



WORKING PAPER

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

Atlantic City, United States, 4 to 8 April 2011

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

2.4: Part 4 — Packing Instructions

REQUIREMENTS FOR HYDROGEN PEROXIDE

(Presented by the Dangerous Goods Advisory Council)

SUMMARY

This paper proposes to permit limited venting of packagings containing hydrogen peroxide.

Action by the DGP-WG is in paragraph 2.

1. INTRODUCTION

1.1 Part 4;1.1.2 of the Technical Instructions prohibits the venting of gases from packages to reduce internal pressure unless otherwise provided. Provisions for dry ice and dewars utilizing liquid nitrogen as a coolant are two instances where venting is permitted. In the case of hydrogen peroxide, the UN Model Regulations in packing instructions relevant to hydrogen peroxide (P501 and 504) include an additional requirement or special packing provision that indicate, “packagings shall be vented.” Currently, no similar requirement is contained in the corresponding packing instructions in the Technical Instructions.

1.2 The release of small quantities of oxygen from hydrogen peroxide is well known. The oxygen is produced from the decomposition reaction producing water and oxygen. For the formulations authorized for transport by air, the amount of oxygen produced is small. To illustrate, a one liter formulation of 59% hydrogen peroxide (transported under UN 2014 and shown as forbidden/forbidden in the Dangerous Goods List) produced 5.3 liters of oxygen over a six month time period when stored at an elevated temperature of 40°C. Lower oxygen generation rates would be expected for more dilute formulations. The information suggests that the rate of oxygen evolution would have imperceptible effects on aircraft oxygen concentrations.

1.3 To provide for the release of oxygen consistent with the UN Model Regulation requirement, packages containing hydrogen peroxide are normally fitted with a vent. The vent is designed to relieve pressure built up due to decomposition without allowing liquid to escape. To do otherwise could result in failure of the inner packaging or spraying of hydrogen peroxide when the package is opened at the time of use.

2. PROPOSAL

2.1 DGAC proposes to revise A75, 4;7.1.2, and the relevant packing instructions applicable to hydrogen peroxide as follows:

- 1) revise SP A75 by adding the following sentence at the end:

A75 Articles such as sterilization devices, when containing less than 30 mL per inner packaging with not more than 150 mL per outer packaging, may be transported on passenger and cargo aircraft in accordance with the provisions in 3;5, irrespective of the value in column 9 and the indication of "forbidden" in columns 10 to 13 of the Dangerous Goods List (Table 3-1), provided such packagings were first subjected to comparative fire testing. Comparative fire testing must show no difference in burning rate between a package as prepared for transport (including the substance to be transported) and an identical package filled with water. Inner packagings may be fitted with a vent to relieve internal pressure due to decomposition.

- 2) revise 4;7.1.2 by adding to the end of the current sentence:

...

7.1.2 Venting of packages is not permitted for air transport unless provided otherwise.

...

- 3) revise PI's Y540, 550, 554 by adding the following additional requirement:

"Irrespective of 4:1.1.6 and 4:1.1.12, inner packagings for 2014 and 3149 must be fitted with a vent designed to relieve internal pressure due to decomposition without release of liquid."

— END —