
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

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Listing, classification and packing

Comments on 2017/25 Classification and packaging for infectious waste of Category A: Fibreboard box moisture penetration test

Submitted by the expert of the United Kingdom

Introduction

1. The infectious waste of category A paper (ST/SG/AC.10/C.3/2017/25) was developed as a result of the telephone working group led by Canada. The paper represents the consensus position reached by the group, but there are a number of places where no decision could be reached and text was placed within square brackets for discussion at the July 2017 UNECE Sub-Committee meeting. One such incidence of this is for additional requirement 9 in the proposed packing instructions as part of option 2. This information paper provides details of a test conducted in the United Kingdom since paper 2017/25 was completed. Based on the results of these tests, the United Kingdom proposes some modified text for additional requirement 9.

Background

2. During the discussions developing paper ST/SG/AC.10/C.3/2017/25 it became apparent that different states wished to use different types of outer packaging to meet these requirements. Following the existing concepts of the United Nations recommendations in pointing the way and the requirements to be met, the list of packagings that could be used for the outer packaging expanded to become all encompassing. However, certain delegations had reservations about using certain types of packaging without additional requirements. There followed considerable debate regarding fibreboard boxes and if these should be required to be fitted with an additional leakproof liner or be coated. The same conditions were also considered for plywood boxes, drums and fibre drums. Faced with this question, the experts from the United Kingdom commissioned a simple test to try and resolve these questions.

Test summary

3. Standard corrugated fibreboard, uncoated, boxes with a known board specification were prepared with the base closures (flaps) of one sample having a U tape pattern applied, whilst the other was prepared with an H tape pattern. The test boxes were then placed on a grille to allow for observation from all sides and then the boxes each had 10 litres of water poured into them. The boxes were observed for leakage and timings taken. Not

unsurprisingly the U taped box which has no tape along the end flaps started leaking instantly and was empty within 7 minutes. With the H taped box, the leaks were confined to the corners and it took 150 minutes to empty. The following photograph shows the internal condition of the H taped box at the end of the test.



Analysis

4. The test demonstrated a number of important points about the packaging. Firstly, as expected the weak points were the exposed seams of the boxes, with leakage from the flaps and from the stitched body seam. Secondly, although the inside of the box shows that water has been absorbed by the board, there was no external evidence of moisture penetrating the walls or the base faces. The high absorbency of the internal walls is to be expected due to their make-up, because they are not required to meet the Cobb standard for water resistance of the outer wall.

Conclusions

5. Given that the premise of the packing instruction is that there will be two leakproof layers of packaging and sufficient absorbent material to deal with any liquid, there should not be any free liquid. If by some chance some, free liquid did escape from the intermediate packaging, allowing it to be absorbed by the box walls would seem to be preferable to requiring the walls to be moisture resistant.

6. Water resistance has two implications:
 - (a) Firstly, that the packaging would cease to be readily available; and
 - (b) Secondly that a coated box would be more likely to leak at the seams as any liquid would collect at the bottom.
7. Even under these extreme conditions, no moisture penetrated the walls, that part of the fibreboard box performing equally as well as any other type of packaging. The part that is an issue, is the closing of the flaps on this design of fibreboard box and the weakness here would be indicative of similar weakness in some designs of plywood boxes and fibreboard drums. (The plywood drum although included as a design type is not considered here, because to date the expert from the UK has never seen one). On this basis, the expert from the UK proposes that the text in square brackets at point 9 in the packing instructions is replaced with the following proposal.

Proposal

8. Any seam or joint in the following packages Plywood drums (1D), Fibre drums (1G) Plywood boxes (4D), and Fibreboard boxes (4G) that is not water resistant shall be taped on the inside whenever possible and in all cases on the outside for the full length of the seam or joint.
 9. The expert from the UK can provide copies of the test report and photographs to any interested parties.
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