



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

**ORIENTATION ARROWS ON PACKAGINGS CONTAINING “HERMETICALLY SEALED”
INNER PACKAGINGS**

(Presented by D. Brennan)

SUMMARY

The text addressing the application of orientation arrows on packagings was revised to include an exception for hermetically sealed inner packagings below certain size. This revision has in effect made the checking of orientation arrows on packages at acceptance worthless and is creating uncertainty for shippers. It is proposed that the exception should be reviewed, and revised.

Action by the DGP-WG is in paragraph 2.

1. INTRODUCTION

1.1 The provisions setting out the requirements for the application of orientation arrows on combination packagings in Part 4;1.1.13 were revised in the 2011-2012 edition of the Technical Instructions to provide an additional exception where the combination packaging contains hermetically sealed inner packagings each containing not more than 500 mL.

1.2 This new exception is an alignment with the UN Model Regulations, 16th revised edition, paragraph 5.2.1.7.2(f). The change adopted into the Model Regulations was based on a proposal to address dangerous goods in tubes, cartridges and bags that are hermetically sealed, such as tubes of paints and glues and as such the orientation of these inner packagings is not critical to prevent leakage during transport. A copy of the paper presented to the UN Subcommittee is attached to this working paper in the appendix.

1.3 In principle permitting these types of products to be in inner packagings without requiring orientation arrows on the outer packaging is reasonable. However, in practice the exception is

creating significant issues for airline acceptance personnel and is creating uncertainty for shippers as to just what is intended by the exception for “hermetically sealed inner packagings”.

1.4 As set out in Part 7;1.3, operators are required to conduct an acceptance check of dangerous goods consignments which must include verification that “the labelling of the package, overpack or freight contained is as required by 5;3”. However, with this new exception for hermetically sealed inner packagings each containing not more than 500 mL, the absence of orientation arrows on combination packagings for any class of dangerous goods is no longer grounds for rejection without the operator first having to verify with the shipper the size of the inner packagings.

1.5 The revised text in Part 4;1.1.4.1 requires that closures for all inner packagings for liquid substances must have two means for keeping the closure in place. This is taken by some shippers to understand that these inner packagings are now “hermetically sealed”. As there is no definition in the Model Regulations or the Technical Instructions for “hermetically sealed”, then the dictionary definition applies. The Concise Oxford Dictionary, 9th edition, defines “hermetic seal” as “an airtight seal”. It is then not unreasonable for someone to conclude that all inner packagings for liquids that meet Part 4;1.1.4.1 are “hermetically sealed”.

1.6 As the original proposal to the UN Subcommittee indicated that generally the dangerous goods in these tubes, cartridges and bags are Class 3, flammable liquids and Class 9, environmentally hazardous substances it may be appropriate to restrict the exception from the application of orientation arrows to those two groups of substances.

1.7 In addition, it may be better to delete the term “hermetically sealed” from Part 4;1.1.13 and instead replace that with some text that describes the types of inner packagings that qualify for the exception, i.e. tubes, cartridges and bags. This though raises the question of the packing instructions and the permitted inner packagings. For example can a shipper pack paint in plastic bags using Packing Instruction 353 where the permitted inner packagings are “glass”, “plastics” and “metal”?

2. ACTION BY THE DGP-WG

2.1 The DGP-WG is invited to revise Part 4;1.1.13 and add a new 1.1.14 as follows:

~~1.1.13 Combination packagings containing liquid dangerous goods, excluding flammable liquids in inner packagings of 120 mL or less, or infectious substances in primary receptacles not exceeding 50 mL, or hermetically sealed inner packagings each containing not more than 500 mL, must be packed so that the closures on the inner packagings are upward and the upright position of the package must be indicated on it by the “Package orientation” label shown in 5;3.2.11 b). The words “This side up” or “This end up” may also be displayed on the top cover of the package.~~

1.1.14 The provisions of 1.1.13 do not apply to combination packagings containing:

a) flammable liquids in inner packagings of 120 mL or less;

b) infectious substances in primary receptacles not exceeding 50 ml; or

c) flammable liquids or environmentally hazardous substances (UN 3082) in hermetically sealed inner packagings of 500 ml or less.

2.2 Alternatively the DGP-WG may like to remove the term “hermetically sealed” and modify the text as follows:

~~1.1.13 Combination packagings containing liquid dangerous goods, excluding flammable liquids in inner packagings of 120 mL or less, or infectious substances in primary receptacles not exceeding 50 mL, or hermetically sealed inner packagings each containing not more than 500 mL, must be packed so that the closures on the inner packagings are~~

upward and the upright position of the package must be indicated on it by the "Package orientation" label shown in 5;3.2.11
b). The words "This side up" or "This end up" may also be displayed on the top cover of the package.

1.1.14 The provisions of 1.1.13 do not apply to combination packagings containing:

a) flammable liquids in inner packagings of 120 ml or less;

b) infectious substances in primary receptacles not exceeding 50 ml; or

c) flammable liquids or environmentally hazardous substances (un 3082) in inner packagings that are sealed tubes, sealed cartridges or sealed bags of 500 ml or less.

2.3 As the exception for these hermetically sealed inner packagings originated with the UN, the DGP-WG, based on the decision reached with these proposals, is invited to request that the Secretary bring this issue and the decision of the DGP-WG to the attention of the UN Subcommittee at the June 2011 meeting.

APPENDIX

UN WORKING PAPER

UN/SCETDG/34/INF.37

**COMMITTEE OF EXPERTS ON THE TRANSPORT OF
DANGEROUS GOODS AND ON THE GLOBALLY
HARMONIZED SYSTEM OF CLASSIFICATION
AND LABELLING OF CHEMICALS**

Sub-Committee of Experts on the
Transport of Dangerous Goods

Thirty-fourth session
Geneva, 1-9 December 2008
Item 7 of the provisional agenda

**MISCELLANEOUS PROPOSALS OF AMENDMENTS TO THE MODEL REGULATIONS OF THE
TRANSPORT OF DANGEROUS GOODS**

Orientation Arrows/Closures Upward

Transmitted by the expert from the Unites States of America

Introduction

1. Currently, 4.1.1.5 of the Model Regulations require that inner packagings containing liquids be packed with their closures upward and placed within outer packagings consistent with the orientation arrows prescribed in 5.2.1.7.
2. Many products in the paint, printing ink and adhesives industry are packaged in tubes (artist colors and paints), cartridges (caulks and adhesives) and bags (paint) which are hermetically sealed in such a way that the orientation of the package is irrelevant. In addition, many of these products are card-mounted or marketed as part of larger portfolio or kit.
3. Generally, these products are classified as Class 3 Flammable Liquids or Class 9 Environmentally Hazardous Liquids and typically, they contain relatively small quantities of product.
4. These inner packagings typically incorporate a plastic or aluminum hermetic seal which effectively seals the package, normally in combination with a screw cap closure. As such, they are designed to be safely stored, transported, and marketed in other than an upright position. Examples are included as an annex to this document.

5. Currently, 5.2.1.7.2 of the Model Regulations provides that orientation arrows are not required on packages containing:

- (a) Pressure receptacles except for cryogenic receptacles;
- (b) Dangerous goods in inner packagings of not more than 120 ml which are prepared with sufficient absorbent material between the inner and outer packagings to completely absorb the liquid contents;
- (c) Division 6.2 infectious substances in primary receptacles of not more than 50 ml;
- (d) Class 7 radioactive material in type IP-2, type IP-3, type A, type B(U), type B(M) or type C packages; or
- (e) Articles which are leak-tight in all orientations (e.g. alcohol or mercury in thermometers, aerosols, etc.).

6. It is proposed that a new paragraph (f) be added to provide similar relief for hermetically sealed inner packagings of combination packages.

7. It is recognized that previously some members of the Sub-Committee have raised concerns over the fact that a hermetic seal is not defined in the UN Model Regulations. Generally when a term is not defined, a dictionary definition is considered applicable. The Random House Unabridged Dictionary (2006) defines “hermetic” as “made airtight by fusion or sealing.”

As such it is proposed that a common dictionary definition is sufficiently clear, however if a majority of the Sub-Committee is of the opinion that a definition is necessary in Chapter 1.2, this definition appears appropriate.

Proposal

8. Add a new paragraph (f) to 5.2.1.7.2 as follows:

- (f) Combination packages containing hermetically sealed inner packagings.

Annex – Examples of Combination Packages with Hermetically Sealed Inner Packagings

