International Civil Aviation Organization

DGP/22-WP/69
17/8/09

WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTY-SECOND MEETING

Montréal, 5 to 16 October 2009

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 2011-2012 Edition

SELF-REACTIVE SUBSTANCES AND ORGANIC PEROXIDES "KEEP AWAY FROM HEAT" REQUIREMENTS

(Presented by D. Brennan)

SUMMARY

This paper proposes removal of the additional documentation, labelling storage, handling and loading requirements applicable to self-reactive substances and organic peroxides.

Action by the DGP: The DGP is invited to:

a) revise the wording of Special Provision A20 as shown in the appendix;
b) remove Special Provision A20 from all permitted entries of self-reactive substances in Division 4.1 (UN Nos: 3223, 3224, 3225, 3226, 3227, 3228, 3229 and 3230) and all permitted entries of organic peroxides (UN Nos: 3103, 3104, 3105, 3106, 3107, 3108, 3109 & 3110). Special Provision A20, as revised would remain assigned to UN 3241, **2-Bromo-2-nitropropane-1,3-diol**. This aligns with the assignment of SP 246 in the UN Model Regulations, which only applies to UN 3241;
c) revise the provisions of Part 5;3.2.11 as shown in the appendix to remove the requirement for the application of the "Keep away from heat" label, and to delete the "Keep away from heat" label (Figure 5-29);
d) revise the provisions of Part 5;4 as shown in the appendix to delete paragraph 4.1.5.8.3 that currently requires that a statement must be added to the dangerous goods transport document with an indication that self-reactive substances or organic peroxides being offered for transport must be protected from sunlight and sources of heat; and
e) revise the provisions of Part 7;2.13 as shown in the appendix to remove the mandatory requirement for operators to ensure that packages or ULDs containing self-reactive substances or organic peroxides be protected from sunlight and sources of heat during the course of transport.

1. INTRODUCTION

1.1 At the DGP Working Group of the Whole Meeting in Auckland (DGP-WG09, 4 to 8 May 2009), a paper was presented proposing the revision of the additional provisions applicable to self-reactive substances of Division 4.1 and for organic peroxides (DGP/22-WP/3, paragraph 3.2.32 refers).

1.2 While there was some support for the paper and the proposals, some members indicated that they would need to seek technical information and advice before being able to take a decision.

1.3 Following DGP-WG09 contact was made with a number of panel members to seek comment and feedback on any technical issues that could impact on the proposed revisions associated with self-reactive substances of Division 4.1 and organic peroxides. As a result of this, contact was made by a representative from a large manufacturer of organic peroxides to discuss in more detail the proposed amendments to the Technical Instructions. The representative from the manufacturer also made reference to a study that was conducted on the uncooled sea transport of liquid organic peroxides, copy provided for panel members.

1.4 While the study assessed the thermal safety of non-temperature controlled organic peroxides in sea transport, it is believed that there are a number of parallels that can be drawn for the handling and transport of self-reactive substances and organic peroxides in air transport.

1.5 The objective of the study was to identify if packaged substances packed into shipping containers will reach or exceed 55°C when exposed to extended periods of high temperatures and sunny weather. The UN criterion being that non-temperature controlled transport is only permitted provided that products have a self-accelerating decomposition temperature (SADT) equal to or greater than 55°C.

1.6 The conclusion of the study into sea transport was that such substances can be safely transported in uncooled shipping containers even though the containers are exposed to extended periods of high temperatures.

1.7 For international air transport, the majority of packages will be transported packed into aircraft containers or loaded onto aircraft pallets (ULD). The build-up and loading of ULD will be carried out within the airline, or ground handling agent, cargo terminal. While inside the cargo terminal the packages and ULD are protected from direct sunlight and will be exposed to ambient air temperatures.

1.8 After being built-up, the ULD will be transported to the ramp prior to being loaded into the cargo compartment. Here the ULD may be exposed to the sun for a period of time, but this is unlikely to be for more than 2 hours. Once loaded into the aircraft, the ULD and contents will be protected from the heat, although there is minimal air flow through the cargo compartment.

1.9 Once the flight has commenced the air temperature inside the cargo compartment will be as provided by the aircraft pressurisation and air conditioning system, but will generally be no more than approximately 21°C when the aircraft has cargo heat installed and activated. In the absence of cargo compartment heating the temperature is more likely to gradually reduce over the duration of the flight and may reach 10°C or even lower on long flight-time sectors. After completion of the flight the ULD will be exposed to similar conditions as encountered during ULD build-up and loading.

1.10 All of this indicates that packages containing self-reactive substances and organic peroxides in air transport will not be exposed to extended periods of high temperatures and sunlight as those in sea transport. Based on this it is believed that the current mandatory requirements, which for the most part apply only to air transport, are unnecessary and can be removed.

— — — — — — — —

APPENDIX

AMENDMENTS TO THE TECHNICAL INSTRUCTIONS

. . .

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 good list

Remove A20 from column 7 for UN Nos: 3223, 3224, 3225, 3226, 3227, 3228, 3229, 3230 3103, 3104, 3105, 3106, 3107, 3108, 3109 and 3110.

. . .

Chapter 3

SPECIAL PROVISIONS

. . .

Table 3-2 lists the special provisions referred to in column 7 of Table 3-1 and the information contained in them is additional to that shown for the relevant entry. Where the wording of the special provision is equivalent to that in the UN Model Regulations, the UN special provision number is shown in parentheses.

Table 3-2. Special provisions

TIs	*UN*	
A20		During the course of transport this substance ~~must~~ should be protected from direct sunlight and all sources of heat and be placed in an adequately ventilated area. ~~A statement to this effect must be included in the Dangerous Goods Transport Document.~~

. . .

Part 5

SHIPPER'S RESPONSIBILITIES

. . .

Chapter 3

LABELLING

. . .

3.2 APPLICATION OF LABELS

3.2.11 In addition to the class hazard labels specified in 3.1, handling labels must also be affixed to packages of dangerous goods as follows:

. . .

~~d) for packages containing self-reactive substances of Division 4.1 or Division 5.2 organic peroxides, the "Keep away from heat" label (Figure 5-29) must be affixed on all packages. This label should be affixed on the same surface of the package near the hazard label(s);~~

≠ ~~e~~d) for excepted packages of radioactive material the "Radioactive material, excepted package" handling label (Figure 5-~~30~~29) must be affixed.

. . .

3.5.2 Handling labels

. . .

3.5.2.2 Lithium battery handling label

Packages containing lithium batteries packed according to Packing Instructions 965 to 970 that are not subject to other additional requirements of these Instructions must bear a "Lithium battery" handling label (Figure ~~5-31~~ 5-30). The label must show "Lithium metal batteries" or "Lithium ion batteries", as applicable. Where the package contains both types of batteries, the label must show "Lithium metal and lithium ion batteries".

Delete Figure 5-29 and renumber subsequent figures accordingly.

. . .

Chapter 4

DOCUMENTATION

. . .

4.1 DANGEROUS GOODS TRANSPORT INFORMATION

. . .

4.1.5 Information required in addition to the dangerous goods description

. . .

~~4.1.5.8.3 When self reactive substances of Division 4.1, or organic peroxides of Division 5.2 or other substances having similar properties, are offered for transport, the shipper must indicate on the dangerous goods transport document that the packages containing such substances must be protected from direct sunlight and all sources of heat and be placed in adequately ventilated areas.~~

. . .

Part 7

OPERATOR'S RESPONSIBILITIES

. . .

Chapter 2

STORAGE AND LOADING

. . .

2.13 HANDLING OF SELF-REACTIVE SUBSTANCES AND ORGANIC PEROXIDES

During the course of transport, packages or unit load devices containing self-reactive substances of Division 4.1 or organic peroxides of Division 5.2 ~~must~~ should be shaded from direct sunlight, stored away from all sources of heat in a well-ventilated area.

— END —