International Civil Aviation Organization

DGP/28-WP/31
20/7/21

WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTY-EIGHTH MEETING

Virtual, 15 to 19 November 2021

Agenda Item 2: Managing air-specific safety risks and identifying anomalies
2.2: Develop proposals, if necessary, for amendments to the *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) for incorporation in the 2023-2024 Edition

REQUIREMENTS FOR DRY ICE LOADING

(Presented by P. Guo)

SUMMARY

This working paper proposes the need to improve the requirements for the loading of dry ice.

Action by the DGP: The DGP is invited to consider revisions to the loading of dry ice provisions as shown in the appendix to this working paper.

1. INTRODUCTION

1.1 Along with the development of COVID-19 pharmaceuticals, the need to transport COVID-19 vaccines by air is growing fast. It is estimated that COVID-19 vaccines will fill more than 8000 747 freighters.

1.2 Various temperatures are required by different COVID-19 vaccines. Some COVID-19 vaccines should be transported at -70° Celsius degrees, which needs a large amount of dry ice (carbon dioxide, solid) as refrigerant in the aircraft.

1.3 The packaging must permit the release of carbon dioxide gas to prevent a build-up pressure that could rupture the packaging, but a large amount of carbon dioxide gas may cause suffocation of crew members and passengers.

1.4 The sublimation rate of dry ice is critical to calculate the loading capacity of dry ice.

2. ACTION BY THE DGP

2.1 The DGP is invited to consider revisions to the loading of dry ice provisions as shown in the appendix to this working paper.

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APPENDIX

AMENDMENT TO PART 7 OF THE TECHNICAL INSTRUCTIONS

Part 7

OPERATOR'S RESPONSIBILITIES

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2.11 LOADING OF DRY ICE

2.11.1 Dry ice (carbon dioxide, solid), when shipped by itself or when used as a refrigerant for other commodities, may be carried provided the operator has made suitable arrangements dependent on the sublimation rate of dry ice the aircraft type, the aircraft ventilation rates, the method of packing and stowing, whether animals will be carried on the same flight, and other factors. The operator must ensure that ground staff are informed that the dry ice is being loaded or is on board the aircraft.

2.11.2 Where dry ice is contained in a unit load device prepared by a single shipper in accordance with Packing Instruction 954 and the operator, after acceptance, adds additional dry ice, then the operator must ensure that the information provided to the pilot-in-command reflects that revised quantity of dry ice.

2.11.3 The operator must equip the cockpit and cabin with CO_2 gas concentration detection equipment, and formulate the emergency response procedures when the concentration exceeds the standard.

2.11.4 The operator must evaluate the gravity centre of the aircraft before take-off and before landing based on the dry ice sublimation rate and flight time.

Note.— For arrangements between the shipper and operator see Packing Instruction 954.

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