International Civil Aviation Organization

DGP/25-WP/34
3/9/15
English only

WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTY-FIFTH MEETING

Montréal, 19 to 30 October 2015

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 2017-2018 Edition

REQUIREMENTS FOR STERILIZATION DEVICES CONTAINING NITROGEN DIOXIDE (UN 1067), NITRIC OXIDE, COMPRESSED (UN 1660) AND NITRIC ACID (UN 2031)

(Presented by the Dangerous Goods Advisory Council (DGAC))

SUMMARY

Action by the DGP: The DGP is invited to consider adopting a 2 new special provision authorizing the transport on passenger and cargo aircraft, small quantities of **Nitrogen dioxide** (UN 1067), **Nitric oxide, compressed** (1660) or Nitric acid (UN 2031) when contained in sterilization devices. This paper is a based on WP/21 which was presented at WG/15 and incorporates the comments made by Panel members at that meeting.

This type of medical service equipment eliminates the need for electric supply in remote area health care applications and is considered a considerable technical advance with significant public health implications. The Technical Instructions have included provisions for sterilization devices containing substances normally forbidden on aircraft for a number of years with no reported difficulties. It is proposed to provide a similar solution for sterilization units containing the gases Nitrogen dioxide and Nitric oxide and liquid Nitric acid at concentrations less than 65%. The maximum quantity per inner package would be 30 mL with a maximum outer packaging quantity of 1 L.

Two separate special provisions are proposed, one for gases, the other for liquids.

1. INTRODUCTION

1.1 At WG/14, DGAC presented an information paper (IP/4) which described a new technology which has been developed which simplifies the process of field sterilization of medical equipment. A chemical process replaces the need for electric power supplies which are sometimes difficult to provide in the conditions often encountered where these devices are deployed. Section 1 of WG/14-IP/4 describes the intended use in detail.

1.2 At WG/15, a formal working paper WP/21 was submitted and the feedback of Panel members was requested with a view to re-submitting the proposal at DGP/25. Several Panel members provided substantive feedback on the proposal and these concerns have been incorporated in this working paper. A request to introduce two separate papers has not been adoped since it is believed the work of the panel would be facilitated by consolidating the background subject matter while addressing the specific proposals separately. In consequence, Proposal 1 addresses the gases, **Nitrogen dioxide** (UN 1067) and **Nitric oxide, compressed** (UN 1660); Proposal 2 addresses Nitric acid, less than 65%; Proposal 3 addresses any consequential amendments which the Panel might like to consider.

1.3 Historically, small inner receptacles (30 mL) of substances normally forbidden on aircraft used for sterilization devices have been permitted on passenger and cargo aircraft for a number years without incident. It is proposed that a similar mechanism be provided for the transport of other substances employed in sterilization devices. The special provisions provide a high level of package integrity while limiting the quantities to those used for excepted quantities of dangerous goods.

1.4 Appendix B of WG/14-IP/4 illustrates the type of equipment which employs these cartridges.

1.5 Current field distribution of these sterilization devices ranges from a single box of up to 32 units to ten to twelve. Field use includes normal day-to-day medical care in remote areas to major incident response.

2. ACTION BY THE DGP

2.1 The DGP is invited to consider adopting a 2 new special provision authorizing the transport on passenger and cargo aircraft, small quantities of Nitrogen dioxide (UN 1067), Nitric oxide (1660) or Nitric acid (UN 2031) when contained in sterilization devices. This paper is a based on WP/21 which was presented at WG/15 and incorporates the comments made by Panel members at that meeting.

This type of medical service equipment eliminates the need for electric supply in remote area health care applications and is considered a considerable technical advance with significant public health implications. The Technical Instructions have included provisions for sterilization devices containing substances normally forbidden on aircraft for a number of years with no reported difficulties. It is proposed to provide a similar solution for sterilization units containing the gases Nitrogen dioxide and Nitric oxide and liquid Nitric acid at concentrations less than 65%. The maximum quantity per inner package would be 30 mL with a maximum outer packaging quantity of 1 L.

Two separate special provisions are proposed, one for gases, the other for liquids.

— — — — — — — —

APPENDIX

PROPOSED AMENTDMNET TO PART 3 OF THE TECHINICAL INSTRUCTIONS

PROPOSAL 1

1.1 Add a new Special Provision "AXXX" to the entries **Gas cartridges** (toxic) without a release device, non-refillable, or **Receptacles, small, containing gas** (toxic) without a release device, non-refillable (UN2037) as follows:

Part 3

DANGEROUS GOODS LIST, SPECIAL PROVISIONS AND LIMITED AND EXCEPTED QUANTITIES

Chapter 2

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

. . .

Table 3-1. Dangerous Goods List

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*
Gas cartridges (toxic) without a release device, non-refillable	2037	2.3			AU 1 CA 7 IR 3 NL 1 US 3	A2 AXXX			FORBIDDEN		FORBIDDEN	
. . .												
Receptacles, small, containing gas (toxic) without a release device, non-refillable	2037	2.3			AU 1 CA 7 IR 3 NL 1 US 3	A2 AXXX			FORBIDDEN		FORBIDDEN	
. . .												

. . .

Chapter 3

SPECIAL PROVISIONS

. . .

Table 3-2. Special provisions

TIs	*UN*	
AXXX		Sterilization devices when containing less than 50 mL per inner gas cartridge and not more than 1 L per outer packaging of UN 1067 — **Nitrogen dioxide** or UN 1660 — **Nitric oxide, compressed** may be transported on passenger and cargo aircraft provided that the following conditions are met: a) each inner metal gas cartridge must be designed with a safety factor of at least four times the working pressure of the receptacle; b) each gas cartridge must be packaged with an absorbent material capable of absorbing any leaked material in a sealed compatible intermediate packaging capable of containing any released gas; c) inner packagings must be placed in a rigid outer packaging that meets the Packing Group I performance level; and d) transport on passenger aircraft is only permitted for disaster response operations in limited circumstances when cargo aircraft flights are not available. The statement "Sterilization devices for medical response in accordance with Special Provision AXXX" must be: a) included on the dangerous goods transport document;and b) marked on the package.

PROPOSAL 2

1.2 Add a new Special Provision "AYYY" to the entries **Gas cartridges** (toxic) without a release device, non-refillable, or **Receptacles, small, containing gas** (toxic) without a release device, non-refillable (UN2037) as follows:

Table 3-2. Special provisions

TIs	*UN*	
AYYY		Sterilization devices when containing less than 50 mL in glass or metal inner packagings with not more than 1 L per outer packaging of UN 2031 — **Nitric acid**, other than red fuming, with more than 20% and less than 65% nitric acid, Packing Group II may be transported on passenger and cargo aircraft provided the following conditions are met: a) each inner packaging must be packaged with an absorbent material capable of absorbing any leaked material in a sealed compatible intermediate packaging capable of containing any released liquid; and b) inner packagings must be placed in a rigid outer packaging that meets the Packing Group I performance level. The statement "Sterilization devices for medical response in accordance with Special Provision AYYY" must be: a) included on the dangerous goods transport document; and b) marked on the package.

TIs UN

Chapter 2

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

. . .

Table 3-1. Dangerous Goods List

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*
Nitric acid, other than red fuming, with more than 20% and less than 65% nitric acid	2031	8		Corrosive	AU 1 CA 7 IR 3 NL 1 US 3	AYYY	II		FORBIDDEN		855	30 L
. . .												

. . .

Proposal 3 – Consequential Amendments

1.3 Add a light type entry to Table 2-14, “Nitrogen dioxide and nitric oxide contained in gas cartridges for use in sterilization devices, see **Gas cartridges** (toxic, oxidizing and corrosive) without a release device, non-refillable, or **Receptacles, small, containing gas** (toxic, oxidizing and corrosive) without a release device, non-refillable.

1.4 Amend Part 5;4.1.5.8 as follows:

Part 5

SHIPPER’S RESPONSIBILITIES

. . .

Chapter 4

DOCUMENTATION

. . .

4.1.5 Information required in addition to the dangerous goods description

. . .

4.1.5.8 *Additional requirements*

4.1.5.8.1 The dangerous goods transport document must also contain:

a) except for radioactive material, the packing instruction applied. For shipments of lithium batteries prepared in accordance with Section IB of Packing Instruction 965 or Packing Instruction 968, the letters “IB” must be added following the packing instruction number;

b) when applicable, reference to Special Provision A1, A2, A4 or A5, AXXX and/or AYYY as applicable;

. . .

— END —