

## 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

24 May 2023

Sixty-second session

Geneva, 3-7 July 2023

Item 3 of the provisional agenda

**Listing, classification and packing**

### Hermetically sealed packaging

Submitted by the expert from the Netherlands

#### Introduction

1. Currently there is no definition assigned in the Model Regulations for the term "hermetically sealed packaging". However, the Dangerous Goods List in Chapter 3.2 shows that for 151 UN entries these dangerous goods shall be transported in hermetically sealed packaging. This is indicated through the various packing instructions, such as packing instructions P001/PP31, P200, P201, P400, P403, P404, P405 P601, P602 or P804 and special provisions 239 and 379.
2. These dangerous goods are assigned to Division 6.1 (51%), Division 4.3 (28%), Division 4.2 (13%), Division 2.3 (3.3%) and Class 8 (3.3%). In two cases, the dangerous goods are assigned to Division 2.1 and Class 3.
3. It appears that for transport of dangerous goods assigned to Division 6.1 and Class 8, combination packagings are required to fulfil the requirement of hermetically sealed. For transport of dangerous goods assigned to Class 3 and Divisions 2.1, 2.3, 4.2 and 4.3, inner packagings are required to fulfil the requirement of hermetically sealed.

#### Considerations

4. In the Netherlands, port inspections have indicated that in some cases the supposed hermetically sealed packaging was not functioning properly. These irregularities were found during inspections of packaged dangerous goods in hermetically sealed packaging in containers from sea transported under the IMDG code. The transported dangerous goods as well as reaction products were regularly encountered in the atmosphere of the container or outside the container during the gas measurement prior to the inspection. The inspections showed that in some cases, these irregularities were due to improperly sealed packaging. However, in other cases the dangerous goods were found to have egressed from approved intact packaging.
5. Egress of dangerous goods from a packaging into the atmosphere of the container, is dependent on the nature of the dangerous goods and the effectiveness of the packaging. Furthermore, especially for maritime transport (IMDG) the duration of the journey and the change in atmospheric conditions (temperature, atmospheric pressure and humidity) can also affect the degree of egress of the dangerous goods or reaction products, and thereby the accumulation of the concentration in the container. Because the journey in sea transport often takes several weeks and often goes through different continents and climates, high concentrations of the dangerous goods or its reaction products can accumulate inside the container. This has a negative impact on transport safety, the environment and poses a safety risk to personnel involved during transport itself as well as personnel involved in inspections.

6. For maritime transport (IMDG), this can be assumed to be a world-wide problem. This issue was also discussed by the Netherlands with the Chinese Maritime Safety Administration (MSA) based on case studies and the problems found with the malfunctioning of hermetically sealed packaging and was shared and endorsed by MSA. Even though the meaning of hermetically sealed in the IMDG Code is vapour-tight closure, the results of the port inspections in the Netherlands show that the specific requirements for hermetically sealed packaging currently are not sufficiently explicit and not clear enough and do not apply to all types of packaging. Additionally, the general requirements for hermetically sealed are insufficiently enforceable based on the wording. The Netherlands and the Chinese MSA agreed to clarify these issues and look for possible directions for solutions.

7. The expert from the Netherlands is of the opinion that these findings pose a significant safety risk that requires the attention of the Sub-Committee for two reasons: first because the packing instructions are set by this Sub-Committee and secondly the general feeling in the Sub-Committee in the past was that the term hermetically sealed meant an air and vapour-tight sealed closure (see ST/SG/AC.10/C.3/78, paragraph 79).

8. However, in the context of finding a proper solution, the question is how to determine whether or not a packaging is hermetically sealed and how it remains functioning hermetically sealed as required under transport conditions. The Model Regulations do not provide a definition of the term hermetically sealed. The various packaging instructions which require hermetically sealed packaging for certain dangerous goods do not include any specific requirements nor criteria to unambiguously determine whether a packaging is hermetically sealed or not.

## Way forward

9. To ensure a safe transport of dangerous goods as well as to achieve a harmonised approach and to apply the term hermetically sealed packaging consistently in all the modes of transport, it could be considered to define the term hermetically sealed packaging in the Model Regulations with unambiguous verifiable criteria and to recommend or refer to existing tests for this purpose, where appropriate.

10. The aim of an approach as mentioned in paragraph 9 is to prevent that each mode of transport will develop its own definition of hermetically sealed packaging with the possible result that this could obstruct or stagnate multimodal transport in the transport chain.

11. Another solution could be to entrust the assessment of whether a packaging is hermetically sealed or not to the competent authority. The competent authority will then issue an approval for the packaging. However, due to the lack of harmonised criteria for hermetically sealed packaging, this approach could lead to approval of packagings that are based on non-uniform grounds. It could also lead to obstruction of transport in the chain if the packaging does not appear to be appropriate according to the competent authority of another country.

## Request

12. The expert from the Netherlands is interested to hear the opinions of the experts in this Sub-Committee on this issue and invites this Sub-Committee to act, as it deems appropriate.

## Justification

13. The aim of this document is to facilitate the clarification of the Model Regulations on the use of hermetically sealed packaging, to prevent unsafe situations during the transport of dangerous goods which are packed in supposed hermetically sealed packagings, to promote harmonisation between the different transport modes in this respect and to prevent obstruction or stagnation of multimodal transport in the case when dangerous goods need to be transported hermetically sealed.

14. Ensuring a more systematic approach and a better rationale in the Model Regulations helps to develop clearer legal texts and avoid different criteria among different countries and

inspection services, and thus helps to implement the United Nations Sustainable Development Goal number 16: Peace, justice and strong institutions. Furthermore, by solving the issue raised in paragraph 5, the Sub-Committee can improve transport safety, thereby contributing to the United Nations Sustainable Development Goal number 3: ensure healthy lives and promote well-being for all at all ages.

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