International Civil Aviation Organization

DGP/25-WP/19
16/8/15

WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTY-FIFTH MEETING

Montréal, 19 to 30 October 2015

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 2017-2018 Edition

DRAFT AMENDMENTS TO THE SUPPLEMENTS TO THE TECHNICAL INSTRUCTIONS TO ALIGN WITH THE UN RECOMMENDATIONS

(Presented by the Secretary)

SUMMARY

This working paper contains draft amendments to the Supplement to the Technical Instructions to reflect the decisions taken by the UN Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals at its seventh session (Geneva, 12 December 2014). It also reflects amendments agreed by DGP-WG15 (Montréal, 27 April to 1 May 2015).

The DGP is invited to agree to the draft amendments in this working paper.

Part S-3

DANGEROUS GOODS LIST, SPECIAL PROVISIONS AND QUANTITY LIMITATIONS

(ADDITIONAL INFORMATION FOR PART 3 OF THE TECHNICAL INSTRUCTIONS)

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Name	*UN No.*	*Class or division*	*Subsidiary risk*	*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*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
UN Model Regulations, SP 379, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.3.1.2)											
Ammonia, anhydrous	1005	2.3	8	AU 1 CA 7 IR 3 NL 1 US 3	A2 A329			See	210	See	210
Adsorbed gas, toxic, corrosive, n.o.s.*	3516	2.3	8	AU 1 CA 7 IR 3 NL 1 US 3	A2 A329			See	210	See	210

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Chapter 6

SPECIAL PROVISIONS

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Table S-3-4. Special Provisions

Supplementary special provisions

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DGP/25-WP/3 (see paragraph 3.2.3.1)

A302 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 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.

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A324 For the purpose of transporting a symbolic flame, the appropriate authority of the States of Origin~~, of destination~~ and of the Operator may approve the carriage of lamps fuelled by UN 1223 — **Kerosene**, or UN 3295 — **Hydrocarbons, liquid, n.o.s.**, carried by a passenger as carry-on baggage only. Lamps must be of a “Davy” type or similar apparatus. In addition, the following conditions apply as a minimum:

a) no more than four lamps may be carried on board the aircraft;

b) lamps may contain no more fuel than the quantity adequate for the duration of the flight and the fuel must be contained in a leakproof reservoir;

c) lamps must be adequately secured;

d) while on board the aircraft, the lamps must be under the constant supervision of an accompanying person, who must not be a member of the operating crew;

e) lamps may be lit by the accompanying person, but must not be refilled on board the aircraft;

f) at least one fire extinguisher must be kept within reach of the accompanying person at all times. The accompanying person must be trained in the use of the extinguisher;

g) the crew members of the aircraft must be given a verbal briefing about the carriage of the lamps and the pilot-in-command must be provided with a copy of the approval; and

h) Part 7;4.1.1.1 b), c), e), 4.3, 4.4 and 4.8 of the Technical Instructions must apply.

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UN Model Regulations, SP 370, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.3.1.2)

A326 (370) This entry applies to:

— ammonium nitrate with more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any added substance; and

— ammonium nitrate with not more than 0.2% combustible substances, including any organic substance calculated as carbon, to the exclusion of any added substance, that ~~are not too sensitive for acceptance into Class 1~~ gives a positive result when tested in accordance with Test Series 2 (see UN *Manual of Tests and Criteria*, Part I). See also UN 1942.

The substances that this special provision is assigned to (UN 1005 — **Ammonia, anhydrous** and UN 3516 — **Adsorbed gas, toxic, corrosive, n.o.s.**) are forbidden from transport by air on passenger and cargo aircraft. They may be transported on cargo aircraft with prior approval (A2). Should:

a) the substances be permitted under the conditions of this special provision (in which case the special provision would appear in the Technical Instructions) (if yes, on passenger and cargo aircraft or on cargo aircraft only?); or

b) the substances remain forbidden/forbidden, but States may consider providing the exception in this special provision under an approval to transport on cargo aircraft; or

c) the special provision not be provided for air transport?

A329 (379) Anhydrous ammonia adsorbed or absorbed on a solid contained in ammonia dispensing systems or cylinders intended to form part of such systems are not subject to the other provisions of the Technical Instructions if the following conditions are observed:

a) the adsorption or absorption presents the following properties:

1) the pressure at a temperature of 20°C in the cylinder is less than 0.6 bar;

2) the pressure at a temperature of 35°C in the cylinder is less than 1 bar;

3) the pressure at a temperature of 85°C in the cylinder is less than 12 bar.

b) the adsorbent or absorbent material must not have dangerous properties listed in Classes 1 to 8;

c) the maximum contents of a cylinder must be 10 kg of ammonia; and

d) cylinders containing adsorbed or absorbed ammonia must meet the following conditions:

1) cylinders must be made of a material compatible with ammonia as specified in ISO 11114-1:2012;

2) cylinders and their means of closure must be hermetically sealed and able to contain the generated ammonia;

3) each cylinder must be able to withstand the pressure generated at 85°C with a volumetric expansion no greater than 0.1%;

iv) each cylinder must be fitted with a device that allows for gas evacuation once pressure exceeds 15 bar without violent rupture, explosion or projection; and

v) each cylinder must be able to withstand a pressure of 20 bar without leakage when the pressure relief device is deactivated.

UN Model Regulations, Chapter 3.3, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.1.1) and ST/SG/AC.10/42/Add.1/Corr.1

UN text: “when transported” changed to “when offered for transport” in line with what was done for A202 of the Technical Instructions (DGP/25-WP/13) (see DGP/25-WP/3, paragraph 3.2.3.2.1 j))

When offered for transport in an ammonia dispenser, the cylinders must be connected to the dispenser in such a way that the assembly is guaranteed to have the same strength as a single-cylinder.

The properties of mechanical strength mentioned in this special provision must be tested using a prototype of a cylinder and/or dispenser filled to nominal capacity, by increasing the temperature until the specified pressures are reached.

The test results must be documented, must be traceable and must be communicated to the relevant authorities upon request.

A329 (386) Substances which are stabilized by temperature control are forbidden for transport by air unless exempted (see 1;1.1.2). When chemical stabilization is employed, the person offering the packaging for transport must ensure that the level of stabilization is sufficient to prevent the substance in the packaging from dangerous polymerization at a bulk mean temperature of 50°C. Where chemical stabilization becomes ineffective at lower temperatures within the anticipated duration of transport, temperature control is required and the substances are forbidden for transport by air unless exempted (see 1;1.1.2). In making this determination, factors to be taken into consideration include, but are not limited to, the capacity and geometry of the packaging and the effect of any insulation present, the temperature of the substance when offered for transport, the duration of the journey and the ambient temperature conditions typically encountered in the journey (considering also the season of year), the effectiveness and other properties of the stabilizer employed, applicable operational controls imposed by regulation (e.g. requirements to protect from sources of heat, including other cargo carried at a temperature above ambient) and any other relevant factors.

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Part S-4

PACKING INSTRUCTIONS

(ADDITIONAL INFORMATION FOR PART 4 OF THE TECHNICAL INSTRUCTIONS)

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Chapter 3

CLASS 1 — EXPLOSIVES

UN Model Regulations, P112(c), PP48, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.3.1.2)

The text of UN PP48 does not currently appear in Packing Instruction 112 c) of the Technical Instructions. ST/SG/AC.10/42/Add.1 adds a second sentence to PP48. The provision, including the new second sentence, is proposed for addition to the Technical Instructions for the sake of alignment with the UN Model Regulations.

112	PACKING INSTRUCTION 112	112
. . .		
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) other metal (4N) plywood (4D) reconstituted wood (4F) solid plastics (4H2) steel (4A) Drums aluminium (1B1, 1B2) fibre (1G) other metal (1N1, 1N2) steel (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 0504, metal packagings must not be used. Packagings of other material with a small amount of metal, for example metal closures or other metal fittings such as those mentioned in 6;3, are not considered metal packagings.
— Inner packagings are not required if drums are used as the outer packaging.
— These packages must be sift-proof.

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Chapter 11

CLASS 9 — MISCELLANEOUS DANGEROUS GOODS

UN Model Regulations, packing instruction P910, ST/SG/AC.10/42/Add.1 and DGP/25-WP/3 (see paragraph 3.2.3.2.1 f))

Packing Instruction 910

Cargo aircraft only

Introduction

This instruction applies to UN Nos. 3090, 3091, 3480 and 3481 production runs consisting of not more than 100 cells and batteries and to pre-production prototypes of cells and batteries when these prototypes are transported for testing.

General requirements

Part 4, Chapter 1 requirements must be met.

ADDITIONAL PACKING REQUIREMENTS

Special Provision A88 currently requires packaging to meet Packing Group I criteria:

[— Packagings must meet the Packing Group II performance requirements.]
— Cells and batteries must be protected against short circuit. Protection against short circuits includes, but is not limited to,
  — individual protection of the battery terminals;
  — inner packaging to prevent contact between cells and batteries;
  — batteries with recessed terminals designed to protect against short circuits, or
  — the use of a non-conductive and non-combustible cushioning material to fill empty space between the cells or batteries in the packaging.

Cells and batteries, including when packed with equipment

1) Batteries and cells, including equipment, of different sizes, shapes or masses must be packaged in an outer packaging of a tested design listed below type provided the total gross mass of the package does not exceed the gross mass for which the design type has been tested;
2) Each cell or battery must be individually packed in an inner packaging and placed inside an outer packaging;
3) Each inner packaging must be completely surrounded by sufficient non-combustible and non-conductive thermal insulation material to protect against a dangerous evolution of heat;
4) Appropriate measures must be taken to minimize the effects of vibration and shocks and prevent movement of the cells or batteries within the package that may lead to damage and a dangerous condition during transport. Cushioning material that is non-combustible and non-conductive may be used to meet this requirement;
5) Non-combustibility must be assessed according to a standard recognized in the State where the packaging is designed or manufactured;
6) A cell or battery with a net mass of more than 30 kg must be limited to one cell or battery per outer packaging.

Cells and batteries contained in equipment

1) Equipment of different sizes, shapes or masses must be packaged in an outer packaging of a tested design type listed below provided the total gross mass of the package does not exceed the gross mass for which the design type has been tested;
2) The equipment must be constructed or packaged in such a manner as to prevent accidental operation during transport;
3) Appropriate measures must be taken to minimize the effects of vibration and shocks and prevent movement of the equipment within the package that may lead to damage and a dangerous condition during transport. When cushioning material is used to meet this requirement it must be non-combustible and non-conductive; and
4) Non-combustibility must be assessed according to a standard recognized in the State where the packaging is designed or manufactured.

Special Provision A88 does provide for unpackaged equipment or batteries:

5) The equipment or the batteries may be transported unpackaged under conditions specified by the appropriate national authority. Additional conditions that may be considered in the approval process include, but are not limited to:

   a) The equipment or the battery must be strong enough to withstand the shocks and loadings normally encountered during transport, including trans-shipment between cargo transport units and between cargo transport units and warehouses as well as any removal from a pallet for subsequent manual or mechanical handling; and
   b) The equipment or the battery must be fixed in cradles or crates or other handling devices in such a way that it will not become loose during normal conditions of transport.

Special Provision A88 currently allows for a metal, plastic or plywood drum or a metal, plastic or wooden box:

OUTER PACKAGINGS

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

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DGP/25-WP/3 (see paragraph 3.2.1.3 of this report)

Part S-7

STATE'S RESPONSIBILITIES WITH RESPECT TO OPERATORS

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Chapter 5

INSPECTIONS

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5.6 TRAINING PROGRAMMES

5.6.1 The Technical Instructions require that the operator's training programmes for all staff be approved by the State of the Operator. The inspection is to confirm that training meets the requirements of the Technical Instructions.

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