
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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Miscellaneous proposals for amendments to the Model Regulations on the Transport of Dangerous Goods: Packagings

New packaging tests in Chapters 6.1 and 6.6

Submitted by the expert of the United Kingdom

Introduction

1. Certain types of dangerous goods that are not classified as Class 1 (usually articles), have been found in certain circumstances to self-initiate or fail such that they evolve excessive heat, catch fire or explode within the packaging. Events of this type were not considered when the UN packaging testing scheme was being developed. Many of the articles falling within this category are typically those involving Lithium Batteries and had not been invented when the text for UN packaging testing was developed. The transport of such dangerous goods is on the increase

2. Competent Authorities, as well as others involved in the transport of Dangerous Goods are aware of an increasing number of incidents where articles of this type appear to be the prime suspects in major transport incidents. Considerable effort has been made to reduce the risk and hazard of shipping such items, such as reducing the state of charge of Lithium Batteries and additional tests for chemical oxygen generators. However, no consideration has been given to using the packaging to mitigate the hazard or to use the UN packaging testing provisions to provide packaging that makes the transport of these dangerous goods safe (or much safer) in normal conditions of transport.

Background

3. The UK is mindful of the initiative taken by ICAO in relation to the packaging of Lithium Batteries, announced at the 48th sub-committee meeting, contracting the SAE to produce a standard. The UK has taken an active part in the deliberations of the SAE, but finds that the current proposals do not fit the ethos of the UN Recommendations (see paragraph 4 of the UN Recommendations), being written round a product, and describing a specific test method.

4. The proposed test will be very expensive to conduct and narrow in its application. Indeed, others have raised concerns that the proposed standard is so complex that compliance levels are likely to be low. In addition, the proposed standard does not cover how it should be applied and how compliance with the standard could be easily shown and verified.

5. The UK also acknowledges the ongoing work of the Lithium Battery working group and notes that this is concentrating on trying to refine the classification of the batteries and define, more precisely, the different levels of risk resulting from the various chemistries

involved. In short, technological developments in these articles have left the UN packaging approval system behind. However, like the batteries, packaging technology has also moved on since the UN packaging testing scheme was written.

6. The expert from the UK believes most strongly that this sub-committee, and the recommendations are the correct place to provide the framework for providing safe packaging for the transport of dangerous goods. The existing system is generic, provides for multi-modal application and already has the methodology for verification of packaging through the UN packaging approval marks.

7. Taking the above into consideration, the expert from the United Kingdom is currently working on proposals to amend Chapters 6.1 and 6.6 to cater for the hazards posed by articles of dangerous goods that may inadvertently catch fire, or evolve excessive heat or have the possibility of a violent rupture. This will include a new packaging design type test, appropriate pass and fail assessment criteria and additions to UN packaging approval marks. The testing would follow existing precedent, for instance the hydraulic test is only done on single packagings for liquids, so these tests would only apply to those intended to contain these particular types of dangerous goods.

8. As an indication of the general direction that the United Kingdom is following, the testing will look to:

- (a) Use worst tested to define operational limits;
- (b) Require total content reaction;
- (c) External surface temperature monitoring during test; and
- (d) Observation for any flames from the packaging.

9. The tested packages would then be subject to a repeat of the stack test to demonstrate that they have retained their structural integrity.

10. Amendment to the UN marking would be required, so that packaging that has passed the test is readily identifiable and some additional mark to indicate the performance rating based on the test results. The expert from the United Kingdom intends to submit a formal paper detailing the proposals for the next session of the sub-committee, but in the meantime would welcome any thoughts and contributions from other delegations and interested parties regarding this packaging test initiative.
