International Civil Aviation Organization

DGP/20-WP/34
4/8/05

WORKING PAPER

DANGEROUS GOODS PANEL (DGP)

TWENTIETH MEETING

Montréal, 24 October to 4 November 2005

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 2007-2008 Edition

REFORMATTING OF PACKING INSTRUCTIONS- COMPATIBILITY

(Presented by D. Raadgers)

1. BACKGROUND

The first version of these proposed modifications has been presented in DGP/19-WP/48.

1.1 The meeting agreed that the proposal was potentially a valuable change to the Technical Instructions and indicated that more specified provisions are needed, but felt that this is not a specific airmode issue but a multimodal issue and should therefore be raised at this Sub-Committee level. It was agreed that the proposal should be sent to the UNSCETDG to be discussed.

1.2 A working paper transmitted by the expert from the Netherlands, was raised in the UNSCETDG , during the twenty-sixth session to facilitate a discussion with the aim to have the Sub-Committee's opinion on a further need to specify compatibility testing in the Recommendations or if they wished to leave it up to the modes to specify this further.

1.3 Their decision was to stay with the general provision 4.1.1.2 with regard to compatibility and for plastics packagings general requirements in 6.1.4.8, 6.1.4.13 and 6.1.4.19. They would leave further provisions up to the modes, if the modes wished to extend the general provision with specific provisions, as for example in ADR and RID in 6.1.6.

2. INTRODUCTION

2.1 The requirements of compatibility are laid down in the ICAO-TI as a general requirements of the Packing Instructions of the classes involved. Also, the whole requirements are laid

down at the shipper's responsibilities. The current situation may lead to different opinions of this general requirement depending on the knowledge of the shipper.

2.2 The panel agreed that compatibility is an important safety issue, and more specific provisions in the form of guidance material are needed.

2.3 This working paper, based on the investigation of The National Testing Authority of Packaging in the Netherlands, aims to give the shipper more detailed information how to comply with the general requirement of compatibility.

3. PROPOSAL

Based on the above it is proposed that the existing text regarding compatibility be modified.

The existing text in Part 4 Chapter 1,1.1.3 reads as follows:

> Materials, such as some plastics, which can be significantly softened or rendered brittle or permeable by the temperatures likely to be experienced during transport or because of the chemical action of the contents or the use of a refrigerant, must not be used. Even though certain packagings are specified in individual packing instructions, it is, nevertheless, the responsibility of the shipper to ensure that such packagings are, in every way, compatible with the articles or substances to be contained within such packagings. This particularly applies to corrosivity, permeability, softening, premature aging and embrittlement. Parts of packagings which are in direct contact with dangerous goods:
>
> a) must not be affected or significantly weakened by those dangerous goods; and
>
> b) must not cause a dangerous effect, e.g. catalysing a reaction or reacting with the dangerous goods.
>
> Where necessary, they must be provided with a suitable inner coating or treatment.

3.1 It is proposed it should be modified as shown:

Part 4 Chapter 1,1.1.3

1.1.3.1 The shipper must in all situations where the use of certain inner and outer packagings is sustained, conform the Packing Instructions, or authorised by the competent authority, ensure that such packagings are in every way, compatible with the articles or substances to be contained within such packagings.

1.1.3.2 The shipper must, in all situations where closures are used, and other parts of the packaging are in contact with the articles or substances to be contained within the packagings, ensure that such closures and such parts of the packagings are in every way compatible with the articles or substances to be contained within such packagings.

1.1.3.3 The shipper also must ensure that materials, such as some plastics, which can be significantly softened or rendered brittle or permeable by the temperatures likely to be experienced during transport or because of the chemical action of the contents or the use of a

refrigerant must not be used.

1.1.3.4 The shipper also must ensure that, when the following materials are used as packagings closures, or in part of packagings, all measures are taken to avoid that any of the described circumstances can occur during transport.

Glass:
all substances containing the element fluorine can lead to chemical attack of the packaging material by the substance. These combinations must thus be avoided.

Metals like steel and aluminium:
are susceptible to corrosion. Substances with corrosive properties against such materials (generally classified in class 8), including acids and alkaline substances, should not be packed in metal packaging and it is recommended not to do this even when a protective coating is present.

Investigations are necessary when a substance containing water is packed in a metal packaging.

Polymer materials :
Relevant interactions for widely used polymer materials like polyethylene and polypropylene are swelling, chemical degradation and environmental stress cracking.

Further investigation is deemed necessary when the swelling rate is higher than 1 percent, as is the case for many organic substances. In this case permeation of the substance through the packaging material can also be expected, which can lead to dangerous situations during transport.

Chemical degradation can occur by interaction with highly oxidising acids like nitric acid and further investigations are deemed necessary for these substances. For organic liquids with low swelling rates (less than 4 percent) environmental stress cracking is a potential problem.

1.1.3.5 In carrying out the shippers responsibilities regarding the compatibility the shipper must ensure, that all measures are taken to avoid that examination and if necessary testing are not carried out in accordance with recent generally acknowledged levels of science

1.1.3.6 The shipper must produce research and / or test reports upon request of the competent authority, to identify that suitable research and/or tests have taken please in order to ensure that the responsibilities regarding compatibility be met.

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