the battery;

b) limiting per package quantities by gross mass could create an incentive for shippers to chose lighter packaging materials in order to maximize the quantity of dangerous goods in the package; and

c) declaring gross mass on the dangerous goods transport document is inconsistent with multi-modal harmonization.

In response to a), it was suggested that potential confusion could be averted by clarifying the difference between net quantity of substances versus articles in the definition for "net quantity". An amended definition was presented and supported, but it was felt that further clarification was needed for articles packed or contained in equipment. The amendment was revised and agreed. A need to clearly identify the net mass permitted in Packing Instruction 214 for UN 3468, **Hydrogen in a metal hydride storage system** was also identified, and an amendment to that packing instruction was agreed.

3.2.12.2 Once the definition for net quantity was clarified, the working group agreed to the removal of references to gross mass in Table 3-1 (except when assigned to limited quantities) and the applicable packing instructions. A number of consequential amendments to Parts 3, 4 and 5 were also agreed. Gross mass was retained for limited quantity amounts as there were a number of substances and articles limited only by the maximum gross mass of 30 kg.

3.2.13 **Secondary Lithium Batteries**
(DGP-WG/11-WP/50)

3.2.13.1 A proposal to eliminate the requirement for State of Origin approval for lithium batteries or battery assemblies exceeding 35 kg, when the consignment is limited to one large battery or battery assembly per package, was presented. The subject was first raised at DGP-WG/10 through an information paper and a presentation which focused on the need to facilitate the transport of large rechargeable lithium batteries in hybrid and electric vehicles. It was explained that to meet the requirements in automotive applications, these batteries were subject to comprehensive and extensive tests in addition to the tests required in subparagraph 38.3 of the UN Manual of Tests and Criteria. It was argued that cells and batteries which successfully pass such tests are safe for transport.

3.2.13.2 Although there was some support for the proposal in principle, many concerns were raised, including:

a) the possibility of one battery igniting and propagating the other batteries on a pallet;

b) the loss of additional conditions placed on transport an approval would provide;

c) the lack of a limit on the watt hour rating an approval would provide;

d) the lack of an upper weight limit; and

e) the practicality of identifying whether or not the package contains a single battery.

3.2.13.3 Some felt the proposal could be considered if conditions, such as those frequently contained in approvals, were added which would ensure an equivalent level of safety. Examples were provided such as limits on the state of charge, stronger packaging, and thermal monitoring.

3.2.13.4 A new proposal, based on the discussion, would be prepared for DGP/23.

3.2.14 Table 3-1 Requirement for Lithium Batteries Packed with and Contained in Equipment (DGP-WG/11-WP/56)

3.2.14.1 This working paper was discussed in conjunction with DGP-WG/11-WPs/36 and 37 whereby a standardized indication of net mass limits in Table 3-1 and the applicable packing instructions was proposed. It was noted that the value in the maximum net quantity per package columns for lithium metal and lithium batteries contained in or packed with equipment was a reference to the applicable packing instruction. It was also noted that the limits shown in the packing instructions for lithium batteries packed with equipment applied to the net mass of lithium batteries contained in a single package, while for lithium batteries contained in equipment, the limits shown applied to the net mass of lithium batteries per piece of equipment. It was argued that the net mass limits should be applied in the same manner as they are applied for fuel cell cartridges, whereby the net mass is indicated in Table 3-1 rather than a reference to the applicable packing instruction and the packing instructions refer to the mass of fuel cell cartridges in a single package regardless of whether the fuel cell cartridges are shipped by themselves, packed with equipment, or contained in equipment.

3.2.14.2 An amendment to Table 3-1 for UN 3481 (**Lithium ion batteries contained in equipment** and **Lithium ion batteries packed with equipment)** and UN 3491 (**Lithium metal batteries contained in equipment** and **Lithium metal batteries packed with equipment**) along with the applicable packing instructions was agreed.

3.2.15 Special Provision A44 — Chemical Kits and first Aid Kits (DGP-WG/11-WP/58)

3.2.15.1 It was suggested a contradiction existed between Special Provision A44 and Packing Instruction 960, both assigned to chemical/first aid kits, whereby the text in the special provision implies that dangerous goods in the kit must be compatible while the text in the packing instruction referring to segregation implies that incompatible dangerous goods are permitted. It was noted that the applicable special provision in the UN Model Regulations referred to “various” dangerous goods instead of “compatible” dangerous goods, and it was proposed to align the Instructions with the Model Regulations.

3.2.15.2 It was also suggested that the requirement in A44 for the most stringent packing group assigned to any individual substance in the kit to appear on the transport document was sometimes difficult to apply since some kits contain dangerous goods for which no packing group was assigned. An amendment to A44 to clarify that in such cases, no packing group need appear on the document, and an amendment to Packing Instruction 960 specifying that packagings meeting Packing Group II performance standards must then be used was made.

3.2.15.3 The proposed amendments to Special Provision A44 and Packing Instruction 960 were agreed. A proposal to amend the applicable packing instruction in the UN Model Regulations to align with the amendment in Packing Instruction 960 would be made to the UN Subcommittee of Experts on the Transport of Dangerous Goods (UNSCTDG).

3.2.16 **Requirements For Hydrogen Peroxide (DGP-WG/11-WP/59)**

3.2.16.1 A proposal to eliminate the fire test requirement in Special Provision A75, assigned to **Hydrogen peroxide, aqueous solution** (UN 2014) was discussed. The meeting was reminded that the provision allows for UN 2014 to be transported in excepted quantities provided a comparative fire test between packages containing the solution and identical packages containing water demonstrates that there is no difference in the burning rate. It was argued that the likelihood of finding discernable differences with the more accurate test equipment used today is much greater than it would have been with equipment used when the test requirements were first developed and that the test therefore precludes transport of these small devices under the special provision.

3.2.16.2 It was noted that approvals are granted in one State for sterilization devices meeting the requirements of A75 and that relatively small differences in burning rates are permitted. It was argued that transport of critical health care devices in that State had been facilitated without incident since the mid 1990s.

3.2.16.3 Although there was support for the proposal, there was concern with the entire requirement being removed. It was suggested that the requirement could be alleviated by allowing small differences in burning rates instead of none.

3.2.16.4 A new proposal would be presented to DGP/23 incorporating the comments received.

3.2.17 **Application of the Y Limited Quantity Mark (DGP-WG/11-WP/61)**

3.2.17.1 The meeting was asked to support a proposal submitted to the 39th Session of the UNSCTDG for amendment to the limited quantity provisions in the Model Regulations concerning the application of the “Y” limited quantity mark. The amendment proposed the addition of new text for 3.4.8 of the Regulations stating that the “Y” limited quantity mark required for air transport may be applied to packages not intended for air transport without hazard labels and markings as long as the remaining provisions in 3;4 of the Instructions are complied with. It was reported that many consignors prefer to apply the “Y” limited quantity on all packages even when not initially intended for air transport in case air is ultimately chosen as the mode of transport. In such cases, it is felt that simply adding the required labels and markings is more efficient than also having to add the “Y” limited quantity mark.

3.2.17.2 The working group agreed that the secretary should support the proposal at the UNSCTDG.

3.2.18 **Packing Instruction Applicable to UN 1968, Insecticide Gas, N.O.S. (DGP-WG/11-WP/62)**

3.2.18.1 It was noted that two packing instructions were assigned to UN 1968, **Insecticide gas, n.o.s.*** and that limited quantities were permitted. In the interest of harmonization with the UN Model Regulations, it was proposed that only Packing Instruction 200 be assigned to UN 1968. This was agreed.

3.2.19 **Inert Gas (DGP-WG/11-IP/1)**

3.2.19.1 Background information on the inclusion of “inert gas” in Special Provision A69 was provided in response to a request at DGP-WG/10.

3.2.20 **Dangerous Goods in Airmail (DGP-WG/11-IP/3)**

3.2.20.1 Information related to a joint request to the Universal Postal Union (UPU) for certain dangerous goods to be permitted in mail was provided. The working group was asked for feedback on the request.

Part 4 — Packing Instructions

3.2.21 **Revision to Packing Instruction 869 for Mercury in Manufactured Articles (DGP-WG/11-WP/2)**

3.2.21.1 A complete revision of Packing Instruction 869 for Mercury in manufactured articles was proposed. It was suggested that there were specific limits imposed in the packing instruction based on the type of article being shipped, yet there was no requirement anywhere else in the Instructions for the shipper to describe the type of article or the part of the packing instruction that their shipment complied with. This made it impossible for operators to verify compliance. It was further suggested that the exception for thermometers, switches and relays containing less than 15 g of mercury should be incorporated into Special Provision A69, since this special provision already excepted small articles containing mercury.

3.2.21.2 Although there was support for the intent of the proposal, some concerns were raised. The fact that it would be impossible for operators to verify quantity limits if they did not know what article was in the package was not seen as justification for the removal of certain quantity limits. It was noted that other requirements in the Instructions (such as flash point) were also impossible to verify, but the shipper’s signature declared that these requirements had been met. A comment that some of language in the Instructions was dated was supported, such as the use of the term “jacketed”.

3.2.21.3 A new proposal would be prepared for DGP/23 based on the discussion.

3.2.22 **Orientation Arrows on Packagings Containing “Hermetically Sealed” Inner Packagings (DGP-WG/11-WP/3)**

3.2.22.1 It was reported that the addition of an exception for orientation arrows from hermetically sealed inner packagings below a certain size, in alignment with the UN Model Regulations, was causing confusion for shippers and operator acceptance staff. First, operators could not verify whether or not the exception had been applied without verifying with the shipper the size of the inner packaging. Second, since there is no definition for “hermetically sealed” in the Model Regulations, a dictionary definition applied. It was argued that the dictionary definition could theoretically apply to any inner packaging for liquids because of the requirement in 4;1.1.4.1 for two means of keeping closures in place on inner packagings for liquid substances.

3.2.22.2 A proposal to restrict the exception to flammable liquids and environmentally hazardous substances was made, since the original proposal to the UN for the exception was intended for these groups of substances. An alternate proposal providing specific types of sealed inner packagings which would be accepted in lieu of the term “hermetically sealed” was also provided.

3.2.22.3 There was some concern that making the requirements more specific could unintentionally preclude the exception from certain substances and packagings. It was also felt that the term “hermetically sealed” should be retained as it was a relatively common term in the UN Model Regulations.

3.2.22.4 It was noted that for certain hermetically sealed items requiring package openings to be in a downward position, similar text to that applied to dangerous goods in machinery or apparatus (i.e. “intended orientation”) might be helpful.

3.2.22.5 The proposal was supported in principle, but it was felt that more time was needed to consider the issue. A new proposal would be made for DGP/23 based on comments received.

3.2.23 **Amendments to the Technical Instructions to Align with the UN Recommendations — Part 4**
(DGP-WG/11-WP/7)

3.2.23.1 Draft amendments to Part 4, Introductory Chapter and Chapters 3, 4, 5, 6, 7, 8, 10 and 11 were proposed to reflect the decisions taken by the UN and DGP/11. The following issues were raised during the discussion:

a) It was noted that although a new entry for **Capacitor**, electric double layer (UN 3499) was proposed for Table 3-1, no corresponding packing instruction was added. A new Packing Instruction 971 was developed and will be incorporated in the DGP/23 working paper.

b) A new provision for gas receptacles conforming to construction, testing and filling requirements approved by the appropriate national authority was agreed in Packing Instruction 206.

c) The new requirement for lithium cells and batteries to be manufactured under a quality management programme was moved from Packing Instructions 965-970 to Part 2;9 (in line with the UN Model Regulations).

d) It was agreed that pressure drums should not be permitted in new Packing Instruction 218. An editorial amendment replacing “authorized” with “permitted” was also agreed.

3.2.23.2 A number of outstanding issues remained as a result of the discussions and would be addressed through new working papers for DGP/23. These were:

e) the content and structure of Part 2;9 being significantly different to the corresponding chapter of the UN Model Regulations. The Secretary would review the differences and report back to the panel; and

f) the addition of non-removable head drums and jerricans as outer combination packagings and the potential for confusion when the relevant packing instruction forbids single packagings e.g. flammable liquids, packing group II, packing instruction 353.

The Secretary would contact the UNSCOE Secretary regarding the addition of drums with non-removable heads, suggesting that changes had been made to accommodate specialized commodities without taking into account the potential difficulties for air transport at acceptance. It was agreed that WP/7 would be

further reviewed by panel members and any discrepancies would be incorporated in the DGP/23 working paper.

3.2.24 **Fuel Cell Industry Update International Electrotechnical Committee (IEC) 62282-6-100 International Standard for Micro Fuel Cells (DGP-WG/11-WP/12) and International Electrotechnical Commission Specification for Micro Fuel Cells using Water Reactive Fuels (DGP-WG/11-WP/13)**

3.2.24.1 A briefing on the adoption by the IEC of an updated international standard for micro fuel cell safety and a new IEC specification for micro fuel cell safety using water reactive fuels was provided. A proposal to replace the reference to the existing standard for micro fuel cells in the Instructions with the new one was made. A separate proposal to add references to the new standard for micro fuel cell safety using water reactive fuels was also made. An ad hoc working group was convened to discuss the new standard. The following is a summary of the discussions.

3.2.24.2 The differences between the existing referenced IEC PAS 62282-6-1 document and the new IEC 62282-6-100 document were discussed. Attention was drawn to the large increase in allowed emissions of formic acid vapour under loss-of-pressure testing. It was explained that this resulted from a careful calculation of allowable emissions to replace the previous limit that was derived simply from the limit at atmospheric pressure, which is lower. It was also pointed out that the formic acid formulations covered by the standard are not flammable.

3.2.24.3 A question was asked regarding the necessity of adopting the new standard: Is the DGP forced to adopt the new standard because the older specification will no longer apply? It was explained that the older specification will continue to be available and manufacturers can continue to meet it if that is a requirement.

3.2.24.4 Questions were raised regarding the allowable emissions at low atmospheric pressure. It was explained that these emissions are limited and apply to the system, not to the cartridge.

3.2.24.5 Discussion of the new specification, IEC PAS 62282-6-150 (which is approved but not yet published), revolved around the need for additional specifications for new fuels and why those fuels could not be covered by the 62282-6-100 standard. It was explained that although a method of showing equivalent safety could be done without a new specification, for reasons of clarity and timeliness, the industry decided to prepare the new specification for the new fuels. It was also explained that the new specification could also be used to show an equivalent level of safety, while still marking the device to be in compliance with the 62282-6-100 standard. It was explained that IEC PAS 62282-6-150 could be considered as being an interim solution which would expedite publication and dissemination of the requirements over the next few years whereas modification to IEC PAS 62282-6-100 would take several years. Some members noted the difficulty transport would face if more than one reference standard was permitted and suggested changes to the base document IEC PAS 62282-6-100 would be preferable.

3.2.24.6 The proposal in DGP-WG/11-WP/12 was agreed in principle and placed in square brackets. A new proposal to add references to the standard for micro fuel cell safety using water reactive fuels would be prepared for DGP/23.

3.2.25 **Requirements relating to Absorbent Material for all Relevant Packing Instructions (DGP-WG/11-WP/24)**

3.2.25.1 It was noted that in many cases the requirement for absorbent material in inner packagings is quantified with text such as "sufficient absorbent material to absorb the entire contents of the inner packaging". However, in other cases the amount of absorbent material is not quantified. An amendment to the additional packing requirements for combination packagings in packing instructions which did not have this clarification was proposed.

3.2.25.2 One member supported the proposal but questioned the feasibility of measuring the quantity required. Another queried whether the actual placement of the absorbent material should also be specified, e.g. under, side top. It was acknowledged that the old packing instructions did have descriptive text in Particular Packing Requirement 13 which may have been inadvertently lost through the reformatting exercise. The proposal was agreed as presented.

3.2.26 **Carriage of Oxygen with Aquatic Animals (DGP-WG/11-WP/25 and DGP-WG/11-WP/26)**

3.2.26.1 A proposal to permit the use of UN 1002, Air, compressed as an alternative to UN 1072, Oxygen, compressed for the purpose of providing life support to aquatic animals during transport was agreed, subject to a limit to the number of cylinders permitted in Special Provision A202 of the Supplement. It was noted that a typographical error appeared in the proposal whereby "E0" appeared in column 9 of Table 3-1 instead of "E1".

3.2.27 **Packing Group and Quantity Limits: UN 3334 Aviation Regulated Liquid, n.o.s. UN 3335 Aviation Regulated Solid, n.o.s. (DGP-WG/11-WP/31)**

3.2.27.1 This working paper was discussed in conjunction with DGP-WG/11-WP/17. See paragraph 3.2.11.

3.2.28 **Incorrect Reference to 5; 3.2.11 b) (DGP-WG/11-WP/33)**

3.2.28.1 An editorial amendment to correct incorrect references in 4;1.1.10 and 4;1.1.13 was agreed.

3.2.29 **Orientation Arrows for Batteries, Wet, Filled with Acid, UN 2794 and Batteries, Wet, Filled with Alkali, UN 2795 (DGP-WG/11-WP/38)**

3.2.29.1 It was suggested a requirement for orientation arrows on packages containing UN 2794, **Batteries, wet, filled with acid** and UN 2795, **Batteries, wet, filled with alkali** was inadvertently omitted from Packing Instruction 870. A proposal to reinstate the requirement was agreed, subject to the replacement of "'Packing orientation' labels" with "'Package orientation' labels".

3.2.30 **Polyester Resin Kits (DGP-WG/11-WP/39)**

3.2.30.1 A proposal to amend Packing Instructions 370 and 371 to provide for Packing Group III base material in polyester resin kits was discussed. The proposal also included an amendment to correct a error whereby liquid quantities appeared under the inner packaging quantity column for solid activator.

3.2.30.2 Noting that the proposed quantities were aligned with those in the packing instructions, the proposal was agreed in principle. Since it was a multi-modal issue, the proposal would be brought to the UNSCOE; in the UN recommendations, the quantity limits are the same for Packing Groups II and III but different packaging types are permitted. A new paper would be prepared for DGP/23.

3.2.31 **Section II Lithium Batteries (DGP-WG/11-WP/40)**

3.2.31.1 The working group had already considered in broad terms the extent to which the use of the phrase “not subject to [other additional requirements of] these Instructions” applied to the provisions concerning passengers and crew (DGP-WG/11-WP/43). That paper was based on original discussions at DGP-WG/10 (DGP-WG/11-WP/1, paragraph 3.2.3) whereby it was suggested that the use of this phrase in Section II of the lithium battery packing instructions could lead a passenger to carry batteries and equipment meeting the Section II requirements.

3.2.31.2 It was reported that further review of Section II of the lithium battery instructions revealed that use of the “not subject to ...” phrase could result in exceptions from other requirements in the Instructions which were not intended to be. It was therefore proposed that the lithium battery issue be looked at separately. It was proposed that the Section II text should not be excepted from the prohibition in air mail, the reporting of dangerous goods accidents and incidents, and the provisions for passengers and crew. The amendment was agreed.

3.2.32 **Packagings for Solids Which May Become Liquid During Transport (DGP-WG/11-WP/63)**

3.2.32.1 A proposal to clarify which packagings must be used for solids that may become liquid during transport was discussed. This was originally proposed at DGP-WG/11 (see DGP-WG/11-WP/1 paragraph 3.2.20).

3.2.32.2 The illogicality of using a packaging tested for liquids being used to transport solids but which may be known to have liquid present was noted. It was agreed that the secretary would raise the issue at the UNSCTDG.

3.2.33 **Requirements for Hydrogen Peroxide (DGP-WG/11-WP/64)**

3.2.33.1 It was noted that small quantities of oxygen is released from hydrogen peroxide. The UN packing instructions applicable to hydrogen peroxide requires packagings to be vented in order to relieve pressure build up, but the Technical Instructions do not. A proposal to permit limited venting of packagings containing hydrogen peroxide was therefore made.

3.2.33.2 Some felt that this approach would go beyond the philosophy of the Instructions. The amount of oxygen released might well be very small, but it would contribute to higher levels of oxygen when combined with what might already exist. One member reported that some major manufacturers in their State addressed the problem by filling the packaging to lower levels and then adding closures during transport. Other members felt that more data related to the amount of oxygen released over time should be studied and other potential alternatives proposed before the amendment could be considered. Because the proposal was submitted past the deadline date for submission, members did not have the time to consult with experts.

3.2.33.3 A new working paper would be prepared for DGP/23.

Part 5 — Shipper's Responsibilities

3.2.34 **Draft Amendments to the Technical Instructions to Align with the UN Recommendations — Part 5 (DGP-WG/11-WP/8)**

3.2.34.1 Draft amendments to Part 5, Chapters 1, 2 and 4 were proposed to reflect the decisions taken by the UN. As result of the working group's earlier decision to forbid the use salvage pressure receptacles, it was agreed that references to them in 1.5 and 4.1.5.2 would be deleted. It was agreed that WP/8 would be further reviewed by panel members and any discrepancies would also be incorporated in the DGP/23 working paper.

3.2.35 **Use of the Word 'Prohibited' (DGP-WG/11-WP/18)**

3.2.35.1 This working paper was discussed in conjunction with DGP-WG/11-WP/22 and DGP-WG/11-WP/23. See paragraph 3.2.8.

3.2.36 **Declaration of "Gross Mass" on the Dangerous Goods Transport Document (DGP-WG/11-WP/36)**

3.2.36.1 A proposal clarifying what information is required on the dangerous goods transport document when no specific quantity limit is shown in Table 3-1 was discussed. It was suggested that confusion existed on the part of shippers and dangerous goods acceptance staff as to whether or not the net quantity or a gross mass is required on the document. The proposal was discussed in conjunction with DGP-WG/11-WP/37 (see paragraph 3.2.12) whereby the working group agreed to the removal of references to gross mass in Table 3-1 except for limited quantities. In removing the reference, the proposal in DGP-WG/11-WP/36 to remove reference to gross mass in 5;4.1.5.1 was considered consequential and agreed. This would remove any cause for confusion on the part of shippers and acceptance staff as to what is required on the transport document was removed.

3.2.36.2 An additional amendment was also proposed in DGP-WG/11-WP/36 to clarify what quantities were required on the transport document for packages containing limited quantities where different dangerous goods are packed together in the same outer packaging. It was also agreed.

3.2.37 **Fire Extinguishers, UN 1044 (DGP-WG/11-WP/42)**

3.2.37.1 A proposal was made to clarify what quantity is required on the dangerous goods transport document for UN 1044. Since the amendments proposed in DGP-WG/11-WP/36 and 37 were made to remove potential confusion when reporting quantities in general, the paper was withdrawn.

Part 6 — Packaging Nomenclature, Marking, Requirements and Tests

3.2.38 **Draft Amendments to the Technical Instructions to Align with the UN Recommendations — Part 6 (DGP-WG/11-WP/9)**

3.2.38.1 Draft amendments to Part 6, Chapters 1, 2, 3 and 5 were proposed to reflect the decisions taken by the UN. As result of the working group's earlier decision to forbid the use salvage pressure receptacles, it was agreed to delete the reference to them in 5.3.3 and the proposed new paragraph 6.5. It was agreed that WP/9 would be further reviewed by panel members, and any discrepancies would be incorporated in the DGP/23 working paper.

3.2.39 **Requirements Relating to 5H1 Packagings**
(DGP-WG/11-WP/27)

3.2.39.1 A proposal to add a reference in Table 6-2 to the applicable paragraph in 6;3 for woven plastic bags (5H1) along with a maximum allowable net mass was agreed.

Part 7 — Operator's Responsibilities

3.2.40 **Recognition of Undeclared Dangerous Goods**
(DGP-WG/11-WP/29)

3.2.40.1 An amendment to 7;1.1.2 was proposed with the intent of emphasizing that operators should compare the description of items listed on shipping documents with the list of general descriptions in 7;6.6.1 which, experience has shown, often apply to dangerous goods. The amendment also added text stating that the operator should require, if necessary, documentary evidence from the shipper stating that the consignment does not contain dangerous goods.

3.2.40.2 Although the working group recognized the risks associated with undeclared dangerous goods, it was felt that making this a requirement would not be practical and would place an intolerable burden on the operator. The addition of training requirements for operators not carrying dangerous goods helped to address this risk, as did the current text in 7;1.1.2. It was suggested that the operator could choose to add this as a business requirement between themselves and the shipper.

3.2.40.3 A revised proposal to include the new text in a note as a recommendation was presented to the working group. Although there was more support for the recommendatory nature of the revised proposal, it was generally felt that it was unnecessary. A new proposal would be made at DGP/23 which would also address similar text which exists in 7;1.1.2.

3.2.41 **Confirmation of no Evidence of any Damage to or Leakage from the Packages Loaded on the Aircraft**
(DGP-WG/11-WP/45)

3.2.41.1 A proposal to include an indication in Part 7;4.1.3 that an external inspection of a unit load device (ULD) had been conducted was presented. It was argued that the current text in 7;4.1.3 could be interpreted to mean that each package contained in a ULD must be re-inspected prior to loading. The amendment was first proposed at DGP-WG/10, and although there was support for the intent of the proposal at that time, there was concern that the actual wording might imply that any damage to a unit load device is unacceptable. The original proposal was revised to refer specifically to leakage of the unit load device.

3.2.41.2 The amendment was agreed. It was noted that the new text would need to be kept in mind during the notification to captain (NOTOC) working group discussions.

3.2.42 **Retention of Transport Documents for Rejected Shipments**
(DGP-WG/11-WP/48)

3.2.42.1 A proposal to add a new paragraph 7;4.10 recommending that operators retain a copy of the transport document and associated checklist related to rejected shipments was discussed. There was some concern that States might well make this recommendation mandatory, but overall the intent- was supported. It was agreed that these documents could help States target problematic shippers when conducting their oversight responsibilities and could also highlight potential areas for stronger training. It was noted a benefit of the new paragraph would be to support a safety management systems approach.

3.2.42.2 It was suggested that text clarifying that the shipments were rejected due to errors and omissions by the shipper be added. It was also suggested that text specifying that the recommendation only applied to acceptance checklists which require physical completion be added.

3.2.42.3 A revised proposal addressing these issues was agreed.

3.2.43 **Acceptance (DGP-WG/11-WP/49)**

3.2.43.1 It was suggested that the absence of a specific reference to single packaging in the acceptance check requirements of 7;1.3.1 g) could be interpreted to mean that there is no need to verify that this type of packaging is acceptable. It was also suggested that the requirement should clarify that the verification can only be done if the packaging is visible (e.g. when an overpack is used). An amendment was proposed to address these issues.

3.2.43.2 There was support for the proposal, but concerns were expressed with the use of the text "when visible". It was suggested that more specific text should be used to clarify its intent, e.g. by referring to overpacks. Others felt that this would be too prescriptive, since other examples could be provided such as ULDs or containers.

3.2.43.3 The amendment was agreed, subject to the placement of "when visible" within square brackets and the removal of "and is permitted by the applicable packing instruction", since this appeared twice.

3.2.44 **Stacking of Intermediate Bulk Containers (DGP-WG/11-WP/54)**

3.2.44.1 It was noted that separate marking requirements are applicable to IBCs capable of being stacked and IBCs not capable of being stacked (6;2.4.3). There were no corresponding operator requirements, however, for stacking and loading of these IBCs. A proposal to add stacking requirements to Part 7;2 was therefore discussed.

3.2.44.2 Although there was support for the proposal, the use of the terminology "that is not capable of being stacked" and "is capable of being stacked" was questioned. It was also questioned whether or not the same requirements applied to flexible IBCs.

3.2.44.3 The amendment was agreed in principle; a revised proposal would be prepared for DGP/23 taking into account the issues raised.

3.2.45 **Reporting of Dangerous Goods Occurrences (DGP-WG/11-WP/55)**

3.2.45.1 A new requirement for the reporting of dangerous goods which have been discovered to have been carried:

a) without meeting the storage and loading requirements; and/or

b) without meeting the notification to the pilot-in-command requirements

was proposed. It was argued that failure to comply with these requirements may be indicative of a systematic weakness in an operator's procedures which, if not corrected, would create a hazard.

3.2.45.2 Some members felt that the amendment was not necessary as these forms of non-compliance would be covered under the reporting of incidents. It was suggested that as an alternative, an amendment to the definition for dangerous goods incident which would clearly encompass these types of issues could be considered Others supported the proposal, but felt that there were other types of occurrences which should also be reported such as failure to comply with the requirements in 7;3. It was noted that some States already had systems whereby voluntary disclosure by operators was expected, together with remedial action plans. Non-punitive self reporting was encouraged for the purpose of uncovering and addressing potential systematic failures. It was also noted that the requirement did not specify to whom such a report should be made.

3.2.45.3 The proposal was agreed in principle; a revised proposal would be presented to DGP/23 addressing the concerns raised.

Part 8 — Provisions Concerning Passengers and Crew

3.2.46 **Fuel Cell Industry Update International Electrotechnical Committee (IEC) 62282-6-100 International Standard for Micro Fuel Cells**
(DGP-WG/11-WP/12)

3.2.46.1 This working paper was reported under Agenda Item 2, Part 4. See paragraph 3.2.24.

3.2.47 **International Electrotechnical Commission Specification for Micro Fuel Cells using Water Reactive Fuels**
(DGP-WG/11-WP/13)

3.2.47.1 This working paper was reported under Agenda Item 2, Part 4. See paragraph 3.2.24.

3.2.48 **Small Cylinders Containing a Division 2.2 Gas**
(DGP-WG/11-WP/14)

3.2.48.1 A proposal to expand the current provision for self-inflating life jackets containing carbon dioxide or another Division 2.2 gas to include other applications such as motorcycle and equestrian safety vests and inflation kits for bicycle tyres was discussed. Based on the type and size of gas cylinders used for these applications, it was suggested that other devices containing no more than four small cylinders be permitted. Two alternatives were provided in the proposal. The first expanded on the existing provision by adding an additional provision for four small cylinders. It also included a water capacity limit. The second removed the specific reference to self-inflating life jackets and increased the number of small cylinders permitted from two to four. There was some support for the second option, but many had difficulty with the lack of a specific size limit. The first alternative was agreed.

3.2.49 **Division 4.3 Fuel Cell Cartridges in Checked Baggage**
(DGP-WG/11-WP/15)

3.2.49.1 The working group was asked to consider allowing passengers and crew to carry fuel cell cartridges containing Division 4.3 water reactive substances in checked baggage. The group was reminded of the decision at DGP/22 to permit other fuel cell cartridges in checked baggage, but to not support a provision for those containing water reactive substances until more experience with those cartridges could be gained.

3.2.49.2 It was argued that the degree of integrity and safety provided by the relevant UN requirements and IEC specifications made the cartridges more likely to survive the rigours of handling than would other goods in checked baggage which were not subject to such testing.

3.2.49.3 It was noted that Division 4.3 cartridges are permitted for transport in limited quantities, and the maximum quantity of fuel permitted was the same limit applicable to cartridges carried by passengers and crew. It was argued that since the cartridges transported in limited quantities were not subject to the rigorous IEC requirements cartridges transported in checked baggage would be, an equivalent level of safety to those carried as cargo would apply.

3.2.49.4 Finally, it was argued that the risks associated with the exposure of Division 4.3 substances to water was mitigated by the design of the system and its robust construction.

3.2.49.5 Although there was some support for the proposal, queries were raised in relation to the FAA report cited in the working paper. Some felt that additional details from the test report should be considered. Although it was reported that the cartridge subjected to a burn test was difficult to ignite, it was thought that once it was ignited it was difficult to extinguish. The size of the sample used was considered to be relevant, as this could influence maximum quantities if the cartridges were to be permitted. Another concern was the belief that the substance used in the test was corrosive and not water reactive and that only one type of cartridge was used in the FAA test, since different types could one day emerge yielding different test results.

3.2.49.6 In response to queries raised, the authors of the proposal indicated that the fire referenced in the report as hard to extengiush was a Class 8 fire, not 4.3. It was argued that the relevance of the test was that the Division 4.3 cartridge did not burn.

3.2.49.7 It was felt that the fact limited quantities of fuel cell cartridges containing water reactive substances were permitted made it difficult to argue against allowing them in checked baggage. The amendment was agreed in principle, and placed in square brackets. A new working paper would be prepared for DGP/23.

3.2.50 Proposal to Require Organizations or Enterprises Offering Services for 'Excess Baggage' to Provide Information about the Types of Dangerous Goods which are Forbidden in Passengers' Baggage (DGP-WG/11-WP/28)

3.2.50.1 A proposal to make the provision of information to passengers about the types of dangerous goods which are forbidden in excess baggage a requirement was discussed. The working group was asked to consider adding the requirement as a new paragraph to 8;1.1.4 or as a new paragraph 7;4.7.

3.2.50.2 There was general agreement that anything that could be done to prevent undeclared dangerous goods being carried on aircraft should be supported. Discussion focussed on whether or not the text should be added to the provision of information at cargo acceptance areas (7;4). Some felt it would be more appropriate to include the text with the provisions concerning passengers and crew (7;5). It was suggested that the requirement would sometimes be difficult for an operator to meet, since a passenger could choose another company or a freight forwarder to ship their excess baggage. Others suggested that the requirement should not be of a mandatory nature.

3.2.50.3 A new proposal would be prepared for DGP/23 taking into account the comments received.

3.2.51 **Carriage of Lithium Battery-Powered Mobility Aids (DGP-WG/11-WP/34)**

3.2.51.1 An amendment clarifying that lithium battery-powered mobility aids may only be carried as checked baggage was proposed. It was recognized that not specifying checked baggage was an oversight. The amendment was agreed.

3.2.52 **Spare Batteries in Passenger Baggage (DGP-WG/11-WP/35)**

3.2.52.1 A proposal to amend the passenger provisions for lithium batteries to address all batteries, not only lithium was discussed. It was argued that the absence of a reference to other types of batteries could be interpreted to mean that spare batteries may be carried in checked baggage and that they should not be.

3.2.52.2 The group was reluctant to accept the proposal. Since no UN number was assigned to these batteries, they were not considered to be regulated. It was argued that there was, however, a light type entry in Table 3-1 for batteries, electronic storage with Special Provision A123 assigned to it which requires protection from short circuit. Regardless, members felt that making the carriage of these batteries more restrictive was not recommended, especially in light of new security requirements whereby more and more passengers check baggage they would have previously carried on. It was suggested, however, that the provision might be considered as a recommendation.

3.2.52.3 A new working paper would be prepared for DGP/23.

3.2.53 **Lithium Batteries in Passenger Baggage (DGP-WG/11-WP/41)**

3.2.53.1 An amendment requiring that only lithium batteries which have passed the Part III, section 38.2 tests from the UN Manual of Tests and Criteria be carried by passengers and crew was agreed.

3.2.54 **Reformatting of Part 8 (DGP-WG/11-WP/46)**

3.2.54.1 A proposal to restructure the Part 8 provisions for passengers and crew in a more practical and user-friendly format was discussed at DGP-WG/10. There was strong support for the proposal at that time, and it was recommended that an additional column referring to dangerous goods permitted on one's person be added. A new proposal was presented to DGP-WG/11 incorporating comments received at WG/10.

3.2.54.2 The working group was asked to review the new proposal and that specific attention be given to the new column, as a pragmatic approach had been taken in the assignment of either a "yes" or "no" to this column. It was suggested that a note explaining the meaning of "on one's person" be added and that this could be considered at DGP/23.

3.2.54.3 There was much support for the new table as it made the interpretation of the provisions much more user friendly. The amendment was agreed, subject to the replacement of "yes" with "no" in the new "On the person" column for Division 2.2 aerosols with no subsidiary risk and to the placement of all text in that column in square brackets. The values in this column would be considered at DGP/23.

3.2.54.4 The amount of work devoted to reformatting Part 8 was recognized, and the working group expressed its appreciation.

3.2.55 **Cigarette Lighters (DGP-WG/11-WP/57)**

3.2.55.1 A proposal for the addition of a recommendation in Part 8;1.1.2 o) stating that cigarette lighters must have two means of requiring activation was discussed. The proposal was prompted by an incident where a cigarette lighter found between two seats on a passenger aircraft had activated and burned some of the seat cover. Although the new provision was intended to be a recommendation, it was felt that some States would interpret the language to be mandatory, and the risk of having these lighters in checked baggage would increase. One member reported that over 8 million lighters were carried in its State each year; the practicality of enforcing the provision, should it be interpreted as a requirement, would be extremely difficult. It was suggested that education and outreach on the dangers posed by easily ignitable lighters would be a more practical approach. The amendment was not agreed.

3.2.56 **Electrical Battery or Electrical Powered Device Containing Non-Spillable Batteries (DGP-WG/11-WP/67)**

3.2.57 It was reported that a number of electrical powered devices that contain non-spillable batteries are being carried by passengers. These include large toys, portable camping lamps, and torches. It was suggested that although these may not create a dangerous evolution of heat, some requirements should be put in place for their safe carriage. An amendment to Part 8 which referred to Special Provision 67 was therefore proposed.

3.2.58 Although there was sympathy for the proposal, a number of concerns were raised:

c) Some felt that operator approval should be required. Without operator approval, it would be difficult to ensure the special provision requirements were met.

d) The fact that articles containing these batteries are often sold at airport duty free stores could make the application of this requirement difficult.

e) Some felt that a size limit should be established.

f) Some felt that a requirement for packaging should be included; one suggestion was for the battery to be carried in the original outer packaging or in the equipment itself. Another was for strong outer packaging.

3.2.59 A revised proposal would be prepared for DGP/23, taking into account the issues raised.

Attachment 2

3.2.60 **Draft Amendments to the Technical Instructions to Align with the UN Recommendations — Attachment 2 (DGP-WG/11-WP/10)**

3.2.61 Draft amendments to Attachment 2 (Glossary of terms) were proposed to reflect the decisions taken by the UN. These were agreed. It was noted that the definition in the fifth revised edition of the *Manual of Tests and Criteria* for “Battery” had been amended. It was suggested that this definition, along with the one for “Cell”, should be added to Attachment 2. This was agreed.

3.3 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 9284SU) for incorporation in the 2013-2014 Edition

3.3.1 Draft Amendments to the Supplement to the Technical Instructions to Align with the UN Recommendations (DGP-WG/11-WP/11)

3.3.1.1 Draft amendments to the Supplement to the Technical Instructions were proposed to reflect the decisions taken by the UN. These were agreed.

3.3.2 Special Provision A202 (DGP-WG/11-WP/26)

3.3.2.1 This working paper was discussed in conjunction with DGP-WG/11-WP/25. See paragraph 3.2.26.

3.3.3 Separation of Explosives (DGP-WG/11-WP/52; DGP-WG/11-IP/4 and DGP-WG/11-IP/9)

3.3.3.1 A proposal to add a chapter to Part S-7 describing separation requirements, including a separation table for explosives, was discussed. The proposal was in follow up to text adopted by DGP/22 for the separation requirements of explosives in the Technical Instructions. It was suggested at DGP/22 that a similar table for the Supplement be developed. Accordingly, an initial proposal was presented at DGP-WG/10. There was much support at that time for the guidance presented in the proposal, but it was felt that the text was somewhat incomplete. The proposal for DGP-WG/11 incorporated text relevant to the air mode from the special provisions applicable to the transport of explosives outlined in the Model Regulations (paragraph 7.1.3.1).

3.3.3.2 It was noted that the proposal presented at DGP-WG/10 set a minimum required separation distance of 2 m between explosive substances and articles of different (when permitted) compatibility groups. This requirement was removed in the new proposal, as it was felt that separation by distance alone might not always be adequate; some experts might advise something different such as separating the goods by other cargo or more space. It was suggested that the appropriate authority should instead seek guidance from specialized experts. Some felt that minimal safety distances should be included along with a recommendation to separate the goods as much as possible. This would assist competent authorities who might not be able to contact a suitable expert. Others felt that a more general requirement should be included such as a distance which would prevent a dangerous reaction.

3.3.3.3 There was concern that Class 1.1A was included in the separation table, as these were very sensitive explosives which are normally not permitted to be transported with any other type of explosive or with any other type of dangerous goods. The group was reminded, however, that all of the substances referred to in the Supplement table are normally forbidden for transport; they were included as guidance for cases of extreme urgency which may dictate moving the explosives under a State exemption. It was noted that an exemption should only be issued after completing an extensive safety risk assessment, subject to additional requirements which would ensure safety.

3.3.3.4 It was suggested that the text in new paragraph 2.3.5 should specify that explosives of Compatibility Group L must not be transported on the same aircraft, but others felt that the text was too specific and that the requirement as proposed should not be mandatory.

3.3.3.5 Some members felt that additional guidance material should be developed, in particular that for loading and unloading of explosives for operators.

3.3.3.6 The proposal was agreed as presented. Further guidance material would be developed and presented to DGP/23.

3.3.4 State Approaches To Shipper Oversight (DGP-WG/11-IP/6)

3.3.4.1 This working paper was reported under Agenda Item 1. See paragraph 3.1.2.

3.3.5 Approval to Carry Dangerous Goods — Air Operators (DGP-WG/11-IP/7)

3.3.5.1 The working group was reminded of discussions at DGP-WG/11 related to the introduction of requirements such that operators would only be permitted to carry dangerous goods by air if approved to do so by the State of the Operator (DGP-WG/11-WP/1, paragraph 3.6.1). At that time, panel members with existing operator approval programmes in their States were asked to provide background information on their approaches, policies, and tools. Accordingly, the working group was provided with an overview of the approach taken in one State to certifying operators to carry dangerous goods. It was suggested consideration could be given to developing guidance in the Supplement.

3.4 Agenda Item 4: Development of recommendations for amendments to the *Emergency Response Guidance for Aircraft Incidents involving Dangerous Goods* (Doc 9481) for incorporation in the 2013-2014 Edition

3.4.1 Additional Drill Letter for Lithium Batteries (DGP-WG/11-WP/20)

3.4.1.1 An amendment to include a new drill letter to Table 4-1 applicable to incidents involving lithium batteries was proposed. The new drill letter “Z” would recommend the use of water as a fire-fighting agent involving lithium batteries and that the crew consider landing immediately. There was overall support for the proposal, with some feeling that it should be implemented quickly. Recognizing that the information in Doc 9481 was guidance, there would be nothing to prevent this from happening. A practical problem for airlines adopting the new code was raised, in that their OPS manuals would need to be revised. The possibility of the new code applying to other substances was also raised.

3.4.1.2 The amendment was agreed, subject to the addition of “if available” after “use water”.

3.4.2 Minor Amendment to align Paragraph 1.5 in Doc 9481 with the Technical Instructions (DGP-WG/11-WP/30)

3.4.2.1 It was noted that paragraph 1.5 of Doc 9481, Accessibility of dangerous goods, was intended to replicate the loading on cargo aircraft requirements in Part 7;2.4.1.2 of the Technical Instructions. Sub-paragraph 1) of paragraph 1.5, however, was different to the applicable subparagraph in the Instructions whereby a reference to subsidiary risk 8 was omitted. An amendment which would align paragraph 1.5 1) with 7;2.4.1.2 a) of the Instructions was agreed

3.4.3 Use of the Word “Poisonous” (DGP-WG/11-WP/32)

3.4.3.1 For the sake of consistency, the replacement of the word “poisonous” with “toxic*” next to the additional risk for drill letter W in Table 4-1 was agreed. The asterisk next to “toxic” would refer to an existing footnote indicating that “toxic” and “poison” have the same meeting.

3.5 Agenda Item 5: Resolution, where possible, of the non-recurrent work items identified by the Air Navigation Commission or the panel

Agenda item 5.1: Review of provisions for the transport of lithium batteries

3.5.1 Lithium Batteries in the Post (DGP-WG/11-WP/60)

3.5.1.1 A proposal by the Universal Postal Union (UPU) to permit limited quantities of lithium batteries through airmail was discussed. The idea was first raised at DGP-WG/09 in response to an increase in the number of lithium batteries in products discovered in the postal system as a result of the prevalence of on-line shopping (DGP-WG/09-WP/68, paragraph 3.5.1.17). The problem was recognized at that time, but many members felt the need to liaise with their postal authorities before considering any proposals. It was also recognized that an amendment to the UPU Convention would be necessary should carriage of lithium batteries by international mail be required. It was reported that an amendment to the UPU Convention had since been adopted; the working group was therefore asked to consider amending the Technical Instructions accordingly.

3.5.1.2 Although there was sympathy for the problem, it was felt that many issues still needed to be addressed before it could be considered. There were currently no or very limited training requirements for postal workers; these would need to be added. Practical issues related to oversight were raised. It was suggested that accessing mail in the event of an incident could be hindered by general laws making it illegal for a person to open mail not intended for them.

3.5.1.3 On the other hand, permitting limited quantities of lithium batteries, as long as they are transported in compliance with the Instructions, would have the potential of reducing the number of lithium batteries being sent unsafely through the post. It was suggested that the level of risk associated with the types of products containing lithium batteries was relatively low and should be taken into account. The fact that some lithium batteries are permitted in cargo without restriction made justifying a ban in mail difficult.

3.5.1.4 There was no support for the proposal at this time, but general agreement that the issues should continue to be discussed with the UPU.

3.5.2 Lithium Batteries Subject to New UN Testing Requirements (DGP-WG/11-WP/68)

3.5.2.1 It was reported that substantial changes to the testing requirements in the UN *Manual of Tests and Criteria* for lithium cells and batteries were adopted and will become effective in 2013. It was suggested that batteries or cells manufactured and tested in accordance with the current requirements should not need retesting. It was therefore proposed that a new provision be added to each lithium battery packing instruction (Packing Instructions 965 – 970) specifying that a cell or battery design type tested in accordance with requirements of the *Manual of Tests and Criteria* that were in effect at the time the cell or battery was first manufactured do not need retesting if, in the future, changes to the testing requirements are made.

3.5.2.2 Although some felt that new testing should be required, others did not. In any case, it was agreed that this was a multi-modal issue and a decision should be made at the UN. The issue would be raised at the UN by the proposer and a new paper would be prepared for DGP/23 based on the discussions at the UN.

3.5.3 **Lithium Batteries: Outreach (DGP-WG/11-IP/2)**

3.5.3.1 An article on lithium batteries which was recently published in one State was provided to the working group for information. The article was part of a lithium battery outreach programme being undertaken in that State.

Agenda Item 5.2: Development of provisions for the carriage of dangerous goods on helicopters

3.5.4 **Development of Provisions for the Carriage of Dangerous Goods by Helicopters (DGP-WG/11-WP/66, DGP-WG/11-WP/69 and DGP-WG/11-IP/5)**

3.5.4.1 In follow-up to the work done at DGP-WG/10 on the development of provisions for the carriage of dangerous goods by helicopters (DGP-WG/11-WP/1, paragraph 3.5.6), amendments to the WG/10 proposals, based on discussions at that meeting, were presented. An ad hoc working group was convened to review the proposals.

3.5.4.2 The working group was reminded of the recognition at DGP/22 given to the need to include anything related to routine helicopter operations in the relevant parts of the Technical Instructions and anything considered to be specialized operations requiring an approval or exemption in the Supplement. It was suggested that transporting dangerous goods in external loads should be recognized as "specialized operations" warranting exemptions or approvals from States. As such, a proposal to move references to external loads in the helicopter provisions to the Supplement was made. It was suggested that guidance for States considering requests to transport dangerous goods in external loads be included in the Supplement. Material was provided for consideration by the panel.

3.5.4.3 It was reported that significant progress had been made by the group which would result in a new proposal for DGP/23.

Agenda Item 5.3: Review of provisions for information to the pilot-in-command

3.5.5 **The Role Of Flight Dispatcher (DGP-WG/11-IP/8)**

3.5.5.1 The difficulty in providing information to airport rescue fire-fighting personnel at unintended arrival airports was noted. To address this difficulty, the working group was asked to consider requiring that flight dispatchers dispatch NOTOC information. It was suggested that the requirement be proposed for addition in Annex 6, since the Annex already contains required duties of a flight operations officer/flight dispatcher.

Agenda Item 5.4: Development of performance standards for State employees

3.5.6 **Competency Framework (DGP-WG/11-WP/65)**

3.5.6.1 An update was provided on the results of the DGP training working group that was established on developing a competency framework for State employees involved in the regulation and oversight of the air transport of dangerous goods. The group had met in Montreal under the chairmanship of Mr. T. Muller of the Netherlands, and work on the competency framework had been completed. The working group was asked to review the framework and provide comments. It was also asked to consider

introducing competency-based training in Part 1;4 along with a reference to the *Procedures for Air Navigation Services — Training* (PANS-TRG, Doc 9868) and to developing guidance on the implementation of competency-based training and assessment for dangerous goods functions to support States.

3.5.6.2 The competency framework was agreed in principle, and the meeting expressed its appreciation for the work done in developing the document. Particular gratitude was expressed through Mr. Muller to the Netherlands for the support provided. Finally, the Secretary reported that resources had been provided by ICAO for the development of competency frameworks for other dangerous goods personnel; it was hoped that these could be allocated to further the work of the training group.

3.6 Agenda Item 6: Other business

3.6.1 Report of the Meeting of the Working Group of the Whole (DGP-WG/10): Abu Dhabi, United Arab Emirates, 7 to 11 November 2010 (DGP-WG/11-WP/1)

3.6.1.1 The report of the WG/10 meeting was noted.

3.6.2 Safety Management Systems (DGP-WG/11-WP/51)

3.6.2.1 The working group discussed safety management systems in relation to dangerous goods. The secretary informed the group that the ANC, during its review of the DGP/23 agenda, requested the DGP to consider elements of SMS within the context of data and safety reporting. The request was prompted during discussion on States' activities related to the transport of lithium batteries. A view expressed by the ANC was that the introduction of some SMS elements for dangerous goods could be useful, but the Secretary reminded the ANC that the DGP had discussed SMS in general and felt that most SMS aspects of dangerous goods were covered under Annex 6. She also explained that one area which was not covered was shippers' responsibilities, but that the panel felt this was beyond the scope of Annex 18.

3.6.2.2 A number of members commented on the difficulties many organizations would face in extracting relevant information from reporting systems not designed for dangerous goods reporting specifically. It was queried if it was the intention for ICAO to develop a database to collect dangerous reports and if yes, what information should be submitted. It was agreed that members would provide comments to the Secretary so that a paper could be prepared for DGP/23.

3.6.3 Amendment to the Technical Instructions in Response to a Request from the IAEA (DGP-WG/11-WP/70)

3.6.3.1 A request from the International Atomic Energy Agency (IAEA) seeking an emergency addendum to permit the transport of persons subjected to intake of or contamination from radioactive material for the purpose of medical treatment was supported. Members noted that this request dealt with a humanitarian need and should be facilitated but that due consideration should also be given to other passengers and crew. It was believed that by adding approval of the operator, appropriate measures could be taken to ensure the radiological protection of these individuals.

3.6.3.2 It was agreed that the proposed amendment should be included as a new sub-paragraph b), and that operator approval and additional text referring to radiological protection measures for other passengers and crew would be added. A note referring to the location of the guidance material was also agreed.

3.6.3.3 Discussion focused on whether States should be involved with approving such an exception. Although there was some support for including approval by the States of Origin, transit Destination, and Operator, it was eventually agreed that, subject to approval by the operator, notification of the appropriate national authorities of these States would be sufficient and that this should be incorporated in the accompanying guidance.

3.6.4 **Notification to captain (NOTOC) working group**

3.6.4.1 It was noted that the NOTOC working group would meet prior to the DGP/23 meeting. Dates for this meeting would be confirmed by the Secretary.

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APPENDIX A

AMENDMENTS TO ANNEX 18

CHAPTER 1. DEFINITIONS

DGP-WG/11-WP/4:

State of Origin. The State in the territory of which the ~~cargo~~ consignment ~~was~~ is first to be loaded on an aircraft.

Note.— It was agreed that the following amendment would not be processed until more substantive amendments to the Annex could be included with it.

DGP-WG/10-WP/8:

UN number. The four-digit number assigned by the United Nations Committee of Experts on the Transport of Dangerous Goods to identify a substance or an article or a particular group of substances or articles.

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APPENDIX B

CONSOLIDATION OF AMENDMENTS TO THE TECHNICAL INSTRUCTIONS AGREED AT WG/11

FOREWORD

. . .

DGP-WG/10-WP/9:

USE OF THE TECHNICAL INSTRUCTIONS

The Technical Instructions are divided into eight Parts and supplemented by several attachments, with each Part and Attachment divided into Chapters and each Chapter divided into paragraphs and subparagraphs.

Within each Chapter, the Chapter number is incorporated into all of the paragraph numbers; thus, in Chapter 3, paragraph 2 carries the number "3.2". When referring to a paragraph, it is necessary to identify the appropriate Part or Attachment; if the above example were located in Part 2, the reference to it would be shown as "2;3.2" (that is, Part 2; Chapter 3, paragraph 3.2). If the above example were located in Attachment 3, the reference to it would be shown as "A3;3.2" (that is, Attachment 3; Chapter 3, paragraph 3.2).

Figures and Tables are numbered sequentially within the Part or Attachment in which they appear. Thus the second figure appearing in Part 4 is identified as "Figure 4-2" ~~and~~, the first table appearing in Part 3 is identified as "Table 3-1" and the first table appearing in the attachments is identified as "Table A-1" and it appears in Attachment 3.

. . .

DGP-WG/11-WP/37:

ABBREVIATIONS AND SYMBOLS

The abbreviations and symbols in the following table are used throughout the Instructions, or in the particular sections indicated, and have the meanings shown below.

Abbreviation or symbol	*Meaning*

. . .

G	gross mass as prepared for transport (as used in column~~s~~ 11 ~~and 13~~ of Table 3-1)

. . .

Part 1

GENERAL

Chapter 1

SCOPE AND APPLICABILITY

. . .

The amendments to the general applicability of approvals and exemptions Standards in Annex 18 which were agreed at DGP/23 were subsequently modified. The following amendments align the text in the Instructions with the amendment to Annex 18 adopted by Council.

DGP-WG/11-WP/4:

1.1.2 Where specifically provided for in these Instructions, the ~~State of Origin and the State of the Operator~~ States concerned may grant an approval~~:~~

~~a) to transport dangerous goods forbidden on passenger and/or cargo aircraft where these Instructions state that such goods may be carried under an approval; or~~

~~b) for other purposes as specified in these Instructions;~~

provided that in such instances an overall level of safety in transport which is ~~at least~~ equivalent to the level of safety provided for in these Instructions is achieved.

1.1.3 In instances:

a) of extreme urgency; or

b) when other forms of transport are inappropriate; or

c) when full compliance with the prescribed requirements is contrary to public interest,

the States concerned may grant an exemption from the provisions of the Instructions provided that in such instances ~~an~~ every effort is made to achieve an overall level of safety in transport which is ~~at least~~ equivalent to the level of safety provided for in these Instructions ~~is achieved~~. ~~For the purposes of exemptions, "States concerned" are the States of Origin, Operator, transit, overflight and destination.~~

1.1.4 For the State of overflight, if none of the criteria for granting an exemption are relevant, an exemption may be granted based solely on whether it is believed that an equivalent level of safety in air transport has been achieved.

Note 1.— For the purpose of approvals, "States concerned" are the States of Origin and the Operator, unless otherwise specified in these Instructions.

Note 2.— For the purpose of exemptions, "States concerned" are the States of Origin, Operator, Transit, Overflight and Destination.

Note 3.— Guidance for the processing of exemptions, including examples of extreme urgency, may be found in the Supplement to the Technical Instructions *(Part S-1;1.2 and 1.3).*

Note 4.— Refer to 1;2.1 for dangerous goods forbidden for transport by air under any circumstance.

Insert new paragraph 1.3

1.3 APPLICATION OF STANDARDS

Where the application of a standard is required and there is any conflict between the standard and these Instructions, the Instructions take precedence.

Renumber subsequent paragraphs accordingly

. . .

Chapter 3

GENERAL INFORMATION

Parts of this Chapter are affected by State Variation BE 1; see Table A-1

3.1 DEFINITIONS

The amended definitions for "Approval" and "Exemption" in Annex 18 which were agreed at DGP/23 were subsequently modified. The following amendments align the definitions in the Instructions with the amended definition in Annex 18 adopted by Council.

Approval. An authorization granted by the appropriate national authority for:

a) the transport of ~~those entries listed in Table 3-1 as~~ dangerous goods forbidden on passenger and/or cargo aircraft ~~to which Special Provision A1 or A2 has been assigned in column 7~~ where the Technical Instructions state that such goods may be carried with an approval; or

b) other purposes as ~~specified~~ provided for in these Instructions.

Note.— In the absence of a specific reference in the Technical Instructions allowing the granting of an approval, an exemption may be sought.

. . .

Exemption. An authorization ~~issued~~, other than an approval, granted by an appropriate national authority providing relief from the provisions of these Instructions.

Note.— The requirements for exemptions are given in 1;1.1.2.

. . .

DGP-WG/11-WP/53:

Misdeclared dangerous goods. Dangerous goods offered for transport by air where:

a) they are incorrectly described on the dangerous goods transport document, such that had they been correctly described, they would not be have been acceptable for carriage; or

b) they are found, after the acceptance check required by 7;1.3, not to have complied with the Technical Instructions.

[Note.— Non-compliances with the Technical Instructions found during an acceptance check are not required to be reported, although an operator may choose to do so if an issue of significance (e.g. incorrect use of packaging) is detected.]

. . .

DGP-WG/11-WP/37 and DP/5:

[

Net quantity. The mass or volume of the dangerous goods contained in a package excluding the mass or volume of any packaging material~~, except in the case of explosive articles and of matches where the net mass is the mass of the finished article excluding packagings~~. . For the purposes of this definition, "dangerous goods" means the substance or article as described by the proper shipping name shown in Table 3-1, e.g. for "Fire extinguishers", the net quantity is the mass of the fire extinguisher. For articles packed with equipment or contained in equipment, the net quantity is the net mass of the article, e.g. for lithium ion batteries contained in equipment, the net quantity is the net mass of the lithium ion batteries in the package.

]

DGP-WG/11-WP/4:

Pressure receptacle. A collective term that includes cylinders, tubes, pressure drums, closed cryogenic receptacles, metal hydride storage systems ~~and~~, bundles of cylinders and salvage pressure receptacles.

Salvage packagings. Special packagings into which damaged, defective, leaking or nonconforming dangerous goods packages, or dangerous goods that have spilled or leaked, are placed for purposes of transport for recovery or disposal.

DGP-WG/11-WP/4 and DP/1:

Salvage pressure receptacle. (See UN Recommendations, Chapter 1.2). Not permitted for air transport.

The following amendment for "State of Origin" was agreed at DGP/23. Since the definition appears in Annex 18, the amendment was not incorporated in the 2011-2012 Edition pending adoption by Council of Amendment 10 to Annex 18. The new definition will appear in teh 2013-2014 Edition.

DGP-WG/11-WP/19:

State of Destination. The State in the territory of which the consignment is finally to be unloaded from an aircraft.

DGP-WG/11-WP/4 and DP/1:

State of Origin. The State in the territory of which the ~~cargo~~ consignment ~~was~~ is first to be loaded on an aircraft.

. . .

DGP-WG/11-WP/53:

Undeclared dangerous goods. Dangerous goods offered for transport by air without being accompanied by a dangerous goods transport document; information applicable to the consignment provided in electronic form; or where permitted, by alternative documentation.

. . .

Chapter 4

TRAINING

Parts of this Chapter are affected by State Variations AE 2, CA 18, HK 1; see Table A-1

. . .

DGP-WG/10-WP/38:

4.2.3 Recurrent training must be provided within 24 months of previous training to ensure knowledge is current. However, if recurrent training is completed within the final three months of validity of previous training, the period of validity extends from the ~~date~~ month on which the recurrent training was completed until 24 months from the expiry ~~date~~ month of that previous training.

. . .

4.2.5 A record of training must be maintained which must include:

a) the individual's name;

b) the most recent training completion ~~date~~ month;

c) a description, copy or reference to training materials used to meet the training requirements;

d) the name and address of the organization providing the training; and

e) evidence which shows that a test has been completed satisfactorily.

Training records must be retained by the employer for a minimum period of 36 months from the most recent training completion ~~date~~ month and must be made available upon request to the employee or appropriate national authority.

. . .

DGP-WG/11-WP/44 and DP/1:

4.2.7 Staff of operators not carrying dangerous goods as cargo~~,~~ or mail ~~or stores~~ must be trained commensurate with their responsibilities. The subject matter to which their various categories of staff should be familiar with is indicated in Table 1-5.

Table 1-4. Content of training courses

. . .

KEY

1 — Shippers and persons undertaking the responsibilities of shippers
2 — Packers
3 — Staff of freight forwarders involved in processing dangerous goods
4 — Staff of freight forwarders involved in processing cargo~~,~~ or mail ~~or stores~~ (other than dangerous goods)
5 — Staff of freight forwarders involved in the handling, storage and loading of cargo~~,~~ or mail ~~or stores~~
6 — Operator's and ground handling agent's staff accepting dangerous goods
7 — Operator's and ground handling agent's staff accepting cargo~~,~~ or mail ~~or stores~~ (other than dangerous goods)
8 — Operator's and ground handling agent's staff involved in the handling, storage and loading of cargo~~,~~ or mail ~~or stores~~ and baggage
9 — Passenger-handling staff
10 — Flight crew members and load planners
11 — Crew members (other than flight crew members)
12 — Security staff who are involved with the screening of passengers and their baggage and cargo~~,~~ or mail ~~and stores~~, e.g. security screeners, their supervisors and staff involved in implementing security procedures

. . .

Table 1-5. Content of training courses for operators not carrying dangerous goods as cargo or mail ~~or stores~~

. . .

KEY

7 — Operator's and ground handling agent's staff accepting cargo~~,~~ or mail ~~or stores~~ (other than dangerous goods)
8 — Operator's and ground handling agent's staff involved in the handling, storage and loading of cargo~~,~~ or mail ~~or stores~~ (other than dangerous goods) and baggage
9 — Passenger handling staff
10 — Flight crew members and load planners
11 — Crew members (other than flight crew members)

DGP-WG/11-WP/4:

Chapter 5

DANGEROUS GOODS SECURITY

Parts of this Chapter are affected by State Variation US 17; see Table A-1

5.1 GENERAL SECURITY PROVISIONS

. . .

Insert new subparagraph 5.1.3

5.1.3 The provisions of this chapter do not apply to:

a) UN 2908 and UN 2909 excepted packages;

b) UN 2910 and UN 2911 excepted packages with an activity level not exceeding the A_2 value; and

c) UN 2912 LSA-I and UN 2913 SCO-I.

. . .

5.3 Provisions for high consequence dangerous goods

5.3.1 Definition of high consequence dangerous goods

5.3.1.1 High consequence dangerous goods are those which have the potential for misuse in a terrorist event and which may, as a result, produce serious consequences such as mass casualties, mass destruction or, particularly for Class 7, mass socio-economic disruption.

5.3.1.2 An indicative list of high consequence dangerous goods in classes and divisions other than Class 7 is given in Table 1-6.

Table 1-6. Indicative list of high consequence dangerous goods

Class 1 Division 1.1 explosives
Class 1 Division 1.2 explosives
Class 1 Division 1.3 compatibility group C explosives
Class 1 Division 1.4 UN Nos. 0104, 0237, 0255, 0267, 0289, 0361, 0365, 0366, 0440, 0441, 0455, 0456 and 0500
Class 1 Division 1.5 explosives
Division 2.3 toxic gases (excluding aerosols)
Class 3 desensitized explosives
Division 4.1 desensitized explosives
Division 6.1 substances of Packing Group 1; except when transported under the excepted quantity provisions in 3;5
Division 6.2 infectious substances of Category A (UN Nos. 2814 and 2900)
~~Class 7 radioactive materials in quantities greater than 3000 A_1 (special form) or 3000 A_2, as applicable in Type B and Type C packages.~~

5.3.1.3 For dangerous goods of Class 7, high consequence radioactive material is that with an activity equal to or greater than a transport security threshold of 3 000 A_2 per single package (see also 2;7.2.2.1) except for the following radionuclides where the transport security threshold is given in Table 1-7 below.

Table 1-7. Transport security thresholds for specific radionuclides

Element	*Radionuclide*	*Transport security threshold (TBq)*
Americium	Am-241	0.6
Gold	Au-198	2
Cadmium	Cd-109	200
Californium	Cf-252	0.2
Curium	Cm-244	0.5
Cobalt	Co-57	7
Cobalt	Co-60	0.3
Caesium	Cs-137	1
Iron	Fe-55	8000
Germanium	Ge-68	7
Gadolinium	Gd-153	10
Iridium	Ir-192	0.8

Element	*Radionuclide*	*Transport security threshold (TBq)*
Nickel	Ni-63	600
Palladium	Pd-103	900
Promethium	Pm-147	400
Polonium	Po-210	0.6
Plutonium	Pu-238	0.6
Plutonium	Pu-239	0.6
Radium	Ra-226	0.4
Ruthenium	Ru-106	3
Selenium	Se-75	2
Strontium	Sr-90	10
Thallium	Tl-204	200
Thulium	Tm-170	200
Ytterbium	Yb-169	3

5.3.1.4 For mixtures of radionuclides, determination of whether or not the transport security threshold has been met or exceeded can be calculated by summing the ratios of activity present for each radionuclide divided by the transport security threshold for that radionuclide. If the sum of the fractions is less than 1, then the radioactivity threshold for the mixture has not been met nor exceeded.

This calculation can be made with the formula:

$$\sum_i \frac{A_i}{T_i} < 1$$

Where:

A_i = activity of radionuclide *i* that is present in a package (TBq)
T_i = transport security threshold for radionuclide *i* (TBq).

5.3.1.5 When radioactive material possess subsidiary risks of other classes or divisions, the criteria of Table 1-6 should also be taken into account (see also 1;6.5).

DGP-WG/11-WP/4 and DP/1:

5.~~3~~4 SECURITY PLANS

5.~~3~~4.1 Operators, shippers and others (including infrastructure managers) engaged in the transport of high consequence dangerous goods (see 5.3.1) should adopt, implement and comply with a security plan that addresses at least the elements specified in 5.~~3~~4.2. ~~High consequence dangerous goods are those which have the potential for misuse in a terrorist incident and which may, as a result, produce serious consequences such as mass casualties or mass destruction. An indicative list of high consequence dangerous goods is provided in Table 1-6.~~

Note.— When national authorities issue exemptions, they should consider all of the provisions in this Chapter.

5.~~3~~4.2 The security plan should comprise at least the following elements:

a) specific allocation of responsibilities for security to competent and qualified persons with appropriate authority to carry out their responsibilities;

b) records of dangerous goods or types of dangerous goods transported;

c) review of current operations and assessment of vulnerabilities, including inter-modal transfer, temporary transit storage, handling, and distribution, as appropriate;

d) clear statement of measures including training policies (including response to higher threat conditions, new employee/ employment verifications, etc.), operating practices (e.g. access to dangerous goods in temporary storage proximity to vulnerable infrastructure, etc.), equipment and resources that are to be used to reduce security risks;

e) effective and up-to-date procedures for reporting and dealing with security threats, breaches of security or security incidents;

f) procedures for the evaluation and testing of security plans and procedures for periodic review and update of the plans;

g) measures to ensure the security of transport information contained in the plan; and

h) measures to ensure that the security of the distribution of transport documentation is limited as far as possible. (Such measures must not preclude provision of the transport documentation required by Part 5, Chapter 4 of these Instructions.)

Note.— Operators, shippers and others with responsibilities for the safe and secure transport of dangerous goods should cooperate with each other and with appropriate authorities to exchange threat information, apply appropriate security measures and respond to security incidents.

5.45 RADIOACTIVE MATERIAL

For radioactive material, the provisions of this Chapter are deemed to be complied with when the provisions of the Convention on Physical Protection of Nuclear Material[1] and the IAEA circular on "The Physical Protection of Nuclear Material and Nuclear Facilities"[2] are applied.

. . .

Chapter 6

GENERAL PROVISIONS CONCERNING CLASS 7

. . .

Note.— The following amendment to 1;6.1.4 was incorporated in the TIs immediately following DGP-WG/11 through Addendum No. 2 to the 2011-2012 Edition of the Instructions. It was approved through the ICAO Council's fast track mechanism for urgent safety-related amendments. The guidance material referred to in b) below which was agreed at DGP-WG/11 and approved by the Council is reproduced in Appendix E to this working paper.

6.1.4 These Instructions do not apply to:

a) radioactive material implanted or incorporated into a person or live animal for diagnosis or treatment;

b) a person who has been subject to accidental or deliberate intake of or contamination from radioactive material and is to be transported for medical treatment, taking into account the necessary radiological protection measures with respect to other passengers and crew, subject to approval by the operator;

Note.— Guidance material may be found on www.icao.int/anb/fls/dangerousgoods.

~~b~~c) radioactive material in consumer products which have received regulatory approval, following their sale to the end user;

~~c~~d) natural material and ores containing naturally occurring radionuclides which are either in their natural state or have only been processed for purposes other than for extraction of the radionuclides, and are not intended to be processed for use of these radionuclides, provided the activity concentration of the material does not exceed 10 times the values specified in 2;7.2.2.1 b) or calculated in accordance with 2;7.2.2.2 to 7.2.2.6;

~~d~~e) non-radioactive solid objects with radioactive substances present on any surfaces in quantities not in excess of the limit specified in the definition of contamination in 2;7.1.

Note.— See Appendix E for guidance material.

1. ~~IAEA~~INFCIRC/274/Rev.1, IAEA, Vienna (1980).
2. ~~IAEA~~INFCIRC/225/Rev.4 (Corrected), IAEA, Vienna (1999). ~~See also "Guidance and Considerations for the Implementation of INFCIRC/225/Rev.4, the Physical Protection of Nuclear Material and Nuclear Facilities, IAEA-TECDoc-967/Rev.1.~~

DGP-WG/11-WP/5:

Part 2

CLASSIFICATION OF DANGEROUS GOODS

INTRODUCTORY CHAPTER

Parts of this Chapter are affected by State Variations DE 5, NL 4; see Table A-1

. . .

3.5 A mixture or solution meeting the classification criteria of these Instructions composed of a single predominant substance identified by name in Table 3-1 and one or more substances not subject to these Instructions and/or traces of one or more substances identified by name in Table 3-1 must be assigned the UN number and proper shipping name of the predominant substance named in Table 3-1, unless:

a) the mixture or solution is identified by name in Table 3-1 in which case this name must be applied; or

b) the name and description of the substance named in Table 3-1 specifically indicates that it applies only to the pure substance; or

c) the hazard class or division, subsidiary risk(s), physical state or packing group of the solution or mixture is different from that of the substance named in Table 3-1; or

d) the hazard characteristics and properties of the mixture or solution necessitate emergency response measures that are different from those required for the substance identified by name in Table 3-1.

. . .

3.9 A mixture or solution meeting the classification criteria of these Instructions that is not identified by name in Table 3-1 and that is composed of two or more dangerous goods must be assigned to an entry that has the proper shipping name, description, hazard class or division, subsidiary risk(s) and packing group that most precisely describe the mixture or solution.

. . .

DGP-WG/11-WP/23:

5. Transport of samples

5.3 Samples of the substance must be transported in accordance with the requirements applicable to the tentative assigned proper shipping name provided:

a) the substance is not considered to be a substance ~~prohibited~~ forbidden for transport by 1;2.1;

. . .

DGP-WG/11-WP/5:

Chapter 1

CLASS 1 — EXPLOSIVES

Parts of this Chapter are affected by State Variations BE 2, DQ 2, GB 1, HK 3, US 5; see Table A-1

. . .

1.1 DEFINITIONS AND GENERAL PROVISIONS

Class 1 comprises:

. . .

b) explosive articles, except devices containing explosive substances in such quantity or of such a character that their inadvertent or accidental ignition or initiation during transport will not cause any effect external to the device either by projection, fire, smoke, heat or loud noise (see 1.5.2); and

. . .

1.3 DIVISIONS

1.3.1 Class 1 is divided into six divisions:

. . .

f) Division 1.6 — Extremely insensitive articles which do not have a mass explosion hazard.

This division comprises articles which contain only extremely insensitive ~~detonating~~ substances and which demonstrate a negligible probability of accidental initiation or propagation.

. . .

Table 2-2. Classification codes

Description of substance or article to be classified	*Compatibility group*	*Classification code*
. . .		
Articles containing only extremely insensitive ~~detonating~~ substances	N	1.6N
. . .		

. . .

1.5 CLASSIFICATION OF EXPLOSIVES

. . .

Insert new paragraph 1.5.2.4

1.5.2.4 An article may be excluded from Class 1 when three unpackaged articles, each individually activated by its own means of initiation or ignition or external means to function in the designed mode, meet the following test criteria:

a) no external surface has a temperature of more than 65º C. A momentary spike in temperature up to 200 ºC is acceptable;

b) no rupture or fragmentation of the external casing or movement of the article or detached parts thereof of more than one metre in any direction;

Note.— Where the integrity of the article may be affected in the event of an external fire, these criteria must be examined by a fire test, such as described in ISO 12097-3.

c) no audible report exceeding 135 dB(C) peak at a distance of one metre;

d) no flash or flame capable of igniting a material such as a sheet of 80 ± 10 g/m² paper in contact with the article; and

e) no production of smoke, fumes or dust in such quantities that the visibility in a one cubic metre chamber equipped with appropriately sized blow out panels is reduced more than 50% as measured by a calibrated light (lux) meter or radiometer located one metre from a constant light source located at the midpoint on opposite walls . The general guidance on Optical Density Testing in ISO 5659-1 and the general guidance on the Photometric System described in Section 7.5 in ISO 5659-2 may be used or similar optical density measurement methods designed to accomplish the same purpose may also be employed. A suitable hood cover surrounding the back and sides of the light meter must be used to minimize effects of scattered or leaking light not emitted directly from the source.

Note 1.— If during the tests addressing criteria (a), (b), (c) and (d) no or very little smoke is observed the test described in (e) may be waived.

Note 2.— The appropriate national authority may require testing in packaged form if it is determined that, as packaged for transport, the article may pose a greater risk.

. . .

Chapter 2

CLASS 2 — GASES

Parts of this Chapter are affected by State Variation US 6;
see Table A-1

. . .

2.2 DIVISIONS

2.2.1 Substances of Class 2 are assigned to one of three divisions based on the primary hazard of the gas during transport.

*Note.— UN 1950 — **Aerosols,** UN 2037 — **Receptacles, small, containing gas** and UN 2037 — **Gas cartridges** must be regarded as being in Division 2.1 when the criteria in 2.5.1 a) are met.*

a) Division 2.1 — Flammable gases.

Gases which at 20°C and a standard pressure of 101.3 kPa:

i) are ignitable when in a mixture of 13 per cent or less by volume with air; or

ii) have a flammable range with air of at least 12 percentage points regardless of the lower flammable limit. Flammability must be determined by tests or by calculation in accordance with methods adopted by ISO (see ~~ISO Standard 10156/1996~~ ISO 10156:2010). Where insufficient data are available to use these methods, tests by a comparable method recognized by the appropriate national authority must be used.

*Note.— UN 1950 — **Aerosols** and UN 2037 — **Receptacles, small, containing gas** must be regarded as being in Division 2.1 when the criteria in 2.5.1 a) are met.*

b) Division 2.2 — Non-flammable, non-toxic gases.

Gases which:

i) are asphyxiant — gases which dilute or replace the oxygen normally in the atmosphere; or

ii) are oxidizing — gases which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does; or

iii) do not come under the other divisions.

Note.— In 2.2.1 b) ii), "gases which cause or contribute to the combustion of other material more than air does" means pure gases or gas mixtures with an oxidizing power greater than 23.5 per cent as determined by a method specified in ~~ISO 10156:1996 or 10156-2:2005~~ ISO 10156:2010.

. . .

2.4 MIXTURES OF GASES

For the classification of gas mixtures into one of the three divisions (including vapours of substance from other classes), the following principles must be used:

a) Flammability must be determined by tests or by calculation in accordance with methods adopted by ISO (see ~~ISO Standard 10156/1996~~ ISO 10156:2010). Where insufficient data are available to use these methods, tests by a comparable method recognized by the appropriate national authority may be used.

. . .

d) Oxidizing ability is determined either by tests or by calculation methods adopted by the International Standards Organization (see the Note in 2.2.1 b) and ~~ISO 10156:1996~~ISO 10156:2010. ~~and ISO 10156-2:2005~~).

DGP-WG/11-WP/22:

2.5 AEROSOLS

2.5.1 For aerosols, the division of Class 2 and the subsidiary risks depend on the nature of the contents of the aerosol dispenser. The following provisions must apply:

. . .

f) aerosols with contents meeting the criteria of Packing Group I for toxicity or corrosivity are ~~prohibited~~ forbidden from transport.

. . .

DGP-WG/11-WP/5:

Table 2-7. List of currently assigned organic peroxides in packages

Note.— Peroxides to be transported must fulfil the classification and the control and emergency temperatures (derived from the self-accelerating decomposition temperature (SADT)) as listed.

Organic peroxide	*Concentration (per cent)*	*Diluent type A (per cent)*	*Diluent type B (per cent) (Note 1)*	*Inert solid (per cent)*	*Water (per cent)*	*Control tempera-ture (°C)*	*Emergency tempera-ture (°C)*	*UN generic entry*	*Notes*
. . .									
([3r-(3r,5as,6s,8as,9r,10r,12s,12ar**)]-Decahydro-10-methoxy-3,6,9-trimethyl-3,12-epoxy-12h-pyrano[4,3-j]-1,2-benzodioxepin)	≤ 100							3106	
Diacetone alcohol peroxides	≤57		≥26		≥8	+40	+45	3115	6
. . .									
Diisopropyl peroxydicarbonate	~~≤28~~ ≤32	~~≥72~~≥68				–15	–5	3115	
. . .									
3,6,9-Triethyl-3,6,9-trimethyl-1,4,7 triperoxonane	≤ 17	≥ 18		≥ 65				3110	

Organic peroxide	*Concentration (per cent)*	*Diluent type A (per cent)*	*Diluent type B (per cent) (Note 1)*	*Inert solid (per cent)*	*Water (per cent)*	*Control tempera-ture (°C)*	*Emergency tempera-ture (°C)*	*UN generic entry*	*Notes*
3,6,9-Triethyl-3,6,9-trimethyl -1,4,7-triperoxonane	≤42	≥58						3105	28

. . .

Chapter 6

CLASS 6 — TOXIC AND INFECTIOUS SUBSTANCES

. . .

6.3 DIVISION 6.2 — INFECTIOUS SUBSTANCES

. . .

6.3.2 Classification of infectious substances

. . .

6.3.2.3.3 Substances in a form that any present pathogens have been neutralized or inactivated such that they no longer pose a health risk are not subject to these Instructions unless they meet the criteria for inclusion in another class.

Note.— Medical equipment which has been drained of free liquid and meets the requirements of this paragraph is not subject to these Instructions.

. . .

Insert new paragraph 6.3.2.2.7

6.3.2.3.7 Except for:

a) medical waste (UN 3291);

b) medical devices or equipment contaminated with or containing infectious substances in Category A (UN 2814 or UN 2900); and

c) medical devices or equipment contaminated with or containing other dangerous goods that meet the definition of another hazard class,

medical devices or equipment potentially contaminated with or containing infectious substances which are being transported for disinfection, cleaning, sterilization, repair, or equipment evaluation are not subject to the provisions of these Instructions if packed in packagings designed and constructed in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents. Packagings must be designed to meet the construction requirements listed in 6.3.

6.3.2.3.7.1 These packagings must meet the general packing requirements of 4;1.1.1 and 4;1.1.3.1 and be capable of retaining the medical devices and equipment when dropped from a height of 1.2 m. [For air transport, additional requirements may apply].

DGP-WG/11-WP/5 and DP/1:

6.3.2.3.7.2 Packages must be marked "Used medical device" or "Used medical equipment". When an overpack used, it must be marked with the words "Used medical device" or "Used medical equipment" unless the markings are visible.

. . .

Table 2-16. Summary of criteria for assigning packing groups to corrosive substances

Packing Group	*Exposure Time*	*Observation Period*	*Effect*
I	≤ 3 min	≤ 60 min	Full thickness destruction of intact skin
II	> 3 min ≤ 1 h	≤ 14 d	Full thickness destruction of intact skin
III	> 1 h ≤ 4 h	≤ 14 d	Full thickness destruction of intact skin
III	-	-	Corrosion rate on either steel or aluminium surfaces exceeding 6.25 mm a year at a test temperature of 55 ºC when tested on both materials

. . .

Chapter 9

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CLASS 9 — MISCELLANEOUS DANGEROUS SUBSTANCES AND ARTICLES, INCLUDING ENVIRONMENTALLY HAZARDOUS SUBSTANCES

. . .

9.2 ASSIGNMENT TO CLASS 9

DGP-WG/11-WP/19 and DP/1:

9.2.1 Class 9 includes, inter alia:

a) Environmentally hazardous substances (aquatic environment) are those that meet the criteria in 2.9.3 of the UN Model Regulations, 15th revised edition, or that meet criteria in international regulations or national regulations established by the appropriate national authority in the State of Origin, transit or destination of the consignment.

Substances or mixtures dangerous to the aquatic environment not otherwise classified under these Instructions must be assigned to Packing Group III and designated:

UN 3077 Environmentally hazardous substance, solid, n.o.s.; or
UN 3082 Environmentally hazardous substance, liquid, n.o.s.

. . .

DGP-WG/11-WP/7 and DP/3:

9.3 LITHIUM BATTERIES

Cells and batteries must be manufactured under a quality management programme that includes:

a) a description of the organizational structure and responsibilities of personnel with regard to design and product quality;

b) the relevant inspection and test, quality control, quality assurance, and process operation instructions that will be used;

c) process controls that should include relevant activities to prevent and detect internal short circuit failure during manufacture of cells;

d) quality records, such as inspection reports, test data, calibration data and certificates. Test data must be kept and made available to the appropriate national authority upon request;

e) management reviews to ensure the effective operation of the quality management programme;

f) a process for control of documents and their revision;

g) a means for control of cells or batteries that are not conforming to the type tested as mentioned in 1) above;

h) training programmes and qualification procedures for relevant personnel; and

i) procedures to ensure that there is no damage to the final product.

Note.— In-house quality management programmes may be accepted. Third party certification is not required, but the procedures listed in 1) to 9) above must be properly recorded and traceable. A copy of the quality management programme must be made available to the appropriate authority upon request.

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Part 3

DANGEROUS GOODS LIST, SPECIAL PROVISIONS AND LIMITED AND EXCEPTED QUANTITIES

Chapter 1

GENERAL

. . .

1.3 MIXTURES OR SOLUTIONS

. . .

DGP-WG/11-WP/6:

1.3.2 A mixture or solution meeting the classification criteria of these Instructions composed of a single predominant substance identified by name in Table 3-1 and one or more substances not subject to these Instructions and/or traces of one or more substances identified by name in Table 3-1 must be assigned the UN number and proper shipping name of the predominant substance named in Table 3-1, unless:

a) the mixture or solution is specifically identified by name in Table 3-1 in which case this name must be applied; or

. . .

1.3.4 A mixture or solution meeting the classification criteria of these Instructions that is not identified by name in Table 3-1 and that is composed of two or more dangerous goods must be assigned to an entry that has the proper shipping name, description, hazard class or division, subsidiary risk(s) and packing group that most precisely describe the solution or mixture.

. . .

Chapter 2

ARRANGEMENT OF THE DANGEROUS GOODS LIST (TABLE 3-1)

2.1 ARRANGEMENT OF THE DANGEROUS GOODS LIST (TABLE 3-1)

. . .

DGP-WG/11-WP/37:

Column 11 "Passenger aircraft — Maximum net quantity per package" — this column shows the maximum net quantity (mass or volume) of the article or substance allowed in each package for transport on a passenger aircraft. ~~The mass quoted is the net mass unless otherwise indicated by a letter "G".~~ Where a maximum net quantity appears beside a packing instruction prefixed by the letter "Y", this indicates it is the maximum net quantity permitted in a packaging containing limited quantities of dangerous goods unless indicated by a letter "G" where the mass quoted is the total mass of the package. The maximum quantity per package may be further limited by the type of packaging used. The maximum net quantities indicated may be exceeded only as permitted in the Supplement to these Instructions in S-3;2 with the approval of the appropriate national authority of the State of Origin and the State of the Operator.

Column 12 "Cargo aircraft — Packing instruction" — this column provides information similar to that in column 10, but for articles or substances which may be transported on a cargo aircraft only.

Column 13 "Cargo aircraft — Maximum net quantity per package" — this column provides information similar to that in column 11, but for articles or substances which may be transported on a cargo aircraft only. ~~The mass quoted is the net mass unless otherwise indicated by a letter "G".~~ The maximum quantity per package may be further limited by the type of packaging used. The maximum net quantities indicated do not apply to transport in portable tanks, as permitted in the Supplement to these Instructions, Part S-4, Chapter 12, with the approval of the appropriate authority of the State of Origin and the State of the Operator. The maximum net quantities indicated may be exceeded only as permitted in the Supplement to these Instructions in S-3;2 with the approval of the appropriate national authority of the State of Origin and the State of the Operator.

. . .

Abbreviation	*Column*	*Meaning*
. . .		
G	11 ~~and 13~~	Gross mass of package as prepared for transport

. . .

See the attachment to this appendix for amendments to Table 3-1

. . .

Chapter 3

SPECIAL PROVISIONS

Parts of this Chapter are affected by State Variations AU 2, CA 7, CA 8, GB 3, IR 3, JM 1, NL 1, US 11, ZA 1; see Table A-1

. . .

Table 3-2. Special provisions

TIs	*UN*	
DGP-WG/11-WP/6 and DP/1:		
A21		This entry only applies to vehicles ~~and equipment which are~~ powered by wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries and equipment powered by wet batteries or sodium batteries which are transported with these batteries installed. For the purpose of this special provision, vehicles are self-propelled apparatus designed to carry one or more persons or goods. Examples of such vehicles ~~and equipment~~ are electrically-powered cars, ~~lawn mowers~~, motorcycles, scooters, three- and four-wheeled vehicles or motorcycles, battery-assisted bicycles, wheelchairs, lawn tractors, boats and aircraft ~~and other mobility aids~~. Examples of equipment are lawnmowers, cleaning machines or model boats and model aircraft. Equipment powered by lithium metal batteries or lithium ion batteries must be consigned under the entries UN 3091 **Lithium metal batteries contained in equipment** or UN 3091 **Lithium metal batteries packed with equipment** or UN 3481 **Lithium ion batteries contained in equipment** or UN 3481 **Lithium ion batteries packed with equipment**, as appropriate. Vehicles or equipment that also contain an internal combustion engine must be consigned under the entries UN 3166 **Engine~~s~~, internal combustion, flammable gas powered** or UN 3166 **Engine~~s~~, internal combustion, flammable liquid powered** or UN 3166 **Vehicle, flammable gas powered** or UN 3166 **Vehicle, flammable liquid powered**, as appropriate. Hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries, lithium metal batteries or lithium ion batteries, transported with the battery(ies) installed, must be consigned under the entries UN 3166 **Vehicle, flammable gas powered** or UN 3166 **Vehicle, flammable liquid powered**, as appropriate. Vehicles or equipment powered by a fuel cell engine must be consigned under the entries UN 3166 **Vehicle, fuel cell, flammable gas powered** or UN 3166 **Vehicle, fuel cell, flammable liquid powered**, or UN 3166 **Engine, fuel cell, flammable gas powered** or UN 3166 **Engine, fuel cell, flammable liquid powered**, as appropriate.
DGP-WG/11-WP/6:		
A32		Air bag inflators, air bag modules or seat-belt pretensioners ~~installed in conveyances or in completed conveyance components~~ installed in vehicles, vessels or aircraft or in completed 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 number A32 must be provided on the air waybill when an air waybill is issued.
DGP-WG/11-WP/58 and DP/2:		
A44		The entry chemical kit or first aid kit is intended to apply to boxes, cases, etc., containing small quantities of ~~one or more compatible items of~~ various dangerous goods which are used, for example, for medical, analytical or testing or repair purposes. Components must not react dangerously (see 4;1.1.8). The packing group assigned to the kit as a whole must be the most stringent packing group assigned to any individual substance in the kit. The assigned packing group must be shown on the dangerous goods transport document. Where the kit contains dangerous goods to which no packing group is assigned, no packing group need be indicated on the dangerous goods transport document. The only dangerous goods which are permitted in the kits are substances which may be transported as: a) excepted quantities as specified in column 9 of Table 3-1, provided the inner packagings and quantities are as prescribed in 5.1.2 and 5.2.1 a); or b) limited quantities under 3;4.1.2.

TIs *UN*

DGP-WG/11-WP/37:

A51 Irrespective of the limit specified in column 11 of Table 3-1, aircraft batteries up to a limit of 100 kg ~~gross~~ net mass per package may be transported. Transport in accordance with this special provision must be noted on the dangerous goods transport document.

DGP-WG/11-WP/6:

A68 (272) This substance must not be transported under the provisions of Division 4.1 unless specifically authorized by the appropriate national authority. (See UN 0143 or UN 0150 as appropriate.)

DGP-WG/11-WP/16:

A70 Internal combustion or fuel cell engines being shipped either separately or incorporated into a vehicle, machine or other apparatus, ~~the fuel tank of which has never contained any fuel and the fuel system of which is completely empty of fuel, or that are powered by a fuel that does not meet the classification criteria for any class or division, and~~ without batteries or other dangerous goods, are not subject to these Instructions~~.~~ provided that:

a) for flammable liquid powered engines:

1) the engine is powered by a fuel that does not meet the classification criteria for any class or division; or

2) the fuel tank of the vehicle, machine or other apparatus has never contained any fuel or the fuel tank has been flushed and purged of vapours and adequate measures taken to nullify the hazard; and

3) the entire fuel system of the engine has no free liquid and all fuel lines are sealed or capped or securely connected to the engine and vehicle, machinery or apparatus.

b) for ~~F~~flammable gas powered internal combustion or fuel cell engines ~~being shipped without batteries or other dangerous goods either separately or incorporated into a vehicle, machine or other apparatus that have contained fuel but~~:

1) the entire fuel system must have been flushed, purged and filled with a non-flammable gas or fluid to nullify the hazard ~~are not subject to these Instructions provided that:~~;

2) the final pressure of the non-flammable gas used to fill the system does not exceed 200 kPa at 20°C

~~a~~3) the shipper has made prior arrangements with the operator; and

~~b~~4) the shipper has provided the operator with written or electronic documentation stating that the flushing, purging and filling procedure has been followed and that the final contents of the engine(s) have been tested and verified to be non-flammable~~; and~~.

~~c) the final pressure of the non-flammable gas used to fill the system does not exceed 200 kPa at 20°C.~~

Multiple engines may be shipped in a unit load device or other type of pallet provided that the shipper has made prior arrangements with the operator(s) for each shipment.

When this special provision is used, the words “not restricted” and the special provision number A70 must be provided on the air waybill when an air waybill is issued.

TIs	*UN*	
DGP-WG/11-WP/6:		
A94		Batteries or cells containing sodium must not contain dangerous goods other than ~~sodium, sulphur and/or polysulphides~~ sodium, sulphur or sodium compounds (e.g. sodium polysulphides and sodium tetrachloroaluminate). Batteries or cells must not be offered for transport at a temperature such that liquid elemental sodium is present in the battery or cell unless approved and under the conditions established by the appropriate national authority. Cells must consist of hermetically sealed metal casings which fully enclose the dangerous goods and which are so constructed and closed as to prevent the release of the dangerous goods under normal conditions of transport. Batteries must consist of cells secured within and fully enclosed by a metal casing so constructed and closed as to prevent the release of the dangerous goods under normal conditions of transport.
. . .		
A134	(312)	Vehicles or machinery powered by a fuel cell engine must be consigned under the entries UN 3166 **Vehicle, fuel cell, flammable gas powered** or UN 3166 **Vehicle, fuel cell, flammable liquid powered**, or UN 3166 **Engine, fuel cell, flammable gas powered** or UN 3166 **Engine, fuel cell, flammable liquid powered**, as appropriate. These entries include hybrid electric vehicles powered by both a fuel cell and an internal combustion engine with wet batteries, sodium batteries ~~or lithium batteries~~, lithium metal batteries or lithium ion batteries, transported with the battery(ies) installed. Other vehicles which contain an internal combustion engine must be consigned under the entries UN 3166 **Vehicle, flammable gas powered** or UN 3166 **Vehicle, flammable liquid powered**, as appropriate. These entries include hybrid electric vehicles powered by both an internal combustion engine and wet batteries, sodium batteries ~~or lithium batteries~~, lithium metal batteries or lithium ion batteries, transported with the battery(ies) installed.
. . .		
A146	(328)	This entry applies to fuel cell cartridges including when contained in equipment or packed with equipment. Fuel cell cartridges installed in or integral to a fuel cell system are regarded as contained in equipment. Fuel cell cartridge means an article that stores fuel for discharge into the fuel cell through a valve(s) that controls the discharge of fuel into the fuel cell. Fuel cell cartridges, including when contained in equipment, must be designed and constructed to prevent fuel leakage under normal conditions of transport. Fuel cell cartridge design types using liquids as fuels must pass an internal pressure test at a pressure of 100 kPa (gauge) without leakage. Except for fuel cell cartridges containing hydrogen in metal hydride which must be in compliance with A162, each fuel cell cartridge design type, including fuel cell cartridges installed in or integral to a fuel cell system, must be shown to pass a 1.2 metre drop test onto an unyielding surface in the orientation most likely to result in failure of the containment system with no loss of contents. When lithium metal or lithium ion batteries are contained in the fuel cell system, the consignment must be consigned under this entry and under the appropriate entries for UN 3091 **Lithium metal batteries contained in equipment** or UN 3481 **Lithium ion batteries contained in equipment**.
. . .		
A161	(338)	Each fuel cell cartridge transported under this entry and designed to contain a liquefied flammable gas must: a) be capable of withstanding, without leakage or bursting, a pressure of at least two (2) times the equilibrium pressure of the contents at 55°C; b) not contain more than 200 mL ~~of~~ liquefied flammable gas, ~~with a~~ the vapour pressure of which must not exceed~~ing~~ 1 000 kPa at 55°C; and c) pass the hot water bath test prescribed in 6;5.4.1.
. . .		

TIs	*UN*	
A176	(356)	Metal hydride storage system~~(s)~~ installed in ~~conveyances~~ vehicles, vessels or aircraft or in completed ~~conveyance~~ components or intended to be installed in ~~conveyances~~ vehicles, vessels or aircraft must be approved by the appropriate national authority before acceptance for transport. The dangerous goods transport document must include an indication that the package was approved by the appropriate national authority or a copy of the appropriate national authority approval must accompany each consignment.

. . .

A184	(304)	This entry may only be used for the transport of non-activated batteries which contain dry potassium hydroxide and which are intended to be activated prior to use by the addition of an appropriate amount of water to the individual cells.
A185	(360)	Vehicles only powered by lithium metal batteries or lithium ion batteries must be consigned under the entry UN 3171 **Battery-powered vehicle**.
A186	(361)	This entry applies to electric double layer capacitors with an energy storage capacity greater than 0.3 Wh. Capacitors with an energy storage capacity of 0.3 Wh or less are not subject to these Instructions. Energy storage capacity means the energy held by a capacitor, as calculated using the nominal voltage and capacitance. All capacitors to which this entry applies, including capacitors containing an electrolyte that does not meet the classification criteria of any class or division of dangerous goods, must meet the following conditions: a) capacitors not installed in equipment must be transported in an uncharged state. Capacitors installed in equipment must be transported either in an uncharged state or protected against short circuit; b) each capacitor must be protected against a potential short circuit hazard in transport as follows: i) when a capacitor's energy storage capacity is less than or equal to 10Wh or when the energy storage capacity of each capacitor in a module is less than or equal to 10 Wh, the capacitor or module must be protected against short circuit or be fitted with a metal strap connecting the terminals; and ii) When the energy storage capacity of a capacitor or a capacitor in a module is more than 10 Wh, the capacitor or module must be fitted with a metal strap connecting the terminals; c) capacitors containing dangerous goods must be designed to withstand a 95 kPa pressure differential; d) capacitors must be designed and constructed to safely relieve pressure that may build up in use, through a vent or a weak point in the capacitor casing. Any liquid which is released upon venting must be contained by packaging or by equipment in which a capacitor is installed; and e) capacitors must be marked with the energy storage capacity in Wh. Capacitors containing an electrolyte not meeting the classification criteria of any class or division of dangerous goods, including when installed in equipment, are not subject to other provisions of these Instructions. Capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods, with an energy storage capacity of 10 Wh or less are not subject to other provisions of these Instructions when they are capable of withstanding a 1.2 metre drop test unpackaged on an unyielding surface without loss of contents. Capacitors containing an electrolyte meeting the classification criteria of any class or division of dangerous goods that are not installed in equipment and with an energy storage capacity of more than 10 Wh are subject to these Instructions. Capacitors installed in equipment and containing an electrolyte meeting the classification criteria of any class or division of dangerous goods are not subject to other provisions of these Instructions provided the equipment is packaged in a strong outer packaging constructed of suitable material and of adequate strength and design in relation to the packaging's intended use and in such a manner as to prevent accidental functioning of capacitors during transport. Large robust equipment containing capacitors may be offered for transport unpackaged or on pallets when capacitors are afforded equivalent protection by the equipment in which they are contained. *Note.— Capacitors which by design maintain a terminal voltage (e.g. asymmetrical capacitors) do not belong to this entry.*

TIs	*UN*	
A187	(362)	This entry applies to liquids, pastes or powders, pressurized with a propellant which meets the definition of a gas in 2;2.1.1 and 2;2.1.2 a) or b). *Note.— A chemical under pressure in an aerosol dispenser must be transported under UN 1950.* The following provisions must apply: a) The chemical under pressure must be classified based on the hazard characteristics of the components in the different states: i) the propellant; ii) the liquid; or iii) the solid. If one of these components, which can be a pure substance or a mixture, needs to be classified as flammable, the chemical under pressure must be classified as flammable in Division 2.1. Flammable components are flammable liquids and liquid mixtures, flammable solids and solid mixtures or flammable gases and gas mixtures meeting the following criteria: i) a flammable liquid is a liquid having a flashpoint of not more than 93 °C; ii) a flammable solid is a solid which meets the criteria in 2;4.2.2 of these Instructions; iii) a flammable gas is a gas which meets the criteria in 2;2.2.1 of these Instructions; b) gases of Division 2.3 and gases with a subsidiary risk of 5.1 must not be used as a propellant in a chemical under pressure; c) where the liquid or solid components are classified as dangerous goods of Division 6.1, Packing Groups II or III, or Class 8, Packing Groups II or III, the chemical under pressure must be assigned a subsidiary risk of Division 6.1 or Class 8 and the appropriate UN number must be assigned. Components classified in Division 6.1, Packing Group I, or Class 8, Packing Group I, must not be used for transport under this proper shipping name; d) in addition, chemicals under pressure with components meeting the properties of: Class 1, explosives; Class 3, liquid desensitized explosives; Division 4.1, self-reactive substances and solid desensitized explosives; Division 4.2, substances liable to spontaneous combustion; Division 4.3, substances which, in contact with water, emit flammable gases; Division 5.1 oxidizing substances; Division 5.2, organic peroxides; Division 6.2, Infectious substances or Class 7, Radioactive material, must not be used for transport under this proper shipping name;

DGP-WG/11-WP/6 and DP/2:

A188	(359)	Nitroglycerin solution in alcohol with more than 1 per cent but not more than 5 per cent nitroglycerin must be classified in Class 1 and assigned to UN 0144 if not all the requirements of Packing Instruction 371 are complied with.
A189	(364)	This article may only be transported under the provisions of 3;4 if, as presented for transport, the package is capable of passing the test in accordance with Test Series 6(d) of Part I of the UN *Manual of Tests and Criteria* as determined by the appropriate national authority.

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Chapter 4

DANGEROUS GOODS IN LIMITED QUANTITIES

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4.3 QUANTITY LIMITATIONS

4.3.1 The net quantity per package must not exceed the quantity specified in column 11 of Table 3-1 against the packing instruction number identified by the prefix letter "Y" in column 10.

4.3.2 The gross mass per package must not exceed 30 kg.

4.3.3 When different dangerous goods are contained in one outer packaging, the quantities of such dangerous goods must be so limited that:

DGP-WG/10-WP/37:

[a) for classes other than Classes 2 (except UN 2037, UN 3478 and UN 3479) and 9 ~~(except UN 3316)~~, the total net quantity in the package does not exceed the value of 1, where "Q" is calculated using the formula:

$$Q = \frac{n_1}{M_1} + \frac{n_2}{M_2} + \frac{n_3}{M_3} + \ldots$$

where n_1, n_2, etc., are the net quantities of the different dangerous goods and M_1, M_2 etc., are the maximum net quantities for these different dangerous goods shown in Table 3-1 against the relevant "Y" packing instructions; and

b) for Classes 2 (except UN 2037, UN 3478 and UN 3479) and 9 ~~(except UN 3316)~~:

1) when packed together without goods of other classes, the gross mass of the package does not exceed 30 kg; or

2) when packed together with goods of other classes, the gross mass of the package does not exceed 30 kg and the total net quantity in the package of goods other than in Classes 2 (except UN 2037, UN 3478 and UN 3479) or 9 ~~(except UN 3316)~~ does not exceed the value of 1 when calculated according to a) above.

c) carbon dioxide, solid (dry ice), UN 1845 may be packed together with goods of other classes, provided that the gross mass of the package does not exceed 30 kg. The quantity of dry ice does not need to be taken into account in the calculation of the "Q" value. However, the packaging containing the carbon dioxide, solid (dry ice) and the outer packaging must permit the release of carbon dioxide gas.

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4.3.4 Where the different dangerous goods in the outer packaging consist only of those with the same UN number, packing group and physical state (i.e. solid or liquid), the calculation in 4.3.3 a) does not need to be made. However, the total net quantity in the package must not exceed the maximum net quantity according to Table 3-1.

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Chapter 5

DANGEROUS GOODS PACKED IN EXCEPTED QUANTITIES

Parts of this Chapter are affected by State Variation JP 23; see Table A-1

5.1 EXCEPTED QUANTITIES

5.1.3 Where dangerous goods in excepted quantities for which different codes are assigned are packaged together, the total quantity per outer packaging must be limited to that corresponding to the most restrictive Code.

DGP-WG/11-WP/6 and DP/2:

[5.1.4 Excepted quantities of dangerous goods assigned to codes E1, E2, E4 and E5 are not subject to these Instructions provided that:

a) the maximum net quantity of material per inner packaging is limited to 1 ml for liquids and gases and 1 g for solids;

b) the provisions of 3;5.2 are met, except that an intermediate packaging is not required if the inner packagings are securely packed in an outer packaging with cushioning material in such a way that, under normal conditions of transport, they cannot break, be punctured, or leak their contents; and for liquid dangerous goods, the outer packaging contains sufficient absorbent material to absorb the entire contents of the inner packagings;

c) the provisions of 3;5.3 are complied with; and

d) the maximum net quantity of dangerous goods per outer packaging does not exceed 100 g for solids or 100 ml for liquids and gases.

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Part 4

PACKING INSTRUCTIONS

INTRODUCTORY NOTES

DGP-WG/10-WP/7:

[Note 1.— Packing groups

For packing purposes, dangerous goods ~~of all classes,~~ other than Classes 1, 2 and 7, self-reactive substances of Division 4.1, ~~and~~ Divisions 5.2 and 6.2, have been divided among three packing groups according to the degree of danger they present. The packing groups have the following meanings:

of classes 3, 8, 9 and divisions

Packing Group I — Substances presenting high danger
Packing Group II — Substances presenting medium danger
Packing Group III — Substances presenting low danger

Some substances in Class 9 and liquids in Division 5.1 have been assigned to packing groups by experience rather than through application of technical criteria. The packing group to which a substance is assigned is listed in Table 3-1. The criteria for the packing groups are given in Part 2, Chapters 3, 4, 5, 6 and 8.

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DGP-WG/11-WP/25:

Note 7.— Carriage of oxygen and air with aquatic animals

With the approval of the appropriate authority of the State of Origin, of Destination and of the Operator, for the purpose of providing life support to aquatic animals during transport, ~~a~~ cylinders containing Oxygen compressed, UN 1072 or Air, compressed, UN 1002 may be carried to oxygenate the water in accordance with the provisions of Table S-3-1 and Special Provision A202 (which appear in the Supplement).

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DGP-WG/10-WP/42:

1.1.4 The body and the closure of any packaging must be so constructed as to be able to adequately resist the effects of temperature and vibration occurring in normal conditions of transport. The closure device must be so designed that it:

a) is unlikely that it can be incorrectly or incompletely closed, and must be such that it may be checked easily to determine that it is completely closed; and

b) remains securely closed during transport.

1.1.4.1 In addition, for inner packagings containing liquids ~~substances~~, closures must be held securely, tightly and effectively in place by secondary means. Examples of such methods include: adhesive tape, friction sleeves, welding or soldering, positive locking wires, locking rings, induction heat seals and child-resistant closures. When secondary means of closure cannot be applied ~~to an inner packaging containing liquids~~, the inner packaging must be securely closed and placed in a leakproof liner and then placed in an outer packaging.

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DGP-WG/11-WP/37:

1.1.9 Subject to 1.1.8 an outer packaging may contain more than one item of dangerous goods provided that:

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e) the quantities of different dangerous goods contained in one outer packaging must be such that "Q" does not exceed the value of 1, where "Q" is calculated using the formula:

$$Q = \frac{n_1}{M_1} + \frac{n_2}{M_2} + \frac{n_3}{M_3} + \ldots$$

where n_1, n_2, etc. are the net quantities of the different dangerous goods and M_1, M_2, etc. are the maximum net quantities for these different dangerous goods according to Table 3-1 for passenger or cargo aircraft as applicable. However, the following dangerous goods do not need to be taken into account in the calculation of the "Q" value:

1) carbon dioxide, solid (dry ice), UN 1845;

2) those where columns 11 and 13 of Table 3-1 indicate "No limit";

3) those with the same UN number, packing group, and physical state (i.e. solid or liquid), providing they are the only dangerous goods in the package and the total net quantity does not exceed the maximum net quantity according to Table 3-1.

~~4) those where columns 11 and 13 of Table 3-1 indicate a maximum gross mass per package.~~

~~f) for packages containing dangerous goods where the letter "G" follows the quantity shown in column 11 or 13 of Table 3-1, the gross mass of the completed package does not exceed the lowest applicable gross mass.~~

An outer packaging containing Division 6.2 (Infectious Substances) may contain material for refrigeration, or freezing or packaging material such as absorbent material.

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DGP-WG/11-WP/33:

1.1.10 Inner packagings must be so packed, secured or cushioned in an outer packaging in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents into the outer packaging. Inner packagings containing liquids must be packaged with their closures upward and placed within outer packagings consistent with the orientation markings prescribed in ~~5;3.2.11 b)~~ 5;3.2.12 b) of these Instructions. Inner packagings that are liable to break or be punctured easily, such as those made of glass, porcelain or stoneware or of certain plastic material, must be secured in outer packagings with suitable cushioning material. Any leakage of the contents must not substantially impair the protective properties of the cushioning material or of the outer packaging.

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1.1.13 Combination packagings containing liquid dangerous goods, excluding flammable liquids in inner packagings of 120 mL or less, or infectious substances in primary receptacles not exceeding 50 mL, or hermetically sealed inner packagings each containing not more than 500 mL, must be packed so that the closures on the inner packagings are upward and the upright position of the package must be indicated on it by the "Package orientation" label shown in ~~5;3.2.11 b)~~ 5;3.2.12 b). The words "This side up" or "This end up" may also be displayed on the top cover of the package.

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Chapter 3

CLASS 1 — EXPLOSIVES

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3.4 PACKING INSTRUCTIONS

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DGP-WG/11-WP/7:

Packing Instruction 114

a) solid wetted

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags plastics textile woven plastics Receptacles metal plastics	Bags plastics textile, plastic coated or lined Receptacles metal plastics	Boxes fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) plastics~~, removable head~~ (1H1, 1H2) plywood (1D) steel~~, removable head~~ (1A1, 1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0077, 0234, 0235 and 0236, packagings must be lead-free.
— For UN 0342, inner packagings are not required when metal (1A2 ~~or~~, 1B2 or 1N2) or plastic (1H2) drums are used as outer packagings.
— Intermediate packagings are not required if leakproof removable head drums are used as the outer packaging.

b) solid dry

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags paper, kraft plastics textile, siftproof woven plastics, siftproof Receptacles fibreboard metal paper plastics wood woven plastics, siftproof	Not necessary	Boxes fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) plywood (4D) reconstituted wood (4F) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) plastics~~, removable head~~ (1H1, 1H2) plywood (1D) steel~~, removable head~~ (1A1, 1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0077, 0132, 0234, 0235 and 0236, packagings must be lead-free.
— For UN 0508 and 0509, metal packagings must not be used.
— For UN 0160 and 0161, when metal drums (1A2 ~~or ,~~ 1B2 or 1N2) are used as the outer packaging, metal packagings must be so constructed that the risk of explosion, by reason of increase in internal pressure from internal or external causes, is prevented.
— For UN 0160 and 0161, inner packagings are not required if drums are used as the outer packaging.

Packing Instruction 130

Inner packagings	*Intermediate packagings*	*Outer packagings*
Not necessary	Not necessary	Boxes aluminium (4B) expanded plastics (4H1) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) plastics~~, removable head~~ (1H1, 1H2) plywood (1D) steel~~, removable head~~ (1A1, 1A2)

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Packing Instruction 131

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags paper plastics Receptacles fibreboard metal plastics wood Reels	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) plastics~~, removable head~~ (1H1, 1H2) other metal (1N1, 1N2) plywood (1D) steel~~, removable head~~ (1A1, 1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

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

Packing Instruction 133

Inner packagings	*Intermediate packagings*	*Outer packagings*
Receptacles fibreboard metal plastics wood Trays, fitted with dividing partitions fibreboard plastics wood	Receptacles fibreboard metal plastics wood	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— Receptacles are only required as intermediate packagings when the inner packagings are trays.
— For UN 0043, 0212, 0225, 0268 and 0306, trays must not be used as inner packagings.

Packing Instruction 134

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags water-resistant Receptacles fibreboard metal plastics wood Sheets fibreboard, corrugated Tubes fibreboard	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) plastics~~, removable head~~ (1H1, 1H2) other metal (1N1, 1N2) plywood (1D) steel~~, removable head~~ (1A1, 1A2)

Packing Instruction 135

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags paper plastics Receptacles fibreboard metal plastics wood Sheets paper plastics	Not necessary	Boxes aluminium (4B) expanded plastics (4H1) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) plastics~~, removable head~~ (1H1, 1H2) plywood (1D) steel~~, removable head~~ (1A1, 1A2)

Packing Instruction 136

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags plastics textile Boxes fibreboard plastics wood Dividing partitions in the outer packagings	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) plastics~~, removable head~~ (1H1, 1H2) plywood (1D) steel~~, removable head~~ (1A1, 1A2)

Packing Instruction 137

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags plastics Boxes fibreboard wood Tubes fibreboard metal plastics Dividing partitions in the outer packagings	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) steel (4A)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 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.

Packing Instruction 138

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags plastics	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) plastics~~, removable head~~ (1H1, 1H2) plywood (1D) steel~~, removable head~~ (1A1, 1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— If the ends of the articles are sealed, inner packagings are not necessary.

Packing Instruction 139

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags plastics Receptacles fibreboard metal plastics wood Reels Sheets paper plastics	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) plastics~~, removable head~~ (1H1, 1H2) plywood (1D) steel~~, removable head~~ (1A1, 1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 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 "**Cord, detonating,** flexible", must be fastened securely.
— For UN 0065 and 0289, inner packagings are not required when they are in coils.

Packing Instruction 140

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags plastics Reels Sheets paper, kraft plastics Receptacles wood	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) plastics~~, removable head~~ (1H1, 1H2) plywood (1D) steel~~, removable head~~ (1A1, 1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— If the ends of UN 0105 are sealed, no inner packagings are required.
— For UN 0101, the packaging must be siftproof except when the fuse is covered by a paper tube and both ends of the tube are covered with removable caps.
— For UN 0101, steel or aluminium boxes or drums must not be used.

Packing Instruction 141

Inner packagings	*Intermediate packagings*	*Outer packagings*
Receptacles fibreboard metal plastics wood Trays, fitted with dividing partitions plastics wood Dividing partitions in the outer packagings	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with siftproof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) plastics~~, removable head~~ (1H1, 1H2) plywood (1D) steel~~, removable head~~ (1A1, 1A2)

Packing Instruction 142

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags	Not necessary	Boxes
paper		aluminium (4B)
plastics		fibreboard (4G)
Receptacles		natural wood, ordinary (4C1)
fibreboard		natural wood, with siftproof walls (4C2)
metal		other metal (4N)
plastics		plywood (4D)
wood		reconstituted wood (4F)
Sheets		solid plastics (4H2)
paper		steel (4A)
Trays, fitted with dividing partitions		Drums
plastics		aluminium~~, removable head~~ (1B1, 1B2)
		fibre (1G)
		other metal (1N1, 1N2)
		plastics~~, removable head~~ (1H1, 1H2)
		plywood (1D)
		steel~~, removable head~~ (1A1, 1A2)

Packing Instruction 143

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags	Not necessary	Boxes
paper, kraft		aluminium (4B)
plastics		fibreboard (4G)
textile		natural wood, ordinary (4C1)
textile, rubberized		natural wood, with siftproof walls (4C2)
Receptacles		other metal (4N)
fibreboard		plywood (4D)
metal		reconstituted wood (4F)
plastics		solid plastics (4H2)
wood		steel (4A)
Trays, fitted with dividing partitions		Drums
plastics		aluminium~~, removable head~~ (1B1, 1B2)
wood		fibre (1G)
		other metal (1N1, 1N2)
		plastics~~, removable head~~ (1H1, 1H2)
		plywood (1D)
		steel~~, removable head~~ (1A1, 1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0271, 0272, 0415 and 0491, when metal packagings are used, metal packagings 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 packagings, composite packagings (6HH2) (plastic receptacle with outer solid box) may be used.

Chapter 4

CLASS 2 — GASES

Parts of this Chapter are affected by State Variations CA 17, US 6, US 15; see Table A-1

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4.2 PACKING INSTRUCTIONS

Packing Instruction 200

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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 in accordance with 6;5.2.7.4 p) are permitted.

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Packing Instruction 202

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6) Pressure-relief devices

Every closed cryogenic receptacle, having a nominal capacity in excess of 550 L, must be provided with at least 2 pressure-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 550 L 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.

Note.— The pressure-relief devices must meet the requirements of 6;5.1.3.6.4 and 6;5.1.3.6.5.

7) Compatibility

Materials used to ensure the leakproofness of the joints or for the maintenance of the closures 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.

8) Periodic inspection

The periodic inspection and test frequencies of pressure relief valves in accordance with 6;5.1.6.3 must not exceed five years.

Note.— Insulated packagings containing refrigerated liquid nitrogen fully absorbed in a porous material are not subject to these Instructions provided they meet the requirements of Special Provision A152.

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Packing Instruction 206

Passenger and cargo aircraft for UN 3167, UN 3168 and UN 3169 only

General requirements

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

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.

DGP-WG/11-WP/7 and DP/3:

Gas cylinders and gas receptacles conforming to the construction, testing and filling requirements approved by the appropriate national authority are permitted.

1) **Compatibility requirements**

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

2) **Closure requirements**

— Closures must meet the requirements of 4;1.1.4.

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DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)		
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

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DGP-WG/11-WP/37 and Flimsy No. 4:

Packing Instruction 214

This Instruction applies to storage systems containing hydrogen absorbed in a metal hydride (UN 3468) individually or when contained in equipment and apparatus when transported on cargo aircraft.

1) For metal hydride storage systems, the general packing requirements of 4;4.1 must be met.

2) Only cylinders not exceeding 150 L in water capacity and having a maximum developed pressure not exceeding 25 MPa are covered by this packing instruction.

3) Metal hydride storage systems meeting the applicable requirements of 6;5 for the construction and testing of cylinders containing gas may be used for the transport of hydrogen only.

4) When steel cylinders or composite cylinders with steel liners are used, only those bearing the "H" mark, in accordance with 6;5.2.9 j) are permitted.

5) Metal hydride storage systems must meet the service conditions, design criteria, rated capacity, type tests, batch tests, routine tests, test pressure, rated charging pressure and provisions for pressure relief devices for transportable metal hydride storage systems specified in ISO 16111:2008, and their conformity and approval must be assessed in accordance with 6;5.2.5.

6) Metal hydride storage systems must be filled with hydrogen at a pressure not exceeding the rated charging pressure shown in the permanent markings on the system as specified in ISO 16111:2008.

7) The periodic test requirements for a metal hydride storage system must be in accordance with ISO 16111:2008 and carried out in accordance with 6;5.2.6, and the interval between periodic inspections must not exceed five years.

8) Storage systems with a water capacity of less than 1 L must be packaged in rigid outer packagings constructed of suitable material of adequate strength and design in relation to the packaging capacity and its intended use. They must be adequately secured or cushioned so as to prevent damage during normal conditions of transport.

9) Maximum net quantity per package for cargo aircraft is 100 kg of metal hydride storage systems, including when such storage systems are packed with equipment or contained in equipment.

10) Transport on passenger aircraft is forbidden.

DGP-WG/11-WP/7:

Packing Instruction 215

Passenger and cargo aircraft for UN 3478 and 3479 only

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OUTER PACKAGINGS

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

Packing Instruction Y215

Limited quantities for UN 3478 and 3479 only

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OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Plastics	Steel
Other metal	Plywood	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

DGP-WG/11-WP/12:

Packing Instruction 216

Passenger and cargo aircraft for UN 3478 and 3479 (contained in equipment) only

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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 packagings.
— Fuel cell systems must not charge batteries during transport.
— On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC [~~PAS 62282-6-1~~ 62282-6-100] Ed. 1 or a standard approved by the appropriate authority of the State of Origin.

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DGP-WG/11-WP/7 and DP/3:

Packing Instruction 218

Passenger and cargo aircraft for UN 3500, 3501, 3502, 3503, 3504 and 3505 only

General requirements

Part 4;1.1.1 and 1.1.8 requirements must be met, including:

1) **Compatibility requirements**

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

Unless otherwise indicated in these Instructions, cylinders conforming to the applicable requirements of 6;5 are permitted.

ADDITIONAL PACKING REQUIREMENTS

— The maximum test period for periodic inspection must be 5 years.
— Cylinders must be so filled that at 50 °C the non-gaseous phase does not exceed 95% of their water capacity and they are not completely filled at 60 °C. When filled, the internal pressure at 65 °C must not exceed the test pressure of the cylinders. The vapour pressures and volumetric expansion of all substances in the cylinders must be taken into account.
— The minimum test pressure must be in accordance with Packing Instruction 200 for the propellant but must not be less than 20 bar.
— Non-refillable cylinders used may have a water capacity in litres not exceeding 1 000 litres divided by the test pressure expressed in bars provided capacity and pressure restrictions of the construction standard comply with ISO 11118:1999, which limits the maximum capacity to 50 litres.

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Chapter 5
CLASS 3 — FLAMMABLE LIQUIDS

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5.1 PACKING INSTRUCTIONS

DGP-WG/11-WP/7:

Packing Instructions Y340 – Y344

Limited quantities
Passenger and cargo aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Plywood	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instructions 350 – 355

Passenger aircraft

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ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

DGP-WG/11-WP/24:

— Inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Packing Group III

— Packagings must meet the Packing Group II performance requirements if the substance has a Class 8 subsidiary risk.

DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

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Packing Instructions 360 – 366

Cargo aircraft only

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ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

DGP-WG/11-WP/24:

— Inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Packing Group III

— Packagings must meet the Packing Group II performance requirements if the substance has a Class 8 subsidiary risk.

DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jericans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Other metal (3N2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Plastics (3H1, 3H2)
Other metal (4N)	Plywood (1D)	Steel (3A1, 3A2)
Plastics (4H1, 4H2)	Plastics (1H1, 1H2)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

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Packing Instruction 370

Passenger and cargo aircraft for UN 3269 (Packing Group II or III) only

DGP-WG/11-WP/39:

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COMBINATION PACKAGINGS					SINGLE PACKAGINGS
Packing conditions	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle) — for liquid activator*	*Inner packaging quantity (per receptacle) — for solid activator*	*Total quantity per package*	
Activator (Organic peroxide)	Plastics*	125 mL	500 g	5 kg	No
	Metal*	125 mL	500 g		
Base material Class 3 Packing Group II ~~or III~~	Glass	1.0 L	~~1.0 L~~ n/a		
	Plastics	5.0 L	~~5.0 L~~ n/a		
	Metal	5.0 L	~~5.0 L~~ n/a		
Activator (Organic peroxide)	Plastics*	125 mL	500 g	10 kg	No
	Metal*	125 mL	500 g		
Base material Class 3 Packing Group III	Glass	2.5 L	n/a		
	Plastics	10 L	n/a		
	Metal	10 L	n/a		
*Including tubes					

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DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jericans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Steel (1A1, 1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction Y370

Limited quantities
Passenger and cargo aircraft for UN 3269 (Packing Group II or III) only

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DGP-WG/11-WP/39:

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COMBINATION PACKAGINGS						SINGLE PACKAGINGS
Packing conditions	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle) — for liquid activator*	*Inner packaging quantity (per receptacle) — for solid activator*	*Total quantity per package*	*Total gross mass per package*	
Activator (Organic peroxide)	Plastics*	30 mL	100 g	1 kg	30 kg	No
	Metal*	30 mL	100 g			
Base material Class 3 Packing Group II ~~or III~~	Glass	1.0 L	~~1.0 L~~ n/a			
	Plastics	1.0 L	~~1.0 L~~ n/a			
	Metal	1.0 L	~~1.0 L~~ n/a			
Activator (Organic peroxide)	Plastics*	30 mL	100 g	5 kg		
	Metal*	30 mL	100 g			
Base material Class 3 Packing Group III	Glass	2.5 L	n/a			
	Plastics	5.0 L	n/a			
	Metal	5.0 L	n/a			
*Including tubes						

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DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

Packing Instruction 371

Passenger and cargo aircraft for UN 1204 and UN 3064 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Steel (1A1, 1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

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Packing Instruction 373

Passenger and cargo aircraft for UN 1228 (Packing Group II or III) only

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DGP-WG/11-WP/24:

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Glass inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Steel (1A1, 1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

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Packing Instruction Y373

Limited quantities
Passenger and cargo aircraft for UN 1228 (Packing Group III) only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

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Packing Instruction 374

Passenger and cargo aircraft for UN 3473 only

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OUTER PACKAGINGS

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

Packing Instruction Y374

Limited quantities for UN 3473 only

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OUTER PACKAGINGS

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Plywood	
Plywood	Steel	
Reconstituted wood		
Steel		

DGP-WG/11-WP/12:

Packing Instruction 375

Passenger and cargo aircraft for UN 3473 (contained in equipment) only

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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 packagings.
— Fuel cell systems must not charge batteries during transport.
— On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC [~~PAS 62282-6-1~~ 62282-6-100] Ed. 1 or a standard approved by the appropriate authority of the State of Origin.

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DGP-WG/11-WP/7:

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Packing Instruction 377

~~Passenger and c~~Cargo aircraft only for Chlorosilanes

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes	*Drums*
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Plastics (1H1, 1H2)
Plastics (4H1, 4H2)	Plywood (1D)
Plywood (4D)	Steel (1A1, 1A2)
Reconstituted wood (4F)	
Steel (4A)	

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Chapter 6

CLASS 4 — FLAMMABLE SOLIDS; SUBSTANCES LIABLE TO SPONTANEOUS COMBUSTION; SUBSTANCES WHICH, IN CONTACT WITH WATER, EMIT FLAMMABLE GASES

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6.2 PACKING INSTRUCTIONS

Packing Instructions Y440 – Y443

Limited quantities
Passenger and cargo aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Plastics	Steel
Other metal	Plywood	
Plastics	Other metal	
Plywood	Steel	
Reconstituted wood		
Steel		

Packing Instructions 445 – 446

Passenger aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instructions 448 – 449

Cargo aircraft only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Other metal (4N) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastics (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.
— Fibre, wood and plywood single packagings must be fitted with a suitable liner.

SINGLE PACKAGINGS

Boxes	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C2) Other metal (4N) Plywood (4D) Plastics (4H2) Reconstituted wood (4F) Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastics (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

Packing Instruction 451

Passenger and cargo aircraft — wetted explosives (Packing Group I)

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

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

Packing Instruction 452

Passenger aircraft for UN 2555, 2556 and 2557 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

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

Packing Instruction 453

Cargo aircraft only for UN 2555, 2556 and 2557 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

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

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Packing Instruction 454

Passenger and cargo aircraft for UN 1324 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre* (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

* These packagings are permitted only for a maximum of 600 m of film.

Packing Instruction Y454

Limited quantities
Passenger and cargo aircraft for UN 1324 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

Packing Instruction 455

Passenger and cargo aircraft for UN 1944 and 1945 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Steel (1A1, 1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction Y455

Limited quantities
Passenger and cargo aircraft for UN 1944 and 1945 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

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Packing Instruction 457

Passenger and cargo aircraft for UN 3241 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (~~4H1~~, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

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Packing Instruction Y457

Limited quantities
Passenger and cargo aircraft for UN 3241 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

Packing Instruction 458

Passenger and cargo aircraft for UN 3270 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

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

Packing Instruction Y458

Limited quantities
Passenger and cargo aircraft for UN 3270 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

Packing Instruction 459

Passenger and cargo aircraft — self-reactive substances

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

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

Packing Instruction 462 – 463

Passenger aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

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Packing Instruction 464 – 465

Cargo aircraft only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jericans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

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Packing Instruction 466 – 469

Passenger aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jericans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction 470 – 471

Cargo aircraft only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jericans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Packing Group III

— Packagings must meet the Packing Group II performance requirements.
— Fibre, wood and plywood single packagings must be fitted with a suitable liner.

SINGLE PACKAGINGS

Boxes	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C2) Other metal (4N) Plastics (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Other metal (1N1, 1N2) Plastics (1H1, 1H2) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

Packing Instruction 472

Passenger and cargo aircraft for UN 1362 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Steel (4A)	Aluminium (1B1, 1B2) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Steel (3A1, 3A2)

Packing Instruction 473

Passenger and cargo aircraft — for UN 1378 and UN 2881 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Other metal (4N) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastics (1H1, 1H2) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

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Packing Instructions Y474 – Y477

Limited quantities
Passenger and cargo aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium Fibreboard Natural wood Other metal Plastics Plywood Reconstituted wood Steel	Aluminium Fibre Other metal Plastics Steel	Aluminium Plastics Steel

Packing Instructions 478 – 479

Passenger aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jericans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

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Packing Instructions 480 – 482

Cargo aircraft only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jericans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

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Packing Instructions 483 – 486

Passenger aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jericans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instructions 487 – 491

Cargo aircraft only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Other metal (4N) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastics (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

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SINGLE PACKAGINGS FOR PACKING GROUP I

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1) Other metal (1N1) Plastics (1H1) Steel (1A1)	Aluminium (3B1) Plastics (3H1) Steel (3A1)

SINGLE PACKAGINGS FOR PACKING GROUPS II AND III ONLY

Boxes	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C2) Other metal (4N) Plastics (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Other metal (1N1, 1N2) Plastics (1H1, 1H2) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

Packing Instruction 492

Passenger and cargo aircraft for UN 3292 only

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DGP-WG/11-WP/37:

COMBINATION PACKAGINGS				**SINGLE PACKAGINGS**
UN number and proper shipping name	*Packing conditions*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	
UN 3292 **Batteries, containing sodium**	Batteries may be offered for transport and transported unpacked or in protective enclosures such as fully enclosed or wooden slatted crates that are not subject to the requirements of Part 6 of these Instructions.	Forbidden	No limit	No limit
UN 3292 **Cells, containing sodium**		25 kg ~~G~~	No limit	No

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DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Steel (1A1, 1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

Packing Instruction 493

Passenger aircraft for UN 3399 only

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DGP-WG/11-WP/24:

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Glass containers must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.
— Packagings must meet the Packing Group II performance requirements.

DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Steel (1A1, 1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

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Packing Instruction 494

Cargo aircraft only for UN 3399

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DGP-WG/11-WP/24:

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

— Inner packagings must have threaded enclosures and must be surrounded in inert cushioning and absorbent material in a quantity sufficient to absorb the entire contents and enclosed in a leakproof liner, plastic bag or other equally effective means of intermediate leakproof containment.

Packing Group II

— Glass inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and enclosed in a leakproof liner, plastic bag or other equally effective means of intermediate leakproof containment.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

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DGP-WG/11-WP/7:

Packing Instruction 495

Passenger and cargo aircraft for UN 3476 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

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

Packing Instruction Y495

Limited quantities for UN 3476 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Plywood	
Plywood	Steel	
Reconstituted wood		
Steel		

DGP-WG/11-WP/12:

Packing Instruction 496

Passenger and cargo aircraft for UN 3476 (contained in equipment) only

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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 packagings.
— The mass of each fuel cell cartridge must not exceed 1 kg.
— Fuel cell systems must not charge batteries during transport.
— On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC [~~PAS 62282-6-1~~ 62282-6-100] Ed. 1 or a standard approved by the appropriate authority of the State of Origin.

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Chapter 7

CLASS 5 — OXIDIZING SUBSTANCES; ORGANIC PEROXIDES

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7.2 PACKING INSTRUCTIONS

DGP-WG/11-WP/7:

Packing Instructions Y540 – Y541

Limited quantities
Passenger and cargo aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

Packing Instructions Y543 – Y546

Limited quantities
Passenger and cargo aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plasticss
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

Packing Instructions 550 – 551

Passenger aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*
Aluminium (4B)	Aluminium (1B1, 1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)
Other metal (4N)	Plastics (1H1, 1H2)
Plastics (4H1, 4H2)	Steel (1A1, 1A2)
Plywood (4D)	
Reconstituted wood (4F)	
Steel (4A)	

Packing Instructions 553 – 555

Cargo aircraft only

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ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

DGP-WG/11-WP/24:

— UN 1873 only glass inner packagings are permitted.
— Inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*
Aluminium (4B)	Aluminium (1B1, 1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)
Other metal (4N)	Plastics (1H1, 1H2)
Plastics (4H1, 4H2)	Steel (1A1, 1A2)
Plywood (4D)	
Reconstituted wood (4F)	
Steel (4A)	

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Packing Instructions 557 – 559

Passenger aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS FOR PACKING GROUP I

Boxes	*Drums*
Aluminium (4B)	Aluminium (1B1, 1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)
Other metal (4N)	Plastics (1H1, 1H2)
Plastics (4H1, 4H2)	Plywood (1D)
Plywood (4D)	Steel (1A1, 1A2)
Reconstituted wood (4F)	
Steel (4A)	

OUTER PACKAGINGS OF COMBINATION PACKAGINGS FOR PACKING GROUPS II AND III

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instructions 561 – 563

Cargo aircraft only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS FOR PACKING GROUP I

Boxes	*Drums*
Aluminium (4B)	Aluminium (1B1, 1B2)
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)
Other metal (4N)	Plastics (1H1, 1H2)
Plastics (4H1, 4H2)	Plywood (1D)
Plywood (4D)	Steel (1A1, 1A2)
Reconstituted wood (4F)	
Steel (4A)	

OUTER PACKAGINGS OF COMBINATION PACKAGINGS FOR PACKING GROUPS II AND III ONLY

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Fibre, wood and plywood single packagings must be fitted with a suitable liner.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

SINGLE PACKAGINGS FOR PACKING GROUP I

Drums

Aluminium (1B1, 1B2)
Other metal (1N1, 1N2)
Steel (1A1, 1A2)

SINGLE PACKAGINGS FOR PACKING GROUPS II AND III

Boxes	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C2) Other metal (4N) Plastics (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastics (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

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Packing Instruction 570

Passenger and cargo aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Fibreboard (4G) Natural wood (4C1, 4C2) Other metal (4N) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F)	Fibre (1G) Plastics (1H1, 1H2) Plywood (1D)	Plastics (3H1, 3H2)

Chapter 8

CLASS 6 — TOXIC AND INFECTIOUS SUBSTANCES

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8.1 PACKING INSTRUCTIONS

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Packing Instructions Y640 – Y642

Limited quantities
Passenger and cargo aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

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Packing Instructions Y644 – Y645

Limited quantities
Passenger and cargo aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

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Packing Instructions 651 – 655

Passenger aircraft

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DGP-WG/11-WP/24:

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

— Inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

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Packing Instructions 657 – 663

Cargo aircraft only

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DGP-WG/11-WP/24:

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

— Inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

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Packing Instructions 665 – 670

Passenger aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Other metal (4N) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastics (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

Fibre, wood and plywood single packagings must be fitted with a suitable liner.

SINGLE PACKAGINGS FOR PACKING GROUP III (PI 670)

Bags	*Boxes*	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Paper (5M2) Plastic film (5H4) Textile (5L3) Woven plastics (5H3)	Aluminium (4B) Fibreboard (4G) Natural wood (4C2) Other metal (4N) Plastics (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastics (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

Packing Instruction 679

Cargo aircraft only for UN 1700, 2016 and 2017 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Other metal (4N) Plastics (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastics (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)

Packing Instruction 680

Passenger and cargo aircraft for UN 1888 only

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DGP-WG/11-WP/24:

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

— Inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Steel (1A1, 1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

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Packing Instruction Y680

Limited quantities
Passenger and cargo aircraft for UN 1888 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

Packing Instruction 681

~~Passenger and c~~Cargo aircraft only for Chlorosilanes

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes	*Drums*
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Plastics (1H1, 1H2)
Plastics (4H1, 4H2)	Plywood (1D)
Plywood (4D)	Steel (1A1, 1A2)
Reconstituted wood (4F)	
Steel (4A)	

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Chapter 10

CLASS 8 — CORROSIVE SUBSTANCES

+ *Note.— Class 8 packing instructions have been replaced with the reformatted packing instructions which appeared in Attachment 4 of the 2009-2010 Edition. Further modifications to these packing instructions are indicated with the customary margin symbols.*

10.1 PACKING INSTRUCTIONS

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Packing Instructions 850 – 852

Passenger aircraft

ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

DGP-WG/11-WP/24:

— Inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

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Packing Instructions 854 – 856

Cargo aircraft only

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ADDITIONAL PACKING REQUIREMENTS FOR COMBINATION PACKAGINGS

Packing Group I

DGP-WG/11-WP/24:

— Inner packagings must be packed with sufficient absorbent material to absorb the entire contents of the inner packagings and placed in a rigid leakproof receptacle before packing in outer packagings.

Packing Group III

— Packagings must meet the Packing Group II performance requirements.

DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Steel (1A1, 1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

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Packing Instructions 858 – 860

Passenger aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Plywood (1D)	
Plywood (4D)	Steel (1A1, 1A2)	
Reconstituted wood (4F)		
Steel (4A)		

Packing Instructions 862 – 864

Cargo aircraft only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C1, 4C2) Other metal (4N) Plastics (4H1, 4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	Aluminium (1B1, 1B2) Fibre (1G) Other metal (1N1, 1N2) Plastics (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

— Fibre, wood and plywood single packagings must be fitted with a suitable liner.

SINGLE PACKAGINGS FOR PACKING GROUP I

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Fibre (1G) Plastics (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

SINGLE PACKAGINGS FOR PACKING GROUPS II AND III ONLY

Boxes	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Aluminium (4B) Fibreboard (4G) Natural wood (4C2) Other metal (4N) Plastics (4H2) Plywood (4D) Reconstituted wood (4F) Steel (4A)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Fibre (1G) Plastics (1H1, 1H2) Plywood (1D) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

Packing Instruction 866

Cargo aircraft only for UN 2028 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

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

Packing Instruction 867

Passenger and cargo aircraft for UN 2803 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

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

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Packing Instruction 868

Passenger and cargo aircraft for UN 2809 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

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

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Packing Instruction 869

Passenger and cargo aircraft for UN ~~2809~~ 3506 contained in manufactured articles only

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DGP-WG/11-WP/37 and 38:

Packing Instruction 870

Passenger and cargo aircraft for UN 2794 and 2795 only

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COMBINATION PACKAGINGS				
UN number and proper shipping name	*Packing conditions*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	**SINGLE PACKAGINGS**
UN 2794 **Batteries, wet, filled with acid** UN 2795 **Batteries, wet, filled with alkali**	Batteries must be placed in an acid/alkali-proof liner of sufficient strength and adequately sealed to positively preclude leakage in the event of spillage. The batteries must be packed so that the fill openings and vents, if any, are upward; they must be incapable of short-circuiting and be securely cushioned in the packagings. The upright position of the package must be indicated on it by "Package orientation" labels (Figure 5-26) as required by 5;3. The words "This side up" or "This end up" may also be displayed on the top of the package.	30 kg ~~G~~	No limit	Unpackaged batteries No
	Batteries installed in equipment If batteries are shipped as an integral component of assembled equipment, they must be securely installed and fastened in an upright position and protected against contact with other articles so as to prevent short circuits. Batteries must be removed and packed according to this packing instruction if the assembled equipment is likely to be carried in other than an upright position.			

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Packing Instruction 871

Passenger and cargo aircraft for UN 3028 only

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COMBINATION PACKAGINGS				
UN number and proper shipping name	*Packing conditions*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	**SINGLE PACKAGINGS**
UN 3028 **Batteries, dry, containing potassium hydroxide solid**	The batteries must be securely cushioned in the packagings.	25 kg ~~G~~	230 kg ~~G~~	No

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DGP-WG/11-WP/7:

Packing Instruction 873

Passenger and cargo aircraft for UN 3477

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

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

Packing Instruction Y873

Limited quantities for UN 3477 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Plywood	
Plywood	Steel	
Reconstituted wood		
Steel		

DGP-WG/11-WP/12:

Packing Instruction 874

Passenger and cargo aircraft for UN 3477 (contained in equipment) only

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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 packagings.
— The mass of each fuel cell cartridge must not exceed 1 kg.
— Fuel cell systems must not charge batteries during transport.
— On passenger aircraft, each fuel cell system and each fuel cell cartridge must conform to IEC [~~PAS 62282-6-1~~ 62282-6-100] Ed. 1 or a standard approved by the appropriate authority of the State of Origin.

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DGP-WG/11-WP/7:

Packing Instruction 876

Cargo aircraft only for Chlorosilanes

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS

Boxes	*Drums*
Fibreboard (4G)	Fibre (1G)
Natural wood (4C1, 4C2)	Plastics (1H1, 1H2)
Plastics (4H1, 4H2)	Plywood (1D)
Plywood (4D)	Steel (1A1, 1A2)
Reconstituted wood (4F)	
Steel (4A)	

SINGLE PACKAGINGS FOR CARGO AIRCRAFT ONLY

Composites	*Cylinders*	*Drums*	*Jerricans*
Plastic receptacle in steel drum (6HA1)	Steel (as permitted by 4;2.7)	Steel (1A1)	Steel (3A1)

Chapter 11

CLASS 9 — MISCELLANEOUS DANGEROUS GOODS

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DGP-WG/10-WP/24:

Packing Instruction 954

Passenger and cargo aircraft for UN 1845 only

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c) the dangerous goods transport document requirements of 5;4 are not applicable provided alternative written documentation is provided describing the contents. The information on the document must be shown in the location provided for the description of the goods. Where an agreement exists with the operator, the shipper may provide the information by electronic data processing (EDP) or electronic data interchange (EDI) techniques. The information required is as follows and should be shown in the following order:

1) UN 1845;

2) **Carbon dioxide, solid** or **Dry ice**;

3) the number of packages and the net quantity of dry ice in each package; and

d) the net mass of the **Carbon dioxide, solid** or **Dry ice** must be marked on the outside of the package; ~~and~~

~~e) the information must be included with the description of the goods.~~

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Packing Instruction 956

Passenger and cargo aircraft for UN 1841, UN 1931, UN 3432, UN 2969, UN 3077, UN 3152 and UN 3335 only

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DGP-WG/11-WP/31 and DP/2:

COMBINATION PACKAGINGS					SINGLE PACKAGINGS	
UN number and proper shipping name	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	Quantity — passenger	Quantity — cargo
. . .						
UN 3335 **Aviation regulated solid, n.o.s.**	Glass	10.0 kg	~~100 kg~~ 400 kg	~~200 kg~~ 400 kg	~~100 kg~~ 400 kg	~~200 kg~~ 400 kg
	Fibre	50.0 kg				
	Metal	50.0 kg				
	Paper bag	50.0 kg				
	Plastics	50.0 kg				
	Plastic bag	50.0 kg				
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DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Plastics (3H1, 3H2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Other metal (4N)	Plastics (1H1, 1H2)	
Plastics (4H1, 4H2)	Steel (1A1, 1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

ADDITIONAL PACKING REQUIREMENTS FOR SINGLE PACKAGINGS

— Fibre, wood and plywood single packagings must be fitted with a suitable liner.

SINGLE PACKAGINGS

Bags	*Boxes*	*Composites*	*Cylinders*	*Drums*	*Jerricans*
Paper (5M2)	Aluminium (4B)	All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Plastic film (5H4)	Fibreboard (4G)			Fibre (1G)	Plastics (3H1, 3H2)
Textile (5L3)	Natural wood (4C2)			Other metal (1N1, 1N2)	Steel (3A1, 3A2)
Woven plastics (5H3)	Other metal (4N)			Plastics (1H1, 1H2)	
	Plastics (4H2)			Plywood (1D)	
	Plywood (4D)			Steel (1A1, 1A2)	
	Reconstituted wood (4F)				
	Steel (4A)				

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Packing Instruction 957

Passenger and cargo aircraft for UN 2211 and UN 3314 only

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SINGLE PACKAGINGS

Boxes	*Drums*
Fibreboard (4G)	Aluminium (1~~A~~B1, 1B2)
Other metal (4N)	
Plywood (4D)	Fibre (1G)
Reconstituted wood (4F)	Plywood (1D)
Wooden (4C1, 4C2)	Steel (1A1, 1A2)

Packing Instruction 958

Passenger and cargo aircraft for UN 2071 and UN 2590 only

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SINGLE PACKAGINGS

Bags	*Boxes*	*Drums*	*Jerricans*
Plastics (5H4)	Fibreboard (4G)	Aluminium (1B2)	Plastics (3H2)
Textile(5L3)	Natural wood (4C2)	Fibre (1G)	Steel (3A2)
	Other metal (4N)	Plastics (1H2)	
Woven plastics (5H3)	Plastics (4H1, 4H2)	Plywood (1D)	
	Plywood (4D)	Steel (1A2)	
	Reconstituted wood (4F)		

Packing Instruction Y958

Limited quantities
Passenger and cargo aircraft

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium	Aluminium	Aluminium
Fibreboard	Fibre	Plastics
Natural wood	Other metal	Steel
Other metal	Plastics	
Plastics	Steel	
Plywood		
Reconstituted wood		
Steel		

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Packing Instruction 960

Passenger and cargo aircraft for UN 3316 only

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DGP-WG/11-WP/58:

ADDITIONAL PACKING REQUIREMENTS

— Kits may contain dangerous goods which require segregation according to Table 7-1.
— Packagings must meet the performance standards of the most stringent packing group assigned to any individual substance contained in the kit. Where the kit contains dangerous goods to which no packing group is assigned, packagings must meet Packing Group II performance standards.
— Kits must not be packed with other dangerous goods in the same outer packaging, with the exception of dry ice. If dry ice is used, the requirements in Packing Instruction 954 must be met.

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DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes

Aluminium (4B)
Fibreboard (4G)
Natural wood (4C1, 4C2)
Other metal (4N)
Plastics (4H1, 4H2)
Plywood (4D)
Reconstituted wood (4F)
Steel (4A)

Packing Instruction Y960

Limited quantities
Passenger and cargo aircraft for UN 3316 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes

Fibreboard
Natural wood
Other metal
Plastics
Plywood
Reconstituted wood

Packing Instruction 961

Passenger and cargo aircraft for UN 3268 only

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OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

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

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Packing Instruction 964

Passenger and cargo aircraft for UN 1941, UN 1990, UN 2315, UN 3151, UN 3082 and UN 3334 only

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DGP-WG/11-WP/31 and DP/2:

COMBINATION PACKAGINGS					SINGLE PACKAGINGS	
UN number and proper shipping name	*Inner packaging (see 6;3.2)*	*Inner packaging quantity (per receptacle)*	*Total quantity per package — passenger*	*Total quantity per package — cargo*	*Passenger*	*Cargo*
. . .						
UN 3334 **Aviation regulated liquid, n.o.s.**	Glass	10.0 L	~~No Limit~~ 450 L	~~No Limit~~ 450 L	~~No Limit~~ 450 L	~~No Limit~~ 450 L
	Plastics	30.0 L				
	Metal	40.0 L				

DGP-WG/11-WP/7:

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes	*Drums*	*Jerricans*
Aluminium (4B)	Aluminium (1B1, 1B2)	Aluminium (3B1, 3B2)
Fibreboard (4G)	Fibre (1G)	Other metal (3N2)
Natural wood (4C1, 4C2)	Other metal (1N1, 1N2)	Plastics (3H1, 3H2)
Other metal (4N)	Plastics (1H1, 1H2)	Steel (3A1, 3A2)
Plastics (4H1, 4H2)	Steel (1A1, 1A2)	
Plywood (4D)		
Reconstituted wood (4F)		
Steel (4A)		

SINGLE PACKAGINGS

Composites	*Cylinders*	*Drums*	*Jerricans*
All (see 6;3.1.18)	See 4;2.7	Aluminium (1B1, 1B2) Other metal (1N1, 1N2) Plastics (1H1, 1H2) Steel (1A1, 1A2)	Aluminium (3B1, 3B2) Plastics (3H1, 3H2) Steel (3A1, 3A2)

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Packing Instruction 965

Passenger and cargo aircraft for UN 3480

SECTION I

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DGP-WG/11-WP/37

Contents	*Package quantity (Section I)*	
	Passenger	*Cargo*
Lithium ion cells and batteries	5 kg ~~G~~	35 kg ~~G~~

DGP-WG/11-WP/7

ADDITIONAL PACKING REQUIREMENTS

— Lithium ion cells and batteries must be protected against short circuits.
— Lithium ion cells and batteries must be placed in inner packagings that completely enclose the cell or battery then placed in an outer packaging. The completed package for the cells or batteries must meet the Packing Group II performance requirements.
— Lithium ion batteries with a mass of 12 kg or greater and having a strong, impact-resistant outer casing, or assemblies of such batteries, may be transported when packed in strong outer packagings ~~or~~ in protective enclosures (e.g. in fully enclosed or wooden slated crates) not subject to the requirements of Part 6 of these Instructions, if approved by the appropriate authority of the State of Origin. A copy of the document of approval must accompany the consignment.
— Batteries manufactured after 31 December 2011 must be marked with the Watt-hour rating on the outside case.

OUTER PACKAGINGS

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

DGP-WG/11-WP/40

SECTION II

With the exception of Part 1;2.3 (Transport of dangerous goods by post), 7;4.4 (Reporting of dangerous goods accidents and incidents) and 8;1.1 (Provisions for dangerous goods carried by passengers or crew), Lithium ion cells and batteries offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

Lithium ion cells and batteries may be offered for transport if they meet the following:

1) for lithium ion cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
2) for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;
   — the Watt-hour rating must be marked on the outside of the battery case except for those batteries manufactured before 1 January 2009;
3) each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

Note.— Batteries are subject to these tests irrespective of whether the cells of which they are composed have been so tested.

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Packing Instruction 966

Passenger and cargo aircraft for UN 3481 (packed with equipment) only

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SECTION I

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General requirements

Part 4;1 requirements must be met.

DGP-WG/11-WP/56

~~*Contents*~~ *UN Number and Name*	*Package quantity (Section I)*	
	Passenger	*Cargo*
~~Quantity of lithium ion cells and batteries per package, excluding equipment~~ UN 3481 **Lithium ion batteries packed with equipment**	5 kg of lithium ion cells or batteries	35 kg of lithium ion cells or batteries

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DGP-WG/11-WP/40

SECTION II

With the exception of Part 1;2.3 (Transport of dangerous goods by post), 7;4.4 (Reporting of dangerous goods accidents and incidents) and 8;1.1 (Provisions for dangerous goods carried by passengers or crew), ~~L~~lithium ion cells and batteries packed with equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

Lithium ion cells and batteries may be offered for transport if they meet the following:

1) for lithium ion cells, the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
2) for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;
   — the Watt-hour rating must be marked on the outside of the battery case except for those batteries manufactured before 1 January 2009;
3) each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

Note.— Batteries are subject to these tests irrespective of whether the cells of which they are composed have been so tested.

. . .

Packing Instruction 967

Passenger and cargo aircraft for UN 3481 (contained in equipment) only

. . .

SECTION I

. . .

General requirements

Equipment must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.9 (except 1.1.9.1).

DGP-WG/11-WP/56

~~*Contents*~~ *UN Number and Name*	~~*Net quantity per piece of equipment*~~ *Package quantity (Section I)*	
	Passenger	*Cargo*
UN 3481 **Lithium ion batteries contained in equipment**	5 kg of lithium ion cells or batteries	35 kg of lithium ion cells or batteries

. . .

DGP-WG/11-WP/40

SECTION II

With the exception of Part 1;2.3 (Transport of dangerous goods by post), 7;4.4 (Reporting of dangerous goods accidents and incidents) and 8;1.1 (Provisions for dangerous goods carried by passengers or crew), ~~L~~lithium ion cells and batteries contained in equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

Lithium ion cells and batteries may be offered for transport if they meet the following:

1) for lithium ion cells ,the Watt-hour rating (see the Glossary of Terms in Attachment 2) is not more than 20 Wh;
2) for lithium ion batteries, the Watt-hour rating is not more than 100 Wh;
   — the Watt-hour rating must be marked on the outside of the battery case except for those batteries manufactured before 1 January 2009;
3) each cell or battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3.

Note.— Batteries are subject to these tests irrespective of whether the cells of which they are composed have been so tested.

Devices such as radio frequency identification (RFID) tags, watches and temperature loggers, which are not capable of generating a dangerous evolution of heat, may be transported when intentionally active. When active, these devices must meet defined standards for electromagnetic radiation to ensure that the operation of the device does not interfere with aircraft systems.

. . .

Packing Instruction 968

Passenger and cargo aircraft for UN 3090

. . .

SECTION I

. . .

DGP-WG/11-WP/37

Contents	*Package quantity (Section I)*	
	Passenger	*Cargo*
Lithium metal cells and batteries	2.5 kg ~~G~~	35 kg ~~G~~

. . .

DGP-WG/11-WP/40

SECTION II

With the exception of Part 1;2.3 (Transport of dangerous goods by post), 7;4.4 (Reporting of dangerous goods accidents and incidents) and 8;1.1 (Provisions for dangerous goods carried by passengers or crew), ~~L~~lithium metal or lithium alloy cells and batteries offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

. . .

Packing Instruction 969

Passenger and cargo aircraft for UN 3091 (packed with equipment) only

. . .

SECTION I

. . .

General requirements

Part 4;1 requirements must be met.

DGP-WG/11-WP/56

~~Contents~~ UN Number and Name	*Package quantity (Section I)*	
	Passenger	*Cargo*
~~Quantity of lithium metal cells and batteries per overpack, excluding equipment~~ UN 3091 **Lithium metal batteries packed with equipment**	5 kg of lithium metal cells or batteries	35 kg of lithium metal cells or batteries

. . .

DGP-WG/11-WP/40

SECTION II

With the exception of Part 1;2.3 (Transport of dangerous goods by post), 7;4.4 (Reporting of dangerous goods accidents and incidents) and 8;1.1 (Provisions for dangerous goods carried by passengers or crew), ~~L~~lithium metal cells and batteries packed with equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

. . .

Packing Instruction 970

Passenger and cargo aircraft for UN 3091 (contained in equipment) only

. . .

SECTION I

. . .

General requirements

Equipment must be packed in strong outer packagings that conform to Part 4;1.1.1, 1.1.3.1 and 1.1.10 (except 1.1.10.1).

DGP-WG/11-WP/56

~~Package contents~~ UN Number and Name	~~Net quantity per piece of equipment~~ *Package quantity (Section I)*	
	Passenger	*Cargo*
~~Lithium metal batteries~~ UN 3091 **Lithium metal batteries contained in equipment**	5 kg of lithium metal cells or batteries	35 kg of lithium metal cells or batteries

. . .

DGP-WG/11-WP/40

SECTION II

With the exception of Part 1;2.3 (Transport of dangerous goods by post), 7;4.4 (Reporting of dangerous goods accidents and incidents) and 8;1.1 (Provisions for dangerous goods carried by passengers or crew), ~~L~~lithium metal cells and batteries contained in equipment offered for transport are not subject to other additional requirements of these Instructions if they meet the requirements of this section.

. . .

DGP-WG/11-WP/7 and DP/5

Packing Instruction 971

Passenger and cargo aircraft for UN 3499 only (see also Special Provision A186)

General requirements

Part 4;1.1.1 and 1.1.8 requirements must be met.

For the purpose of this packaging instruction, a capacitor is considered an inner packaging.

UN number and proper shipping name	*Quantity — passenger*	*Quantity — cargo*
UN 3499 **Capacitor**, electric double layer	No limit	No limit

ADDITIONAL PACKING REQUIREMENTS

— Each capacitor must be transported in an uncharged state. The capacitor or, when fitted in a module, the module must be fitted with a metal strap connecting the terminals.
— Capacitors must be securely cushioned in the outer packagings.

OUTER PACKAGINGS OF COMBINATION PACKAGINGS (see 6;3.1)

Boxes *Drums* *Jerricans*

Strong outer packagings

Part 5

SHIPPER'S RESPONSIBILITIES

Chapter 1

GENERAL

. . .

DGP-WG/11-WP/18:

1.1 GENERAL REQUIREMENTS

Before a person offers any package or overpack of dangerous goods for transport by air that person must ensure that:

a) the articles or substances are not ~~prohibited~~ forbidden for transport by air (see Part 1, Chapter 2);

. . .

DGP-WG/11-WP/8:

Chapter 2

PACKAGE MARKINGS

Parts of this Chapter are affected by State Variations CA 4, DQ 4, ES 1, HK 2, MY 6, PK 1, US 1, US 7, VC 5, VU 1; see Table A-1

. . .

2.4.1.1 Unless otherwise provided in these Instructions, the proper shipping name of the dangerous goods (supplemented with the technical name(s) if appropriate, see Part 3, Chapter 1) and, when assigned, the corresponding UN number preceded by the letters "UN" or "ID", as appropriate, must be displayed on each package. The UN number and the letters "UN" must be at least 12 mm high, except for packagings of 30 litres or 30 kg capacity or less, when they must be at least 6 mm in height and for packagings of 5 litres or 5 kg or less when they must be of an appropriate size. In the case of unpackaged articles, the marking must be displayed on the article, on its cradle or on its handling, storage or launching device. A typical package marking would be:

"Corrosive liquid, acidic, organic, n.o.s. (caprylyl chloride) UN 3265".

Note.— The size requirements for the UN number marking must apply as from 1 January 2014.

. . .

2.4.10 Marking of overpacks

An overpack must be marked with the word "Overpack", with the proper shipping name, UN number, and special handling instructions appearing on interior packages for each item of dangerous goods contained in the overpack unless markings and labels representative of all dangerous goods in the overpack are visible, except as required in 3.2.6 and 3.5.1.1 h) to i). Packaging specification markings must not be reproduced on the overpack.

Figure 5-2. Symbol (fish and tree): black on white or suitable contrasting background

Note.— The labelling provisions of 5;3 apply in addition to any requirement for packages to bear the environmentally hazardous substance mark.

. . .

Chapter 4

DOCUMENTATION

Parts of this Chapter are affected by State Variations AE 1, BN 1, CA 4, CA 14, CA 15, CA 16, CA 20, ES 1, HK 2, JM 2, JM 3, MY 6, PK 3, US 1, US 7, US 12, VC 7, VU 1, ZA 3; see Table A-1

. . .

4.1.5 Information required in addition to the dangerous goods description

. . .

4.1.5.1 *Quantity of dangerous goods, number and type of packagings*

The number of packages, type of packaging (e.g. steel drum, fibreboard box, etc.) and net quantity of dangerous goods in each package (by volume or mass, as appropriate) must be indicated for each item of dangerous goods bearing a different proper shipping name, UN number or packing group. Abbreviations may be used to specify the unit of measurement for the quantity. For packages containing the same dangerous goods and quantity per package a multiple of the quantity may be used. For example:

UN 1263, Paint, 3, PG II, 5 fibreboard boxes x 5 L

Consignment comprising packages of different quantities of the same dangerous good must be clearly identified. For example:

UN 1263, Paint, 3, PG II, 5 fibreboard boxes x 5 L, 10 fibreboard boxes x 10 L

DGP-WG/11-WPs/36 and 37:

UN packaging codes may only be used to supplement the description of the kind of package (e.g. one fibreboard box (4G)). For limited quantities, Where the letter "G" follows the quantity in column 11 ~~or 13~~ of Table 3-1 the gross mass of each package must be indicated, rather than the net quantity, except when there are different dangerous goods packed together in the same outer packaging, which must be described as shown in paragraph e); and:

a) for empty uncleaned packagings as described by 4.1.4.3 b) only the number and type of packagings need be shown;

b) for chemical kits and first aid kits, the total net mass of dangerous goods. Where the kits contain solids and/or liquids, the net mass of liquids within the kits is to be calculated on a 1 to 1 basis of their volume, i.e. 1 litre equal to 1 kilogram;

c) for dangerous goods in machinery or apparatus, the individual total quantities of dangerous goods in solid, liquid or gaseous state, contained in the article;

d) for dangerous goods transported in salvage packagings, an estimate of the quantity of dangerous goods must be given;

e) ~~for items where "No Limit" or a packing instruction number is shown in columns 10 to 13 of Table 3-1, the quantity must be:~~for dangerous goods in limited quantity with a 30 kg G limit in Table 3-1, where different dangerous goods are packed together in the same outer packaging, the net quantity of each dangerous goods followed by the gross mass of the completed package;

~~1) for substances the net mass or volume (e.g. UN 2969, UN 3291);~~

~~2) for UN 3091 and UN 3481 when packed with equipment in accordance with Packing Instructions 969 and 966 respectively, the net quantity of battery(ies) per package; and~~

~~3) for other articles the gross mass, followed by the letter G (e.g. UN 2794, UN 2800, UN 2990, UN 3166).~~

f) for explosive articles of Class 1, the net quantity indicated for each package must be supplemented with the net explosive mass (see Part 1;3.1.1 for the definition of net explosive mass) contained in the package followed by the unit of measurement. The abbreviations "NEQ", "NEM" or "NEW" may be indicated in association with the value provided.

Note.— The number, type and capacity of each inner packaging within the outer packaging of a combination packaging is not required to be indicated.

. . .

DGP-WG/11-WP/8:

Insert new paragraph 4.1.5.6

4.1.5.6 *Firework classification reference*

4.1.5.6.1 When fireworks of UN Nos. 0336 and 0337 are transported, the dangerous goods transport document must include a classification reference(s) issued by the appropriate national authority.

4.1.5.6.2 The classification reference(s) must consist of the appropriate national authority's State, indicated by the distinguishing sign for motor vehicles in international traffic, the appropriate national authority identification and a unique serial reference. Examples of such classification references are:

GB/HSE123456
D/BAM1234
USA EX20091234.

Renumber subsequent paragraphs accordingly

. . .

Part 6

PACKAGING NOMENCLATURE, MARKING, REQUIREMENTS AND TESTS

Chapter 1

APPLICABILITY, NOMENCLATURE AND CODES

. . .

1.3 INDEX OF PACKAGINGS

Table 6-2. Index of packagings other than inner packagings

DGP-WG/11-WP/9:

Kind	*Code and, where applicable, category*		*Paragraph*	*Maximum capacity (L)*	*Maximum net mass (kg)*
. . .					
Plastic boxes	4H1	expanded plastic boxes	3.1.12		60
	4H2	solid plastic boxes	3.1.12		400
Steel ~~or~~, aluminium or other metal boxes	4A	steel	3.1.13		400
	4B	aluminium	3.1.13		400
	4N	other than steel or aluminium	3.1.13		
Textile bags	5L1	without inner liner or coating	Not used in these Instructions		
	5L2	siftproof	3.1.14		50
	5L3	water-resistant	3.1.14		50
. . .					

DGP-WG/11-WP/27:

Woven plastic bags	5H1		3.1.15	Specialized use only	50

. . .

Chapter 2

MARKING OF PACKAGINGS OTHER THAN INNER PACKAGINGS

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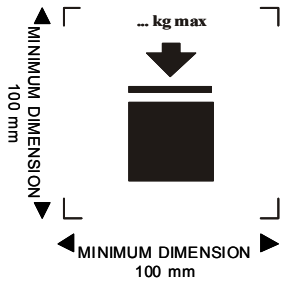
2.4 PACKAGING MARKINGS FOR INTERMEDIATE BULK CONTAINERS

. . .

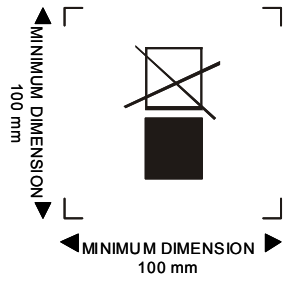
DGP-WG/11-WP/9:

2.4.3 The maximum permitted stacking load applicable when the IBC is in use must be displayed on a symbol as follows:

Replace the symbols in the 2011-2012 Edition with the following:



IBCs capable of being stacked



IBCs NOT capable of being stacked

The mass marked above the symbol must not exceed the load imposed during the design type test (see 6.5.6.6.4 of the UN Model Regulations) divided by 1.8.

. . .

Chapter 3

REQUIREMENTS FOR PACKAGINGS

3.1 REQUIREMENTS FOR PACKAGINGS OTHER THAN INNER PACKAGINGS

General requirements

. . .

3.1.13 Steel ~~or~~, aluminium or other metal boxes
4A steel
4B aluminium
4N metal, other than steel or aluminium

. . .

Chapter 5

REQUIREMENTS FOR THE CONSTRUCTION AND TESTING OF CYLINDERS AND CLOSED CRYOGENIC RECEPTACLES, AEROSOL DISPENSERS AND SMALL RECEPTACLES CONTAINING GAS (GAS CARTRIDGES) AND FUEL CELL CARTRIDGES CONTAINING LIQUEFIED FLAMMABLE GAS

. . .

5.1 GENERAL REQUIREMENTS

5.1.1 Design and construction

. . .

5.1.1.5 The test pressure of cylinders must be in accordance with Packing Instruction 200 or, for a chemical under pressure, with Packing Instruction 218. The test pressure for closed cryogenic receptacles must be in accordance with Packing Instruction 202. The test pressure of a metal hydride storage system must be in accordance with Packing Instruction 214.

. . .

5.1.6 Periodic inspection and testing

5.1.6.1 Refillable cylinders must be subjected to periodic inspections and tests by a body authorized by the appropriate national authority, in accordance with the following:

a) check of the external conditions of the cylinder and verification of the equipment and the external markings;

. . .

e) check of service equipment, other accessories and pressure-relief devices, if to be reintroduced into service.

Note.— For the periodic inspection and test frequencies, see Packing Instruction 200 or, for a chemical under pressure, Packing Instruction 218.

. . .

Insert new paragraph 5.1.6.3

5.1.6.3 Pressure relief valves for closed cryogenic receptacles must be subject to periodic inspections and tests.

. . .

5.2.3 Service equipment

The following standards apply to closures and their protection:

~~ISO 11117:1998 Gas cylinders — Valve protection caps and valve guards for industrial and medical gas cylinders — Design, construction and tests.~~

ISO 11117:2008+ Cor 1:2009 Gas cylinders — Valve protection caps and valve guards — Design, construction and tests.

Note.— Construction according to ISO 11117:1998 may continue until 31 December 2014.

ISO 10297:2006 Gas cylinders — Refillable gas cylinder valves — Specification and type testing.

ISO 13340:2001 Transportable gas cylinders — Cylinders valves for non-refillable cylinders — Specification and prototype testing

For UN metal hydride storage systems, the requirements specified in the following standard apply to closures and their protection:

ISO 16111:2008 Transportable gas storage devices — Hydrogen absorbed in reversible metal hydride.

5.2.4 Periodic inspection and test

The following standards apply to the periodic inspection and testing of UN cylinders and UN metal hydride storage systems:

. . .

ISO 11623:2002 Transportable gas cylinders — Periodic inspection and testing of composite gas cylinders.

ISO 16111:2008 Transportable gas storage devices — Hydrogen absorbed in reversible metal hydride.

ISO 10460:2005 Gas cylinders – Welded carbon-steel gas cylinders – Periodic inspection and testing

Note.— The repair of welds described in clause 12.1 of this standard must not be permitted. Repairs described in clause 12.2 require the approval of the appropriate national authority which approved the periodic inspection and test body in accordance with 5.2.6.

. . .

Part 7

OPERATOR'S RESPONSIBILITIES
Chapter 1

ACCEPTANCE PROCEDURES

. . .

1.3 THE ACCEPTANCE CHECK

. . .

DGP-WG/11-WP/49:

g) the outer packaging of a combination package or the single packaging is permitted by the applicable packing instruction, and [when visible] is of the type stated on the accompanying dangerous goods transport document;

. . .

Chapter 2

STORAGE AND LOADING

. . .

DGP-WG/10-WP/13:

2.6 VISIBILITY OF MARKINGS AND LABELS

[While in storage and during transport] required markings and labels must not be covered or obscured by any part of or attachment to the packaging or any other label or marking.

DGP-WG/10-WP/11:

. . .

2.12 LOADING OF UN 2211 ~~EXPANDABLE~~, POLYMERIC BEADS, EXPANDABLE OR UN 3314, PLASTICS MOULDING COMPOUND

A total of not more than 100 kg net mass of expandable polymeric beads (or granules), or plastic moulding materials, referenced to Packing Instruction 957, may be carried in any inaccessible hold on any aircraft.

. . .

Chapter 4

PROVISION OF INFORMATION

4.1 INFORMATION TO THE PILOT-IN-COMMAND

DGP-WG/10-WP/45:

4.1.1 The operator of an aircraft in which dangerous goods are to be carried must provide the pilot-in-command, as early as practicable before departure of the aircraft, [but in no case later than when the aircraft moves under its own power,] with accurate and legible written or printed information concerning dangerous goods that are to be carried as cargo.

. . .

DGP-WG/11-WP/45:

4.1.3 The information provided to the pilot-in-command must also include a signed confirmation, or some other indication, from the person responsible for loading the aircraft that there was no evidence of any damage to or leakage from the packages or any leakage from the unit load devices loaded on the aircraft.

. . .

DGP-WG/10-WP/15 Revised:

4.1.9 In the event that the volume of information provided to the pilot-in-command is such that in-flight radiotelephony transmission would be impracticable in an emergency situation, a summary of the information should also be provided by the operator, containing at least the quantities and class or division of the dangerous goods in each cargo compartment.

4.1.10 The dangerous goods listed in Table 3-9 need not appear on the information provided to the pilot-in-command.

[Table 7-9
Dangerous goods not required to appear
on the information to pilot-in-command]

UN Number	Proper Shipping Name	Reference
	Dangerous goods packed in excepted quantities	3;5.1.1
UN 2807	**Magnetized material**	Packing instruction 953
UN 2908	**Radioactive material, excepted package — empty packaging**	1;6.1.5.1 (a)
UN 2909	**Radioactive material, excepted package — articles manufactured from natural uranium** or **depleted uranium** or **natural thorium**	1;6.1.5.1 (a)
UN 2910	**Radioactive material, excepted package — limited quantity of material**	1;6.1.5.1 (a)
UN 2911	**Radioactive material, excepted package — instruments** or **articles**	1;6.1.5.1 (a)
UN 3090	**Lithium metal batteries** (including lithium alloy batteries) when meeting the requirements of Packing Instruction 968, Section II	Packing instruction 968, Section II
UN 3091	**Lithium metal batteries contained in equipment** (including lithium alloy batteries) when meeting the requirements of Packing Instruction 970, Section II or **Lithium metal batteries packed with equipment** (including lithium alloy batteries) when meeting the requirements of Packing Instruction 969, Section II	Packing instruction 970, Section II Packing instruction 969, Section II
UN 3245	**Genetically modified micro-organisms** or **Genetically modified organisms**	Packing instruction 959
UN 3373	**Biological substance, Category B**	Packing instruction 650, point 11
UN 3480	**Lithium ion batteries** (including lithium ion polymer batteries) when meeting the requirements of Packing Instruction 965, Section II	Packing instruction 965, Section II
UN 3481	**Lithium ion batteries contained in equipment** (including lithium ion polymer batteries) when meeting the requirements of Packing Instruction 967, Section II	Packing instruction 967, Section II
UN 3481	**Lithium ion batteries packed with equipment** (including lithium ion polymer batteries) when meeting the requirements of Packing Instruction 966, Section II	Packing instruction 966, Section II

. . .

DGP-WG/10-WP/29:

4.5 REPORTING OF UNDECLARED OR MISDECLARED DANGEROUS GOODS

An operator must report any occasion when undeclared or misdeclared dangerous goods are discovered in cargo or mail. Such a report must be made to the appropriate authorities of the State of the Operator and the State in which this occurred. An operator must also report any occasion when dangerous goods not permitted under 8;1.1.1 are discovered ~~in passengers' baggage~~ either in the baggage or on the person of passengers or crew members. Such a report must be made to the appropriate authority of the State in which this occurred.

. . .

DGP-WG/11-WP/55:

[4.6 REPORTING OF DANGEROUS GOODS OCCURRENCES

An operator must report any occasion when:

a) dangerous goods are discovered to have been carried when not loaded, segregated, separated and secured in accordance with Part 7, Chapter 2; or

b) dangerous goods are discovered to have been carried without information having been provided to the pilot-in-command in accordance with Part 7;4.1.]

Renumber subsequent paragraphs accordingly.

. . .

DGP-WG/11-WP/48 and DP/5:

. . .

4.~~10~~11 RETENTION OF DOCUMENTS

4.10.1 The operator must ensure that at least one copy of the documents appropriate to the transport by air of a consignment of dangerous goods is retained for a minimum period of three months after the flight on which the dangerous goods were transported. As a minimum, the documents which must be retained are the dangerous goods transport documents, the acceptance checklist (when this is in a form which requires physical completion) and the written information to the pilot-in-command.

4.10.2 For each package or overpack containing dangerous goods or freight container containing radioactive material or unit load device or other type of pallet containing dangerous goods as described in 1.4 that was not accepted by an operator, due to an error or omission by the shipper in packaging, labelling, marking or documentation, a copy of the documentation as well as the acceptance checklist (when this is in a form which requires physical completion) should be retained for a minimum period of three months after the completion of the acceptance checklist.

Note.— Where the documents are kept electronically or in a computer system, they should be capable of being reproduced in a printed manner.

. . .

Part 8

PROVISIONS CONCERNING PASSENGERS AND CREW

. . .

1.1 DANGEROUS GOODS CARRIED BY PASSENGERS OR CREW

. . .

DGP-WG/10-WP/14:

f) with the approval of the operator(s), battery-powered wheelchairs or other similar mobility aids with spillable batteries, for use by passengers whose mobility is restricted by either a disability, their health or age, or a temporary mobility problem (e.g. broken leg), as checked baggage, provided that the wheelchair or mobility aid can be loaded, stowed, secured and unloaded always in an upright position and that the battery terminals are protected from short circuits (e.g. by being enclosed within a battery container) and the battery is securely attached to the wheelchair or mobility aid. The operator(s) must ensure that wheelchairs or other battery-powered mobility aids are carried in such a manner so as to prevent unintentional activation and that they are protected from being damaged by the movement of baggage, mail, stores or other cargo. If the wheelchair or mobility aid cannot be loaded, stowed, secured and unloaded always in an upright position, the battery must be removed and the wheelchair or mobility aid may then be carried as checked baggage without restriction. The removed battery must be carried in strong, rigid packagings as follows:

. . .

3) these packagings must be marked “Battery, wet, with wheelchair” or “Battery, wet, with mobility aid” and be labelled with a “Corrosive” label (Figure 5-22) and with ~~a~~ package orientation labels (Figure 5-26) as required by 5;3.

. . .

DGP-WG/11-WP/34

g) with the approval of the operator(s), as checked baggage, lithium-ion battery-powered wheelchairs or other similar mobility aids for use by passengers whose mobility is restricted by either a disability, their health or age, or a temporary mobility problem (e.g. broken leg), subject to the following conditions:

1) the batteries must be of a type which meets the requirements of each test in the UN *Manual of Tests* and *Criteria*, Part III, section 38.3;

2) battery terminals must be protected from short circuits (e.g. by being enclosed within a battery container) and securely attached to the mobility aid;

3) the operator(s) must ensure that such mobility aids are carried in a manner so as to prevent unintentional activation and that they are protected from being damaged by the movement of baggage, mail, stores or other cargo; and

4) the pilot-in-command must be informed of the location of the mobility aid.

It is recommended that passengers make advance arrangements with each operator.

. . .

DGP-WG/11-WP/14

r) with the approval of the operator(s), no more than two small cylinders of carbon dioxide or another suitable gas in Division 2.2, per person, fitted into a self-inflating life-jacket for inflation purposes, plus no more than two spare cartridges. Other devices containing no more than four small cylinders of carbon dioxide or other suitable gas in division 2.2, per person may be carried with the approval of the operator; provided that each cylinder has a water capacity of no more than 50 ml;

Note.— For carbon dioxide a gas cylinder with a water capacity of 50 mL is equivalent to a 28 g cartridge.

. . .

DGP-WG/11-WP/41

s) portable electronic devices (watches, calculating machines, cameras, cellular phones, laptop computers, camcorders, etc.) containing lithium or lithium ion cells or batteries when carried by passengers or crew for personal use, which should be carried as carry-on baggage~~.~~ , subject to the following conditions:

1) ~~S~~spare batteries must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch) and carried in carry-on baggage only~~.~~;

2) ~~In addition,~~ each installed or spare battery must not exceed the following:

— for lithium metal or lithium alloy batteries, a lithium content of not more than 2 grams; or

— for lithium ion batteries, a watt-hour rating of not more than 100 Wh.

3) batteries and cells must be of a type which meets the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, section 38.3

With the approval of the operator, lithium ion batteries exceeding a watt-hour rating of 100 Wh but not exceeding 160 Wh may be carried as spare batteries in carry-on baggage or in equipment in either checked or carry-on baggage. No more than two individually protected spare batteries per person may be carried.

t) fuel cells used to power portable electronic devices (for example cameras, cellular phones, laptop computers and camcorders) and spare fuel cell cartridges, under the following conditions:

. . .

For hydrogen in metal hydride, the fuel cell cartridges must have a water capacity of 120 mL or less;

DGP-WG/11-WP/12:

4) each fuel cell and each fuel cell cartridge must conform to IEC [~~PAS 62282-6-1~~ 62282-6-100] Ed. 1, and must be marked with a manufacturer's certification that it conforms to the specification. In addition, each fuel cell cartridge must be marked with the maximum quantity and type of fuel in the cartridge;

. . .

DGP-WG/11-WP/15:

[6) no more than two spare fuel cell cartridges may be carried by a passenger in carry-on baggage, in checked baggage or on the person~~, as follows:~~

~~a) fuel cell cartridges containing flammable liquids, corrosive substances, liquefied flammable gas or hydrogen in metal hydride in carry-on baggage, in checked baggage or on the person; and~~

~~b) fuel cell cartridges containing water-reactive substances in carry-on baggage or on the person~~;

]

. . .

DGP-WG/11-WP/12:

8) interaction between fuel cells and integrated batteries in a device must conform to IEC [~~PAS 62282-6-1~~ 62282-6-100] Ed. 1. Fuel cells whose sole function is to charge a battery in the device are not permitted;

. . .

Note.— The above changes to 8;1.1.2 will be incorporated in the new table for Part 8 (below) for DGP/23.

Items or Articles	Location			Approval of the operator(s) is required	The pilot-in-command must be informed	Restrictions
	Checked Baggage	Carry-on Baggage	[On the person			
MEDICAL NECESSITIES						
a) Small gaseous oxygen or air cylinders required for medical use	Yes	Yes	Yes	Yes	Yes	• ~~Each cylinder must not exceed~~ No more than 5 kg gross mass per cylinder; • Cylinders, valves and regulators, where fitted, must be protected from damage, which could cause inadvertent release of the contents; and • The pilot-in-command must be informed of the number of oxygen or air cylinders loaded on board the aircraft and their loading location(s).
Devices containing liquid oxygen	No	No	No	n/a	n/a	• Devices containing liquid oxygen are forbidden in carry-on baggage, checked baggage or on the person.
b) Cylinders of a gas of Division 2.2 worn for the operation of mechanical limbs	Yes	Yes	Yes	No	No	• Spare cylinders of a similar size are also allowed if required to ensure an adequate supply for the duration of the journey.

	Items or Articles	Location			Approval of the operator(s) is required	The pilot-in-command must be informed	Restrictions
		Checked Baggage	Carry-on Baggage	[On the person			
c)	Non-radioactive medicinal articles (including aerosols)	Yes	Yes	Yes	No	No	• ~~The total net quantity of each single article must not exceed~~ No more than 0.5 kg or 0.5 L total net quantity per single article; • Release valves on aerosols must be protected by a cap or other suitable means to prevent inadvertent release of the contents; and • No more than 2 kg or 2L ~~The~~total net quantity of all articles mentioned in c), j) and m) ~~must not exceed 2 kg or 2 L~~ (e.g. four aerosol cans of 500 mL each) ~~for each~~ per person.
d)	Radioisotopic cardiac pacemakers or other devices, including those powered by lithium batteries implanted into a person	n/a	n/a	Yes	No	No	• Must be implanted into a person as the result of medical treatment.
	Radio-pharmaceuticals contained within the body of a person	n/a	n/a	Yes	No	No	• Must be as the result of medical treatment.
e)	Battery-powered wheelchairs or other similar mobility aids with non-spillable batteries	Yes	No	No	Yes	No	• For use by passengers whose mobility is restricted by either a disability, their health or age, or a temporary mobility problem (e.g. broken leg); • Must comply with Special Provision A67 or the vibration and pressure differential tests of Packing Instruction 872; • The battery terminals must be protected from short circuits (e.g. by being enclosed within a battery container); • The battery must be securely attached to the wheelchair or mobility aid; and • The operator(s) must ensure that o wheelchairs or other battery powered mobility aids are carried in such a manner so as to prevent unintentional activation; and o they are protected from being damaged by the movement of baggage, mail, stores or other cargo. It is recommended that passengers make advance arrangements with each operator.
f)	Wheelchairs or other battery-powered mobility aids with spillable batteries	Yes	No	No	Yes	Yes	• For use by passengers whose mobility is restricted by either a disability, their health or age, or a temporary mobility problem (e.g. broken leg); • The wheelchair or mobility aid can be loaded, stowed, secured and unloaded always in an upright position and the battery terminals are protected from short circuits (e.g. by being enclosed within a battery container) and the battery is securely attached to the wheelchair or mobility aid; • The operator(s) must ensure that wheelchairs or other battery powered mobility aids are carried in such a manner so as to prevent unintentional activation and that they are protected from being damaged by the movement of baggage, mail, stores or other cargo; • If the wheelchair or mobility aid cannot be loaded, stowed, secured and unloaded always in an upright position, the battery must be removed and the wheelchair or mobility aid may then be carried as checked baggage without restriction; and • The removed battery must be carried in strong, rigid

Items or Articles	Location			Approval of the operator(s) is required	The pilot-in-command must be informed	Restrictions
	Checked Baggage	Carry-on Baggage	[On the person			
						packagings as follows: o the packagings must be leaktight, impervious to battery fluid and be protected against upset by securing them to pallets or by securing them in cargo compartments using appropriate means of securement (other than by bracing with freight or baggage) such as by use of restraining straps, brackets or holders; o batteries must be protected against short circuits, secured upright in these packagings and surrounded by compatible absorbent material sufficient to absorb their total liquid contents; and o these packagings must be marked "Battery, wet, with wheelchair" or "Battery, wet, with mobility aid" and be labelled with "Corrosive" labels (Figure 5-22) and with package orientation labels (Figure 5-26) as required by 5;3. It is recommended that passengers make advance arrangements with each operator; also unless batteries are nonspillable they should be fitted, where feasible, with spill-resistant vent caps.
g) Lithium-ion battery-powered wheelchairs or other similar mobility aids	Yes	No	No	Yes	Yes	• For use by passengers whose mobility is restricted by either a disability, their health or age, or a temporary mobility problem (e.g. broken leg); • The batteries must be of a type which meets the requirements of each test in the UN Manual of Tests and Criteria, Part III, section 38.3; • Battery terminals must be protected from short circuits (e.g. by being enclosed within a battery container) and securely attached to the mobility aid; and • The operator(s) must ensure that such mobility aids are carried in a manner so as to prevent unintentional activation and that they are protected from being damaged by the movement of baggage, mail, stores or other cargo; It is recommended that passengers make advance arrangements with each operator.
h) Portable medical electronic devices (Automated External Defibrilators (AED), Nebulizer, Continuous Positive Airway Pressure (CPAP), etc.) containing lithium metal or lithium ion cells or batteries	No	Yes	Yes	Yes	No	• Carried by passengers for medical use; • No more than two spare batteries may be carried. Spare batteries must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch); and • Each installed or spare battery: o must be of a type which meets the requirements of each test in the UN Manual of Tests and Criteria, Part III, section 38.3; and o must not exceed the following: • for lithium metal batteries, a lithium content of not more than 8 grams; or • for lithium ion batteries, a watt-hour rating of not more than 160 Wh.
i) Small medical or clinical thermometer which contains mercury	Yes	Yes	Yes	No	No	• ~~Limited to~~ No more than one per person; • Must be for personal use; and • Must be in its protective case.
ARTICLES USED IN DRESSING OR GROOMING						
j) Toiletry articles (including aerosols)	Yes	Yes	Yes	No	No	• The term "toiletry articles (including aerosols)" is intended to include such items as hair sprays, perfumes and colognes; • ~~The total net quantity of each single article must not~~

	Items or Articles	Location			Approval of the operator(s) is required	The pilot-in-command must be informed	Restrictions
		Checked Baggage	Carry-on Baggage	[On the person			
							~~exceed~~ No more than 0.5 kg or 0.5 L total net quantity per single article; • Release valves on aerosols must be protected by a cap or other suitable means to prevent inadvertent release of the contents; and • No more than 2 kg or 2L ~~The~~total net quantity of all articles mentioned in c), j) and m) ~~must not exceed 2 kg or 2 L~~ (e.g. four aerosol cans of 500 mL each)~~for each~~ per person.
k)	Hair curlers containing hydrocarbon gas	Yes	Yes	Yes	No	No	• No more than one per person; • The safety cover must be securely fitted over the heating element; and • Gas refills for such curlers must not be carried
CONSUMER ARTICLES							
l)	Alcoholic beverages containing more than 24 per cent but not more than 70 per cent alcohol by volume	Yes	Yes	Yes	No	No	• Must be in • ~~Must be in~~ No more than 5L per individual receptacles~~ not exceeding 5L~~; and • ~~A~~ No more than 5L total net quantity per person ~~of 5 L~~ for such beverages. Note.— Alcoholic beverages containing not more than 24 per cent alcohol by volume are not subject to any restrictions.
m)	Aerosols in Division 2.2, with no subsidiary risk, for sporting or home use	Yes	No	No	No	No	• ~~The total net quantity of each single article must not exceed~~ No more than 0.5 kg or 0.5 L total net quantity per single article; • Release valves on aerosols must be protected by a cap or other suitable means to prevent inadvertent release of the contents; and • No more than 2 kg or 2L ~~The~~total net quantity of all articles mentioned in c), j) and m) ~~must not exceed 2 kg or 2 L~~ (e.g. four aerosol cans of 500 mL each) ~~for each per~~ person.
n)	Securely packaged cartridges in Division 1.4S (UN 0012 or UN 0014 only);	Yes	No	No	Yes	No	• ~~In quantities not exceeding~~ No more than 5 kg gross mass per person for that person's own use; • Must not include ammunition with explosive or incendiary projectiles; and • Allowances for more than one person must not be combined into one or more packages.
o)	Small packet of safety matches	No	No	Yes	No	No	• ~~Limited to~~ No more than one per person; and • Intended for use by an individual~~; and~~ • ~~Must be carried on the person~~.
	"Strike anywhere" matches	No	No	No	n/a	n/a	• Forbidden
	Small cigarette lighter	No	No	Yes	No	No	• ~~Limited to~~ No more than one per person; • Intended for use by an individual; and • ~~Must be carried on the person~~. • Does not contain unabsorbed liquid fuel (other than liquefied gas).
	Lighter fuel and lighter refills	No	No	No	n/a	n/a	• Forbidden
p)	Battery-powered equipment capable of generating extreme heat, which could cause a fire if activated (e.g. underwater high intensity lamps)	Yes	Yes	No	Yes	No	• The heat producing component or the battery is packed separately so as to prevent activation during transport; and • Any battery which has been removed must be protected against short circuit.

	Items or Articles	Location			Approval of the operator(s) is required	The pilot-in-command must be informed	Restrictions
		Checked Baggage	Carry-on Baggage	[On the person			
q)	Avalanche rescue backpack	Yes	Yes	No	Yes	No	• No more than ~~O~~one per person; • The pyrotechnic trigger mechanism must not contain more than 200 mg net of Division 1.4S; • The cylinder of compressed gas of Division 2.2 must not exceed 250 mL; • The backpack must be packed in such a manner that it cannot be accidentally activated; and • The airbags within the backpack must be fitted with pressure relief valves.
r)	Small cartridges fitted into a self-inflating life-jacket	Yes	Yes	Yes	Yes	No	• Limited to carbon dioxide or another suitable gas in Division 2.2; • Must be for inflation purposes; • ~~Limit of~~ No more than two small cylinders of carbon dioxide or another suitable gas in Division 2.2 fitted in the life-jacket, per person; and • No more than two spare cartridges.
s)	Portable electronic devices (watches, calculating machines, cameras, cellular phones, laptop computers, camcorders, etc.)						
	Portable electronic devices containing lithium or lithium ion cells or batteries	Yes	Yes	Yes	No	No	• Carried by passengers or crew for personal use; • Should be carried as carry-on baggage; and • Each battery must not exceed the following: o for lithium metal or lithium alloy batteries, a lithium content of not more than 2 grams; or o for lithium ion batteries, a watt-hour rating of not more than 100 Wh.
	Spare batteries for portable electronic devices containing lithium or lithium ion cells or batteries	No	Yes	Yes	No	No	• Carried by passengers or crew for personal use; • Must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch); • Each battery must not exceed the following: o for lithium metal or lithium alloy batteries, a lithium content of not more than 2 grams; or o for lithium ion batteries, a watt-hour rating of not more than 100 Wh.
	Portable electronic devices containing lithium ion batteries exceeding a watt-hour rating of 100 Wh but not exceeding 160 Wh	Yes	Yes	Yes	Yes	No	• Carried by passengers or crew for personal use; and • Should be carried as carry-on baggage.
	Spare batteries for portable electronic devices containing lithium ion batteries exceeding a watt-hour rating of 100 Wh but not exceeding 160 Wh	No	Yes	Yes	Yes	No	• Carried by passengers or crew for personal use; • No more than two individually protected spare batteries per person; and • Must be individually protected so as to prevent short circuits (by placement in original retail packaging or by otherwise insulating terminals, e.g. by taping over exposed terminals or placing each battery in a separate plastic bag or protective pouch).

Items or Articles	Location			Approval of the operator(s) is required	The pilot-in-command must be informed	Restrictions
	Checked Baggage	Carry-on Baggage	[On the person			
t) Fuel cells used to power portable electronic devices (for example cameras, cellular phones, laptop computers and camcorders)	No	Yes	Yes	No	No	• fuel cell cartridges may only contain flammable liquids, corrosive substances, liquefied flammable gas, water reactive substances or hydrogen in metal hydride; • refuelling of fuel cells on board an aircraft is not permitted except that the installation of a spare cartridge is allowed; • the maximum quantity of fuel in any fuel cell or fuel cell cartridge must not exceed: o for liquids 200 mL; o for solids 200 grams; o for liquefied gases, 120 mL for non-metallic fuel cell cartridges or 200 mL for metal fuel cell or fuel cell cartridges; and o for hydrogen in metal hydride, the fuel cell or fuel cell cartridges must have a water capacity of 120 mL or less; • each fuel cell and each fuel cell cartridge must conform to IEC PAS 62282-6-1 Ed. 1, and must be marked with a manufacturer's certification that it conforms to the specification. In addition, each fuel cell cartridge must be marked with the maximum quantity and type of fuel in the cartridge; • fuel cell cartridges containing hydrogen in metal hydride must comply with the requirements in Special Provision A162. • no more than two spare fuel cell cartridges may be carried by a passenger; • fuel cell containing fuel are permitted in carry-on baggage only; • interaction between fuel cells and integrated batteries in a device must conform to IEC PAS 62282-6-1 Ed. 1. Fuel cell whose sole function is to charge a battery in the device are not permitted; • fuel cell must be of a type that will not charge batteries when the portable electronic device is not in use and must be durably marked by the manufacturer: "APPROVED FOR CARRIAGE IN AIRCRAFT CABIN ONLY" to so indicate; and • in addition to the languages which may be required by the State of Origin for the markings specified above, English should be used.
Spare fuel cell cartridges containing flammable liquids, corrosive substances, liquefied flammable gas or hydrogen in metal hydride	Yes	Yes	Yes	No	No	
Spare fuel cell cartridges containing water-reactive substances	No	Yes	Yes	No	No	
u) Dry Ice	Yes	Yes	No	Yes	No	• ~~quantity not exceeding~~ No more than 2.5 kg per person; • used to pack perishables that are not subject to these Instructions; • the package must permit the release of carbon dioxide gas; and • when carried in checked baggage, each package must be marked: o "DRY ICE" or "CARBON DIOXIDE, SOLID"; and o the net weight of dry ice or an indication that the net weight is 2.5 kg or less;
v) A mercurial barometer or mercurial thermometer	No	Yes	No	Yes	Yes	• must be carried by a representative of a government weather bureau or similar official agency; and • must be packed in a strong outer packaging, having a sealed inner liner or a bag of strong leakproof and puncture-resistant material impervious to mercury, which will prevent the escape of mercury from the package irrespective of its position.

	Items or Articles	Location			Approval of the operator(s) is required	The pilot-in-command must be informed	Restrictions
		Checked Baggage	Carry-on Baggage	[On the person			
w)	Instruments containing radioactive material (i.e. chemical agent monitor (CAM) and/or rapid alarm and identification device monitor (RAID-M))	Yes	Yes	No	Yes	No	• the instruments must not exceed the activity limits specified in Table 2-15 of these Instructions; • must be securely packed and without lithium batteries; and • must be carried by staff members of the Organization for the Prohibition of Chemical Weapons (OPCW) on official travel.
x)	Energy efficient light bulbs	Yes	Yes	Yes	No	No	• When in retail packaging; and • Intended for personal or home use.
SECURITY-TYPE EQUIPMENT							
y)	Security type equipment such as attaché cases, cash boxes, cash bags, etc. incorporating dangerous goods as part of this equipment, for example lithium batteries or pyrotechnic material	Yes	No	No]	Yes	No	• the equipment must be equipped with an effective means of preventing accidental activation; • if the equipment contains an explosive or pyrotechnic substance or an explosive article, this article or substance must be excluded from Class 1 by the appropriate national authority of the State of Manufacture in compliance with Part 2;1.5.2.1; • if the equipment contains lithium cells or batteries, these cells or batteries must comply with the following restrictions: o for a lithium metal cell, the lithium content is not more than 1 g; o for a lithium metal or [lithium alloy] battery, the aggregate lithium content is not more than 2 g; o for lithium ion cells, the Watt-hour rating (see Attachment 2) is not more than 20 Wh; o for lithium ion batteries, the Watt-hour rating is not more than 100 Wh; o each cell or battery is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, section 38.3; • if the equipment contains gases to expel dye or ink, o only gas cartridges and receptacles, small, containing gas with a capacity not exceeding 50 mL, containing no constituents subject to these Instructions other than a Division 2.2 gas, are allowed; o The release of gas must not cause extreme annoyance or discomfort to crew members so as to prevent the correct performance of assigned duties; and o In case of accidental activation, all hazardous effects must be confined within the equipment and must not produce extreme noise; and • security type equipment that is defective or that has been damaged is forbidden for transport.

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Attachment 2
GLOSSARY OF TERMS

Glossary of terms

DGP-WG/11-WP/10 and DP/3:

Term and explanation	*UN Number(s), when relevant*
. . .	
ARTICLES, EXPLOSIVE, EXTREMELY INSENSITIVE (ARTICLES, EEI). Articles that contain only extremely insensitive ~~detonating~~ substances and which demonstrate a negligible probability of accidental initiation or propagation (under normal conditions of transport). *Note.— An extremely insensitive ~~detonating~~ substance is a substance which although capable of sustaining a detonation has demonstrated through tests that it is so insensitive that there is very little probability of accidental initiation.*	0486
. . .	
AUXILIARY EXPLOSIVE COMPONENT, isolated An "isolated auxiliary explosive component" is a small device that explosively performs an operation related to the article's functioning, other than its main explosive loads' performance. Functioning of the component does not cause any reaction of the main explosive loads contained within the article.	
. . .	
BATTERY. Two or more cells which are electrically connected together fitted with devices necessary for use, for example, case, terminals, marking and protective devices. A single cell battery is considered a "cell" and must be tested according to the testing requirements for "cells" for the purposes of the Technical Instructions and the *UN Manual of Tests and Criteria* (see also the explanation for "cell"). *Note.— Units that are commonly referred to as "battery packs", "modules" or "battery assemblies" having the primary function of providing a source of power to another piece of equipment are for the purposes of the Technical Instructions and the* UN Manual of Tests and Criteria *treated as batteries.*	
CELL. A single encased electrochemical unit (one positive and one negative electrode) which exhibits a voltage differential across its two terminals. Under the Technical Instructions and the *UN Manual of Tests and Criteria*, to the extent the encased electrochemical unit meets the definition of "cell" herein, it is a "cell", not a "battery", regardless of whether the unit is termed a "battery" or a "single cell battery" outside of the Technical Instructions and the *UN Manual of Tests and Criteria*.	
. . .	
~~**EXPLOSIVE, EXTREMELY INSENSITIVE DETONATING SUBSTANCE (EIDS).** A substance which, although capable of sustaining a detonation, has demonstrated through tests that it is so insensitive that there is very little probability of accidental initiation.~~	—
EXPLOSIVE, EXTREMELY INSENSITIVE SUBSTANCE (EIS) A substance which has demonstrated through tests that it is so insensitive that there is very little probability of accidental initiation.	—
. . .	

DGP-WG/10-WP/5:

LITHIUM BATTERY OR LITHIUM CELLS. A battery is one or more cells which are electrically connected together by a permanent means. A cell is a single encased electromechanical unit which exhibits a voltage differential across its two terminals.	3090, 3091, 3480, 3481

ATTACHMENT

PROPOSED AMENDMENTS TO TABLE 3-1

Table 3-1. Dangerous Goods List - DRAFT

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	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
≠	**Cartridges for weapons, inert projectile †**	0012	1.4S		Explosive 1.4		A189		E0	130 Y1XX?	25 kg [5 kg]	130	100 kg
≠	**Cartridges, small arms †**	0012	1.4S		Explosive 1.4		A189		E0	130 Y1XX?	25 kg [5 kg]	130	100 kg
+	**Cartridges for tools, blank †**	0014	1.4S		Explosive 1.4		A189		E0	130 Y1XX?	25 kg [5 kg]	130	100 kg
≠	**Cartridges for weapons, blank †**	0014	1.4S		Explosive 1.4		A189		E0	130 Y1XX?	25 kg [5 kg]	130	100 kg
≠	**Cartridges, small arms, blank †**	0014	1.4S		Explosive 1.4		A189		E0	130 Y1XX?	25 kg [5 kg]	130	100 kg
≠	**Cases, cartridge, empty, with primer †**	0055	1.4S		Explosive 1.4		A189		E0	136 Y1XX?	25 kg [5 kg]	136	100 kg
≠	**Dimethyldichlorosilane**	1162	3	8	Liquid flammable & Corrosive			II	E0	FORBIDDEN		377	5 L
≠	**Ethyltrichlorosilane**	1196	3	8	Liquid flammable & Corrosive			II	E0	FORBIDDEN		377	5 L
≠	**Methyltrichlorosilane**	1250	3	8	Liquid flammable & Corrosive	AU 1 CA 7 IR 3 NL 1 US 3		II	E0	FORBIDDEN		377	5 L
≠	**Trimethylchlorosilane**	1298	3	8	Liquid flammable & Corrosive			II	E0	FORBIDDEN		377	5 L
≠	**Vinyltrichlorosilane**	1305	3	8	Liquid flammable & Corrosive	AU 1 CA 7 IR 3 NL 1 US 3		II	E0	FORBIDDEN		377	5 L
≠	**Thallium compound, n.o.s.***	1707	6.1		Toxic	US 4	A6	II	E4	669 Y644	25 kg 1 kg	676	100 kg
≠	**Iodine monochloride, solid**	1792	8		Corrosive	AU 1 CA 7 IR 3 NL 1 US 3	A1	II	E0	FORBIDDEN		863	50 kg
≠	**Insecticide gas, n.o.s.***	1968	2.2		Gas non-flammable				E1	200	75 kg	200	150 kg
≠	**Alkylsulphuric acids**	2571	8		Corrosive			II	E2	851 Y840	1 L 0.5 L	855	30 L

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	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
≠	**Batteries, wet, filled with acid**, electric storage †	2794	8		Corrosive		A51 A164 A183		E0	870	30 kg	870	No limit
≠	**Batteries, wet, filled with alkali**, electric storage †	2795	8		Corrosive		A51 A164 A183		E0	870	30 kg	870	No limit
≠	**Mercury**	2809	8	6.1	Corrosive & Toxic	US 4		III	E0	868	35 kg	868	35 kg
≠	**Chlorosilanes, flammable, corrosive, n.o.s.**	2985	3	8	Liquid flammable & Corrosive			II	E0	FORBIDDEN		377	5 L
≠	**Batteries, dry, containing potassium hydroxide solid**, electric storage †	3028	8		Corrosive		A183 A184		E0	871	25 kg	871	230 kg
≠	**Nitroglycerin solution in alcohol** with more than 1% but not more than 5% nitroglycerin	3064	3		Liquid flammable	BE 3	A188	II	E0	FORBIDDEN		371	5 L
≠	**Lithium metal batteries** (including lithium alloy batteries) †	3090	9		Miscellaneous	US 2 US 3	A88 A99 A154 A164 A183	II	E0	968	2.5 kg	968	35 kg
≠	**Lithium metal batteries contained in equipment** (including lithium alloy batteries) †	3091	9		Miscellaneous	US 2 US 3	A48 A99 A154 A164 A181 A185	II	E0	970	5 kg	970	35 kg
≠	**Lithium metal batteries packed with equipment** (including lithium alloy batteries) †	3091	9		Miscellaneous	US 2 US 3	A99 A154 A181 A185	II	E0	969	5 kg	969	35 kg
≠	**Nitriles, liquid, toxic, n.o.s.**	3276	6.1		Toxic		A3 A4 A137	I II	E5 E4	652 654 Y641	1 L 5 L 1 L	658 662	30 L 60 L
								III	E1	655 Y642	60 L 2 L	663	220 L
≠	**Organophosphorus compound, liquid, toxic, n.o.s.**	3278	6.1		Toxic		A3 A4 A6 A137	I II	E5 E4	652 654 Y641	1 L 5 L 1 L	658 662	30 L 60 L
								III	E1	655 Y642	60 L 2 L	663	220 L

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	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
≠	**Organometallic compound, liquid, toxic, n.o.s.**	3282	6.1		Toxic		A3 A4	I II III	E5 E4 E1	652 654 Y641 655 Y642	1 L 5 L 1 L 60 L 2 L	658 662 663	30 L 60 L 220 L
≠	**Cells, containing sodium** †	3292	4.3		Danger if wet		A94	II	E0	492	25 kg	492	No limit
≠	**Aviation regulated liquid, n.o.s.***	3334	9		Miscellaneous		A27	III	E1	964 Y964	450 L 30 kg G	964	450 L
≠	**Aviation regulated solid, n.o.s.***	3335	9		Miscellaneous		A27	III	E1	956 Y956	400 kg 30 kg G	956	400 kg
≠	**Chlorosilanes, toxic, corrosive, n.o.s. ***	3361	6.1	8	Toxic & Corrosive			II	E0	FORBIDDEN		681	30 L
≠	**Chlorosilanes, toxic, corrosive, flammable, n.o.s.***	3362	6.1	3 8	Toxic & Liquid flammable & Corrosive			II	E0	FORBIDDEN		681	30 L
≠	**Toxic by inhalation liquid, n.o.s.*** with an LC_{50} lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 LC_{50}	3381	6.1							FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, n.o.s.*** with an LC_{50} lower than or equal to 1 000 ml/m³ and saturated vapour concentration greater than or equal to 10 LC_{50}	3382	6.1							FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, flammable, n.o.s.*** with an LC_{50} lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 LC_{50}	3383	6.1	3						FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, flammable, n.o.s.*** with an LC_{50} lower than or equal to 1 000 ml/m³ and saturated vapour concentration greater than or equal to 10 LC_{50}	3384	6.1	3						FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, water-reactive, n.o.s.*** with an LC_{50} lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 LC_{50}	3385	6.1	4.3						FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, water-reactive, n.o.s.*** with an LC_{50} lower than or equal to 1 000 ml/m³ and saturated vapour concentration greater than or equal to 10 LC_{50}	3386	6.1	4.3						FORBIDDEN		FORBIDDEN	

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	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
≠	**Toxic by inhalation liquid, oxidizing, n.o.s.*** with an LC_{50} lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 LC_{50}	3387	6.1	5.1						FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, oxidizing, n.o.s.*** with an LC_{50} lower than or equal to 1 000 ml/m³ and saturated vapour concentration greater than or equal to 10 LC_{50}	3388	6.1	5.1						FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, corrosive, n.o.s.*** with an LC_{50} lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 LC_{50}	3389	6.1	8						FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, corrosive, n.o.s.*** with an LC_{50} lower than or equal to 1 000 ml/m³ and saturated vapour concentration greater than or equal to 10 LC_{50}	3390	6.1	8						FORBIDDEN		FORBIDDEN	
≠	**Nitriles, solid, toxic, n.o.s.**	3439	6.1		Toxic		A3 A5	I II III	E5 E4 E1	666 669 Y644 670 Y645	5 kg 25 kg 1 kg 100 kg 10 kg	673 676 677	50 kg 100 kg 200 kg
≠	**Organophosphorus compound, solid, toxic, n.o.s.**	3464	6.1		Toxic		A3 A5 A6	I II III	E5 E4 E1	666 669 Y644 670 Y645	5 kg 25 kg 1 kg 100 kg 10 kg	673 676 677	50 kg 100 kg 200 kg
≠	**Organometallic compound, solid, toxic, n.o.s.**	3467	6.1		Toxic		A3 A5	I II III	E5 E4 E1	666 669 Y644 670 Y645	5 kg 25 kg 1 kg 100 kg 10 kg	673 676 677	50 kg 100 kg 200 kg
≠	**Hydrogen in a metal hydride storage system**	3468	2.1		Gas flammable		A1 A143 A176		E0	FORBIDDEN		214	100 kg
≠	**Hydrogen in a metal hydride storage system contained in equipment**	3468	2.1		Gas flammable		A1 A143 A176		E0	FORBIDDEN		214	100 kg
≠	**Hydrogen in a metal hydride storage system packed with equipment**	3468	2.1		Gas flammable		A1 A143 A176		E0	FORBIDDEN		214	100 kg

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	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
≠	**Lithium ion batteries** (including lithium ion polymer batteries)	3480	9		Miscellaneous		A88 A99 A154 A164 A183	II	E0	965	5 kg	965	35 kg
≠	**Lithium ion batteries contained in equipment** (including lithium ion polymer batteries)	3481	9		Miscellaneous		A48 A99 A154 A164 A181 A185	II	E0	967	5 kg	967	35 kg
≠	**Lithium ion batteries packed with equipment** (including lithium ion polymer batteries)	3481	9		Miscellaneous		A88 A99 A154 A164 A181 A185	II	E0	966	5 kg	966	35 kg
≠	**Toxic by inhalation liquid, flammable, corrosive, n.o.s.*** with an LC_{50} lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 LC_{50}	3488	6.1	3 8						FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, flammable, corrosive, n.o.s.*** with an LC_{50} lower than or equal to 1 000 ml/m³ and saturated vapour concentration greater than or equal to 10 LC_{50}	3489	6.1	3 8						FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, water-reactive, flammable, n.o.s.*** with an LC_{50} lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 LC_{50}	3490	6.1	3 4.3						FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, water-reactive, flammable, n.o.s.*** with an LC_{50} lower than or equal to 1 000 ml/m³ and saturated vapour concentration greater than or equal to 10 LC_{50}	3491	6.1	3 4.3						FORBIDDEN		FORBIDDEN	
>	UN 3492 (delete)												
>	UN 3493 (delete)												
+	**Iodine monochloride, liquid**	3498	8		Corrosive			II	E2	851	1.0 L	855	30 L
+	**Capacitor**, electric double layer (with an energy storage capacity greater than 0.3 Wh)	3499	9		Miscellaneous		A186		E0	971	No limit	971	No limit
+	**Chemical under pressure, n.o.s.***	3500	2.2		Gas non-flammable		A187		E0	see 218		see 218	

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	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
+	**Chemical under pressure, flammable, n.o.s.***	3501	2.1		Gas flammable		A187		E0	see 218		see 218	
+	**Chemical under pressure, toxic, n.o.s.***	3502	2.2	6.1	Gas non-flammable & Toxic		A187		E0	see 218		see 218	
+	**Chemical under pressure, corrosive, n.o.s.***	3503	2.2	8	Gas non-flammable & Corrosive		A187		E0	see 218		see 218	
+	**Chemical under pressure, flammable, toxic, n.o.s.***	3504	2.1	6.1	Gas flammable & Toxic		A187		E0	see 218		see 218	
+	**Chemical under pressure, flammable, corrosive, n.o.s.***	3505	2.1	8	Gas flammable & Corrosive		A187		E0	see 218		see 218	
≠	**Mercury contained in manufactured articles**	3506	8	6.1	Corrosive & Toxic		A48 A69	III	E0	869	No limit	869	No limit

APPENDIX C

CONSOLIDATION OF AMENDMENTS TO THE SUPPLEMENT TO THE TECHNICAL INSTRUCTIONS AGREED AT WG/11

DGP-WG/11-WP/52:

Part S-1

GENERAL

(ADDITIONAL INFORMATION FOR PART 1 OF THE TECHNICAL INSTRUCTIONS)

Chapter 1

SCOPE AND APPLICABILITY

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1.1 DESIGNATION OF NATIONAL AUTHORITY

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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.

Note.— For the separation of explosives, see Part 7;2.3.

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Part S-3. DANGEROUS GOODS LIST AND LIMITED QUANTITIES EXCEPTIONS
(additional information for Part 3 of the Technical Instructions)

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Chapter 3

SPECIAL PROVISIONS

Table S-3-4. Special Provisions

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TIs	*UN*

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DGP-WG/11-WP/26:

A202	For the purpose of providing life support for aquatic animals during transport, the appropriate authority of the States of Origin, of Destination and of the Operator may approve the carriage of ~~a~~ cylinders containing oxygen compressed, UN 1072 and Air, compressed UN 1002, with the valve(s) open to supply a controlled quantity of oxygen or air through a regulator into water containing the aquatic animals. The cylinder or cylinder valve must be fitted with a self-sealing device to prevent uncontrolled release of oxygen or air should the regulator malfunction or be broken or damaged. The oxygen or air cylinder must meet those parts of Packing Instruction 200 which apply, except for the need for valves to be closed. In addition, the following conditions apply as a minimum: a) the water container with the attached oxygen and/or air cylinder (transportation unit) must be engineered and constructed to withstand all anticipated loads. No more than two cylinders of which a maximum is one cylinder of oxygen are permitted; b) the water container must be tilt-tested at an angle of 45° in four directions from the upright for a 10-minute minimum duration in each direction with the oxygen supply operating, without leakage of water; c) the oxygen or air cylinder and regulator must be restrained and protected within the equipment; d) the oxygen or air regulator used must have a maximum flow rate of not more than five litres per minute; e) the oxygen or air flow rate to the container must be limited to that sufficient to provide life support to the aquatic animals; f) the quantity of oxygen or air provided must not exceed 150 per cent of the oxygen or air required for the normal duration of air transport; and g) only one cylinder may be carried for each 15 cubic metres of gross cargo hold volume. In no circumstances may the rate of oxygen or air flow from the cylinder exceed one litre per minute per five cubic metres of gross cargo hold volume.

DGP-WG/11-WP/11:

A218	This substance must not be transported under the provisions of Division 4.1 unless specifically authorized by the appropriate national authority (see UN 0143 or UN 0150 as appropriate).

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A225	(358)	Nitroglycerin solution in alcohol with more than 1 per cent but not more than 5 per cent nitroglycerin may be classified in Class 3 and assigned to UN 3064 provided all the requirements of Packing Instruction 371 are complied with.

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Part S-4

PACKING INSTRUCTIONS

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Chapter 3

CLASS 1 — EXPLOSIVES

110	PACKING INSTRUCTION 110 **(UN packing method EP 10)**	110

a) Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags plastics textile, plastic-coated or lined rubber textile, rubberized textile Receptacles wood	Bags plastics textile, plastic-coated or lined rubber textile, rubberized Receptacles metal plastics wood	Drums other metal (1N1, 1N2) plastics~~, removable head~~ (1H1, 1H2) steel, removable head (1A1, 1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— The intermediate packagings must be filled with water-saturated material such as an anti-freeze solution or wetted cushioning.
— Outer packagings must be filled with water-saturated material such as an anti-freeze solution or wetted cushioning. Outer packagings must be constructed and sealed to prevent evaporation of the wetting solution, except when UN 0224 is being carried dry.

b) Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags plastics, conductive rubber, conductive Receptacles metal plastics, conductive rubber, conductive wood	Dividing partitions fibreboard metal plastics wood	Boxes natural wood, with sift-proof walls (4C2) plywood (4D) reconstituted wood (4F)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

For UN 0074, 0113, 0114, 0129, 0130, 0135 and 0224, the following conditions must be satisfied:
a) inner packagings must not contain more than 50 g of explosive substance (quantity corresponding to dry substance);
b) compartments between dividing partitions must not contain more than one inner packaging, firmly fitted; and
c) the outer packaging must be partitioned into up to 25 compartments.

111	PACKING INSTRUCTION 111	111
	(UN packing method EP 11)	

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags paper, waterproofed plastics textile, rubberized Receptacles wood Sheets plastics textile, rubberized	Not necessary	Boxes aluminium (4B) expanded plastics (4H1) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with sift-proof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre~~board~~ (1G) other metal (1N1, 1N2) plastics~~, removable head~~ (1H1, 1H2) plywood (1D) steel~~, removable head~~ (1A1, 1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0159, inner packagings are not required when metal (1A2 or 1B2) or plastics (1H2) drums are used as outer packagings.

112	PACKING INSTRUCTION 112	112
	(UN packing method EP 12)	

a) solid wetted 1.1D

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags paper, multiwall, water-resistant plastics textile textile, rubberized woven plastics Receptacles metal plastics wood	Bags plastics textile, plastic-coated or lined Receptacles metal plastics wood	Boxes aluminium (4B) expanded plastics (4H1) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with sift-proof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) plastics~~, removable head~~ (1H1, 1H2) steel~~, removable head~~ (1A1, 1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0004, 0076, 0078, 0154, 0219 and 0394, packagings must be lead-free.
— Intermediate packagings are not required if leakproof drums are used as the outer packaging.
— For UN 0072 and UN 0226, intermediate packagings are not required.

b) solid dry, other than powder 1.1D

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags paper, kraft paper, multiwall, water-resistant plastics textile textile, rubberized woven plastics	Bags (for 0150 only) plastics textile, plastic-coated or lined	Bags paper, multiwall, water-resistant (5M2) plastics, film (5H4) textile, sift-proof (5L2) textile, water-resistant (5L3) woven plastics, sift-proof (5H2/3) Boxes aluminium (4B) expanded plastics (4H1) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with sift-proof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) plastics~~, removable head~~ (1H1, 1H2) steel~~, removable head~~ (1A1, 1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0004, 0076, 0078, 0154, 0216, 0219 and 0386, packagings must be lead-free.
— For UN 0209, bags, sift-proof (5H2) are recommended for flake or prilled TNT in the dry state and a maximum net mass of 30 kg.
— For UN 0222 and UN 0223, inner packagings are not required when the outer packaging is a bag.

c) for solid dry powder 1.1D

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags paper, multiwall, water-resistant plastics woven plastics Receptacles fibreboard metal plastics wood	Bags (for 1050 only) paper, multiwall, water-resistant with inner lining plastics Receptacles metal plastics wood	Boxes fibreboard (4G) natural wood, ordinary (4C1) natural wood, with sift-proof walls (4C2) metal, other (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) steel~~, removable head~~ (1A1, 1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0004, 0076, 0078, 0154, 0216, 0219 and 0386, packagings must be lead-free.
— For UN 0209, bags, sift-proof (5H2) are recommended for flake or prilled TNT in the dry state and a maximum net mass of 30 kg.
— Inner packagings are not required if drums are used as the outer packaging.
— These packages must be sift-proof.

113	PACKING INSTRUCTION 113	113
	(UN packing method EP 13)	

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags paper plastics textile, rubberized Receptacles fibreboard metal plastics wood Sheets paper, kraft paper, waxed	Not necessary	Boxes fibreboard (4G) natural wood, ordinary (4C1) natural wood, with sift-proof walls (4C2) metal, other (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) steel~~, removable head~~ (1A1, 1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0094 and UN 0305, no more than 50 g of substance must be packed in an inner packaging.
— For UN 0027, inner packagings are not necessary when drums are used as the outer packaging.
— Packages must be sift-proof.
— Sheets may only be used for UN 0028.

115	PACKING INSTRUCTION 115	115
	(UN packing method EP 15)	

Inner packagings	*Intermediate packagings*	*Outer packagings*
Receptacles metal plastics wood	Bags plastics in metal receptacles Drums metal Receptacles wood	Boxes fibreboard (4G) natural wood, ordinary (4C1) natural wood, with sift-proof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) plywood (1D) steel~~, removable head~~ (1A1, 1A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0075, 0143, 0495 and 0497 when boxes are used as the outer packaging, 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 materials. 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 limited to 30 kg for each package when outer packagings are boxes.
— For UN 0075, 0143, 0495 and 0497 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 of propellant in each package must not exceed 120 litres.
— For UN 0144, absorbent cushioning material must be inserted.
— Metal receptacles as inner packagings must only be used for UN 0144.
— For UN 0075, 0143, 0495 and 0497, bags are to be used as intermediate packagings when boxes are used as outer packagings.
— For UN 0075, 0143, 0495 and 0497, drums are to be used as intermediate packagings when drums are used as outer packagings.
— For UN 0144, intermediate packagings are not necessary.
— Fibreboard boxes (4G) should only be used for UN 0144.
— For UN 0144, aluminium drums, removable head (1B2) and metal, other than steel or aluminium, drums, removable head (1N2), are not allowed.

116	PACKING INSTRUCTION 116	116

(UN packing method EP 16)

Inner packagings	*Intermediate packagings*	*Outer packagings*
Bags paper, water and oil resistant plastics textile, plastic-coated or lined woven plastics, sift-proof Receptacles fibreboard, water-resistant metal plastics wood, sift-proof Sheets paper, water-resistant paper, waxed plastics	Not necessary	Bags paper, multiwall, water-resistant (5M2) plastics, film (5H4) textile, sift-proof (5L2) textile, water-resistant (5L3) woven plastics (5H1/2/3) Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with sift-proof walls (4C2) other metal (4N1) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium~~, removable head~~ (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) plastics~~, removable head~~ (1H1, 1H2) steel~~, removable head~~ (1A1, 1A2) Jerricans plastics~~, removable head~~ (3H1, 3H2) steel~~, removable head~~ (3A1, 3A2)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0082, 0241, 0331 and 0332, inner packagings are not necessary if leakproof, removable head drums are used as the outer packaging.
— For UN 0082, 0241, 0331 and 0332, inner packagings are not required when the explosive is contained in a material impervious to liquid.
— For UN 0081, inner packagings are not required when contained in rigid plastic which is impervious to nitric esters.
— UN 0331, inner packagings are not required when bags (5H2), (5H3) or (5H4) are used as outer packagings.
— Bags (5H2 or 5H3) should be used only for UN 0082, 0241, 0331 and 0332.
— For UN 0081, bags must not be used as outer packagings.

132	PACKING INSTRUCTION 132	132
	(UN packing method EP 32)	

a) Articles consisting of closed metal, plastic or fibreboard casings that contain a detonating explosive, or consisting of plastic-bonded detonating explosives

Inner packagings	*Intermediate packagings*	*Outer packagings*
Not necessary	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with sift-proof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A)

b) Articles without closed casings

Inner packagings	*Intermediate packagings*	*Outer packagings*
Receptacles fibreboard metal plastics wood Sheets paper plastics	Not necessary	Boxes aluminium (4B) fibreboard (4G) natural wood, ordinary (4C1) natural wood, with sift-proof walls (4C2) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A)

144	PACKING INSTRUCTION 144	144
	(UN packing method EP 44)	

Inner packagings	*Intermediate packagings*	*Outer packagings*
Receptacles fibreboard metal wood plastics Dividing partitions in the outer packings	Not necessary	Boxes aluminium (4B) expanded plastics (4H1) natural wood, ordinary (4C1) with metal liner other metal (4N) plywood (4D) with metal liner reconstituted wood (4F) with metal liner steel (4A)

PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0248 and UN 0249, packagings must be protected against the ingress of water. When CONTRIVANCES, WATER ACTIVATED are transported unpackaged, they must be provided with at least two independent protective features which prevent the ingress of water.

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DGP-WG/11-WP/52:

Part S-7

STATE'S RESPONSIBILITIES

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Chapter 2

STORAGE AND LOADING

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2.3 Separation of explosive substances and articles

Note.—: The safety of explosive substances and articles would be enhanced by transporting each kind separately, but consideration of practicability and economics preclude such an ideal. In practice, a proper balance of the interest of safety against the other relevant factors necessitates a degree of mixing in the transport of explosive substances and articles of several kinds.

2.3.1 The extent to which explosives of Class 1 may be loaded together in transport is determined by the "compatibility" of the explosives. Explosives of Class 1 are considered to be compatible if they can be transported together without significantly increasing either the probability of an accident or, for a given quantity, the magnitude of the effects of such an accident.

2.3.2 Explosives in Compatibility Groups A to K and N may be transported in accordance with the following provisions:

a) Packages bearing the same Compatibility Group letter may be stowed together regardless of the division number;

b) Packages bearing different Compatibility Group letters must not in general be stowed together (regardless of the division number) except in the case of Compatibility Group letters C, D, E and S as explained in 2.3.3 and 2.3.4 below.

2.3.3 Explosives in Compatibility Groups C, D, E may be stowed together.

2.3.4 Explosives in Compatibility Group S may be stowed with explosives in all compatibility groups other than A and L.

2.3.5 Explosives in Compatibility Group L must not be transported with explosives in other compatibility groups. Furthermore, explosives in Compatibility Group L may only be transported with the same type of explosives within Compatibility Group L.

2.3.6 Table S-7-1 provides guidance for the separation of packages containing explosives with different compatibility groups. An "X" at the intersection of a row and column indicates that explosives of these compatibility groups must be separated. The method of separation (e.g. the minimum distance between incompatible explosives and/or separation of incompatible explosives with other cargo) must be approved by the competent authority, taking into account the danger of transmission of detonation between the different explosives.

Table S-7-1. Separation of explosive substances and articles

Compatibility group	A	B	C	D	E	F	G	H	J	K	L	N	S
A		X	X	X	X	X	X	X	X	X	X	X	X
B	X		X	X	X	X	X	X	X	X	X	X	
C	X	X				X	X	X	X	X	X	X	
D	X	X				X	X	X	X	X	X	X	
E	X	X				X	X	X	X	X	X	X	
F	X	X	X	X	X		X	X	X	X	X	X	
G	X	X	X	X	X	X		X	X	X	X	X	
H	X	X	X	X	X	X	X		X	X	X	X	
J	X	X	X	X	X	X	X	X		X	X	X	
K	X	X	X	X	X	X	X	X	X		X	X	
L	X	X	X	X	X	X	X	X	X	X	1)	X	X
N	X	X	X	X	X	X	X	X	X	X	X		
S	X										X		

1) see 2.3.5 above.

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ATTACHMENT A

PROPOSED AMENDMENTS TO TABLE S-3-1

Table S-3-1. Supplementary Dangerous Goods List - DRAFT

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	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
≠	**Nitroglycerin solution in alcohol** with more than 1% but not more than 10% nitroglycerin	0144	1.1D		Explosive		A225			FORBIDDEN (115)		FORBIDDEN (115)	
≠	**Air, compressed**	1002	2.2		Gas non-flammable		A202		E1	200	75 kg	200	150 kg3A223
≠	**Dimethyldichlorosilane**	1162	3	8	Liquid flammable & Corrosive			II	E0	377	1 L	377	5 L
≠	**Ethyltrichlorosilane**	1196	3	8	Liquid flammable & Corrosive			II	E0	377	1 L	377	5 L
≠	**Methyltrichlorosilane**	1250	3	8	Liquid flammable & Corrosive	AU 1 CA 7 IR 3 NL 1 US 3		II	E0	377	1 L	377	5 L
≠	**Trimethylchlorosilane**	1298	3	8	Liquid flammable & Corrosive			II	E0	377	1 L	377	5 L
≠	**Vinyltrichlorosilane**	1305	3	8	Liquid flammable & Corrosive	AU 1 CA 7 IR 3 NL 1 US 3		II	E0	377	1 L	377	5 L
≠	**Iodine monochloride, solid**	1792	8		Corrosive	AU 1 CA 7 IR 3 NL 1 US 3	A1	II	E0	815	(15 kg)	863	50 kg
≠	**Dimethyl disulphide**	2381	3	6.1	Liquid flammable & Toxic		A223	II	E0	353	5 L	364	60 L
≠	**Chlorosilanes, flammable, corrosive, n.o.s.**	2985	3	8	Liquid flammable & Corrosive			II	E0	377	1 L	377	5 L
≠	**Nitroglycerin solution in alcohol** with more than 1% but not more than 5% nitroglycerin	3064	3		Liquid flammable	BE 3	A188	II	E0	FORBIDDEN		371	5 L
≠	**Chlorosilanes, toxic, corrosive, n.o.s. ***	3361	6.1	8	Toxic & Corrosive			II	E0	681	1 L	681	30 L
≠	**Chlorosilanes, toxic, corrosive, flammable, n.o.s.***	3362	6.1	3 8	Toxic & Liquid flammable & Corrosive			II	E0	681	1 L	681	30 L

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	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
≠	**Toxic by inhalation liquid, n.o.s.*** with an LC_{50} lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 LC_{50}	3381	6.1		Toxic			I		FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, n.o.s.*** with an LC_{50} lower than or equal to 1 000 ml/m³ and saturated vapour concentration greater than or equal to 10 LC_{50}	3382	6.1		Toxic			I		FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, flammable, n.o.s.*** with an LC_{50} lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 LC_{50}	3383	6.1	3	Toxic & Liquid flammable			I		FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, flammable, n.o.s.*** with an LC_{50} lower than or equal to 1 000 ml/m³ and saturated vapour concentration greater than or equal to 10 LC_{50}	3384	6.1	3	Toxic & Liquid flammable			I		FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, water-reactive, n.o.s.*** with an LC_{50} lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 LC_{50}	3385	6.1	4.3	Toxic & Danger if wet			I		FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, water-reactive, n.o.s.*** with an LC_{50} lower than or equal to 1 000 ml/m³ and saturated vapour concentration greater than or equal to 10 LC_{50}	3386	6.1	4.3	Toxic & Danger if wet			I		FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, oxidizing, n.o.s.*** with an LC_{50} lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 LC_{50}	3387	6.1	5.1	Toxic & Oxidizer			I		FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, oxidizing, n.o.s.*** with an LC_{50} lower than or equal to 1 000 ml/m³ and saturated vapour concentration greater than or equal to 10 LC_{50}	3388	6.1	5.1	Toxic & Oxidizer			I		FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, corrosive, n.o.s.*** with an LC_{50} lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 LC_{50}	3389	6.1	8	Toxic & Corrosive			I		FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, corrosive, n.o.s.*** with an LC_{50} lower than or equal to 1 000 ml/m³ and saturated vapour concentration greater than or equal to 10 LC_{50}	3390	6.1	8	Toxic & Corrosive			I		FORBIDDEN		FORBIDDEN	

	Name	UN No.	Class or division	Subsidiary risk	Labels	State variations	Special provisions	UN packing group	Excepted quantity	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
≠	**Hydrogen in a metal hydride storage system**	3468	2.1		Gas flammable		A1 A143 A176		E0	FORBIDDEN		214	100 kg
≠	**Hydrogen in a metal hydride storage system contained in equipment**	3468	2.1		Gas flammable		A1 A143 A176		E0	FORBIDDEN		214	100 kg
≠	**Hydrogen in a metal hydride storage system packed with equipment**	3468	2.1		Gas flammable		A1 A143 A176		E0	FORBIDDEN		214	100 kg
≠	**Toxic by inhalation liquid, flammable, corrosive, n.o.s.*** with an LC_{50} lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 LC_{50}	3488	6.1	3 8	Toxic & Liquid flammable & Corrosive					FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, flammable, corrosive, n.o.s.*** with an LC_{50} lower than or equal to 1 000 ml/m³ and saturated vapour concentration greater than or equal to 10 LC_{50}	3489	6.1	3 8	Toxic & Liquid flammable & Corrosive					FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, water-reactive, flammable, n.o.s.*** with an LC_{50} lower than or equal to 200 ml/m³ and saturated vapour concentration greater than or equal to 500 LC_{50}	3490	6.1	3 4.3	Toxic & Liquid flammable & Danger if wet					FORBIDDEN		FORBIDDEN	
≠	**Toxic by inhalation liquid, water-reactive, flammable, n.o.s.*** with an LC_{50} lower than or equal to 1 000 ml/m³ and saturated vapour concentration greater than or equal to 10 LC_{50}	3491	6.1	3 4.3	Toxic & Liquid flammable & Danger if wet					FORBIDDEN		FORBIDDEN	
>	UN 3492												
>	UN 3493												

APPENDIX D

CONSOLIDATION OF AMENDMENTS TO THE EMERGENCY RESPONSE GUIDANCE AGREED AT WG/11

Section 1

GENERAL INFORMATION

DGP-WG/11-WP/30:

1.5 ACCESSIBILITY OF DANGEROUS GOODS

Dangerous goods bearing the “cargo aircraft only” label are required to be accessible in flight, except for:

~~1) flammable liquids (Class 3) of Packing Group III, without subsidiary risks;~~

1) substances of Class 3, Packing Group III, other than those with a subsidiary risk of Class 8;

2) toxic and infectious substances (Class 6);

3) radioactive materials (Class 7); and

4) miscellaneous dangerous goods (Class 9).

Other dangerous goods (those which do not bear “cargo aircraft only” labels) are not required to be accessible.

Part 7, Chapter 2 of the Technical Instructions sets out the full requirements on the accessibility of dangerous goods on cargo aircraft.

. . .

DGP-WG/11-WPs/20 and 32:

Table 4-1. Aircraft Emergency Response Drills

1. COMPLETE APPROPRIATE AIRCRAFT EMERGENCY PROCEDURES.
2. CONSIDER LANDING AS SOON AS PRACTICABLE.
3. USE DRILL FROM THE CHART BELOW.

DRILL NO.	INHERENT RISK	RISK TO AIRCRAFT	RISK TO OCCUPANTS	SPILL OR LEAK PROCEDURE	FIREFIGHTING PROCEDURE	ADDITIONAL CONSIDERATIONS
. . .						
6	Toxic*, may be fatal if inhaled, ingested, or absorbed by skin	Contamination with toxic* liquid or solid				

. . .						
9	No general inherent risk	As indicated by the drill letter	As indicated by the drill letter	Use 100% oxygen; establish and maintain maximum ventilation if "A" drill letter	All agents according to availability; [Use water if available on "Z" drill letter] no water on "W" drill letter	None If "Z" drill letter, consider landing immediately.

DRILL LETTER	ADDITIONAL RISK	DRILL LETTER	ADDITIONAL RISK
A	ANAESTHETIC	N	NOXIOUS
C	CORROSIVE	P	TOXIC* (POISON)
E	EXPLOSIVE	S	SPONTANEOUSLY COMBUSTIBLE OR PYROPHORIC
F	FLAMMABLE	W	IF WET GIVES OFF ~~POISONOUS~~ TOXIC* OR FLAMMABLE GAS
H	HIGHLY IGNITABLE	X	OXIDIZER
i	IRRITANT / TEAR PRODUCING	Y	DEPENDING ON THE TYPE OF INFECTIOUS SUBSTANCE, THE APPROPRIATE NATIONAL AUTHORITY MAY BE REQUIRED TO QUARANTINE INDIVIDUALS, ANIMALS, CARGO AND THE AIRCRAFT
L	OTHER RISK LOW OR NONE		
M	MAGNETIC	Z	AIRCRAFT CARGO FIRE SUPPRESSION SYSTEM MAY NOT EXTINGUISH OR CONTAIN THE FIRE. CONSIDER LANDING IMMEDIATELY.

* Toxic has the same meaning as poison.

Amend Tables 4-2 and 4-3 as indicated:

UN No.	*Drill Code*	*Proper shipping name*
3480	~~9F~~9FZ	Lithium ion batteries
3481	~~9F~~9FZ	Lithium ion batteries contained in equipment
3481	~~9F~~9FZ	Lithium ion batteries packed with equipment
3090	~~9F~~9FZ	Lithium metal batteries
3091	~~9F~~9FZ	Lithium metal batteries contained in equipment
3091	~~9F~~9FZ	Lithium metal batteries packed with equipment

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APPENDIX E

GUIDANCE MATERIAL FOR TRANSPORTING PERSONS SUBJECTED TO RADIOACTIVE MATERIAL INTAKE

Developed in coordination with the International Atomic Energy Agency (IAEA)

Transport of persons for medical treatment

For many years there has been an exemption in the dangerous goods regulations relating to the carriage of a person who contains radioactive material as a result of medical diagnosis or treatment. In 2009, it was noted that this exemption did not apply to cases where the radioactive material in the person was not as a result of medical diagnosis or treatment (e.g. accidental intake). This anomaly is rectified in the latest edition of the regulations. One significant difference is that, in these new scenarios, there is a low risk of some external contamination of the patients. This guidance is intended to be sufficiently generic to allow it to be used for initial urgent transport of a first responder from the incident scene (normally by road) and also for later urgent transport for specialist treatment (normally by air). It will be usual for a casualty to be decontaminated as soon as practicable, however this may be after removal to a safe location by road transport, or by dedicated air ambulance. Patients who are externally contaminated are very unlikely to travel by international commercial air transport.

The Technical Instructions are not presently intended to be applied to movements of a person for medical treatment in case the person has been subjected to the accidental intake of radioactive material or the external contamination from radioactive material. Some adjustment is therefore required.

The appropriate authorities of the States of Operator, Origin, Transit and Destination should be notified of the proposed transport of a person contaminated with radioactive material. Normally, a person being transported for urgent medical treatment will be accompanied by an appropriate medical professional. The responsible medical professional should give advice on radiological safety (if not, locally available appropriate expertise is likely to be available at the destination). Levels of radioactive material in a person who is being flown for medical treatment will be self-limiting to some degree, however the degree to which material internal to the patient can affect others is easy to measure. If the dose rate at 50 cm from the patient exceeds 25 microSv per hour then any adjacent seats should only be occupied by informed and willing carers and it would be sensible for the carer to carry a dosimeter badge. Where there is loose contamination, surgical gloves should be worn. If the dose rate at 50 cm from the patient exceeds 100 microSv per hour then expert advice on radiological protection should be sought and followed.

Radioactive material external to the body is more difficult to deal with. Generally, the principles applied to any medical treatment in terms of cleanliness apply equally to contaminated casualties. Skin decontamination of persons should be considered prior to their transport when the associated delay is estimated to have no health impact. The degree to which contamination is removable from the skin needs to be considered. The method of determining this is to wipe the skin and then measure the amount of radioactive material that is removed on the swab. The goal is to remove any easily removable contamination, or to cover areas where this is not possible such that any contamination cannot spread. Particularly difficult areas are open wounds. Guidance is provided in IAEA documents on contamination monitoring and skin decontamination, and is summarized in the following table.

Monitoring for and dealing with skin contamination
Perform a radiological survey.
Decontaminate the skin with soap using warm water. Do not scrub too vigorously.
Handle any unknown metal objects with a hemostat or forceps.
Save samples and label them (smears of contamination, nasal smear, extracted tooth, hair and nails, purged bone pieces, etc.).
If a wound is contaminated, survey, rinse, debride only for surgical reasons.
If contamination persists, consider covering the area (taking into account that contamination may be fixed to the skin or internal).
Perform a final radiological survey (by first responder monitor/radiological assessor).
Transfer the decontaminated patient to the clean area. Use clean gloves to move the patient to a clean stretcher and exit the contaminated area.
Control the spread of contamination.
Survey staff for possible contamination; remove contaminated clothing and shower before exiting contaminated area.
Survey medical equipment for contamination and decontaminate as required before removing it from the contaminated area.

Criteria for determining if decontamination is warranted

There are two sets of limits established in dangerous goods regulations relating specifically to contamination.

Contamination level below which the object should not be considered as radioactive:

- < 0.4 Bq/cm^2 beta/gamma emitters
- < 0.04 Bq/cm^2 for alpha emitters

Cleanliness limit for packages for transport:

- < 4.0 Bq/cm^2 beta/gamma emitters
- < 0.4 Bq/cm^2 for alpha emitters
- < 5 micro Sv/h at the surface

Contamination limits are specified as being the average over 300 cm^2 and should be measured by an appropriately trained person. The cleanliness limits are set considering both worker and public exposure. Even taking into account the most restrictive conditions, these limits are very unlikely to result in

exposures close to dose limits to any member of the public. These levels will apply to the conveyance following transport of a patient.

First responders

IAEA advice to first responders, who may need to be transported away from the radiation source, gives the following limits:

- 1 micro Sv/h at 10 cm
- 10 000 Bq/cm^2 beta/gamma emitters
- 1 000 Bq/cm^2 for alpha emitters

Only one ambient dose rate criterion of 1 micro Sv/h is provided for assessing the first responder. This criterion can only be used to assess skin/clothing contamination from strong gamma emitters. The ambient dose rate criteria were established at levels for strong gamma emitters that can be easily detected under emergency conditions but still correspond to contamination levels more than 100 times below those at which deterministic health effects would be expected.

Criteria in terms of concentrations (Bq/cm^2) are provided for use by the radiological assessor for assessment of all types of radioactive materials. The criteria were established at levels which are below those at which contaminated people would experience deterministic health effects warranting medical treatment or follow-up. These limits demonstrate how restrictive the limits for packages are (over 1 000 times lower).

The following were considered in developing the first responder criteria:

- all the important isotopes;
- all members of the public, including children and pregnant women;
- inadvertent ingestion of contamination from the skin;
- external dose from skin contamination;
- skin contamination as an indicator of inhalation dose; and
- personal protective equipment (PPE) for carers not being used.

Generally conservative assumptions were used in the calculations (e.g. it is assumed that the skin contamination is undiminished for four days). For inhalation it was assumed that the skin contamination may have resulted from an airborne cloud and thus is an indicator of inhalation dose.

Conditions for carriage of patients

Overall, a prudent approach is to use the more limiting criteria resulting in the following three cases based on the dose rate at 0.5 m (the approximate distance between two seated individuals). The following scenarios take into account a long-haul flight and a dose constraint of 0.3 mSv (i.e. no member of the public should get more than one-third of the public dose limit from this activity, and no special precautions should be required other than those listed below). This low constraint ensures safety of all concerned.

CASE 1

Dose rate at 0.5 m >100 microSv per hour – seek advice from radiological protection expert on separation from other people.

Beta/gamma contamination >4.0 Bq/cm^2, or Alpha emitters >0.4 Bq/cm^2 – decontaminate or cover the affected area (to reduce any alpha emission, but more importantly prevent the spread of radioactive material).

CASE 2

Dose rate at 0.5 m >25 microSv per hour – adjacent seats should only be occupied by informed and willing carers.

Beta/gamma contamination >4.0 Bq/cm^2, or Alpha emitters >0.4 Bq/cm^2 – decontaminate or cover the affected area.

CASE 3

Dose rate at 0.5 m <25 microSv per hour – no restriction on use of adjacent seats.

Where possible use 1 micro Sv/h at 10 cm, or 5 micro Sv/h at contact (ability to use these values will depend on dose from the patient at 0.5 m).

Beta/gamma contamination >4.0 Bq/cm^2, or Alpha emitters >0.4 Bq/cm^2 – decontaminate or cover the affected area. If monitoring for contamination is impracticable (e.g. at an ongoing major incident), then consider taking simple precautions such as use of disposable covers, and clean (using routine cleaning methods) the conveyance before next use.

Spread of contamination to the conveyance in significant levels is very unlikely and can be further limited by following this guidance. Generally, it will be accurate to say that the risk to other passengers and workers, even in the most extreme circumstances, will be low compared to the risk to the casualty if they are not treated. Simple precautions such as the patient changing into clean clothes shortly before boarding or placing a sheet (e.g. a typical bed sheet) over the patient's seat can produce even greater protection with little cost.

— END —