

Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals

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Sub-Committee of Experts on the Transport of Dangerous Goods

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Item 6 (c) of the provisional agenda

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

Impact testing of portable tanks and multiple-element gas containers: amendment to Section 41 of the Manual of Tests and Criteria

Transmitted by the expert from Canada

Introduction

1. The Canadian competent authority has been the leading international expert on the dynamic longitudinal impact test protocol for portable tanks and multiple-element gas containers (MEGCs), and maintains a high degree of contact with international stakeholders in the impact testing of portable tanks and MEGCs. This is achieved through Canada's oversight program, which consists of registering test facilities and witnessing agencies, conducting compliance audits, reviewing test reports, and exchanging technical expertise with key personnel of the testing and witnessing bodies.
2. As part of its oversight program, the Canadian competent authority has observed that in some instances, facilities conducting the impact test only measure the container's applicable dimensions to ensure conformity with the dimensional requirements of the test after the final impact. However, the expert from Canada believes that the intent is to conduct the dimensional analysis after every impact, in order to compare the results from each impact to the previous impact, and to be able to determine if the container has deformed in excess of the dimensional requirements prior to conducting additional impact tests.
3. Paragraphs 41.3.4.4 and 41.3.4.5 currently state:

41.3.4.4

“An impact shall be created (see 41.3.2) such that for a single impact the as tested Shock Response Spectrum (SRS, see 41.3.8.1) curve at both corner fittings at the impacting end equals or exceeds the minimum SRS curve shown in Figure 41.3.8.1 at all frequencies within the range from 3 Hz to 100 Hz. Repeated impacts may be required to achieve this result but the test results for each impact shall be considered individually.”

41.3.4.5

“... To satisfy the test, the portable tank or MEGC shall show no leakage, permanent deformation or damage that would render it unsuitable for use, and shall be in conformity with the dimensional requirements regarding handling, securing and transfer from one means of transport to another.”
4. This document proposes to modify the existing requirements to clarify the expectation that the dimensional measurements and analysis must be taken after every impact (not only the final one) to ensure that the container fully meets the requirements of the impact test.

Potential proposal

5. Amend paragraph 41.3.4.4, to read as follows (new text underlined):

“An impact shall be created (see 41.3.2) such that for a single impact the as tested Shock Response Spectrum (SRS, see 41.3.8.1) curve at both corner fittings at the impacting end equals or exceeds the minimum SRS curve shown in Figure 41.3.8.1 at all frequencies within the range from 3 Hz to 100 Hz. Repeated impacts may be required to achieve this result but the test results for each impact shall be considered individually. The relevant dimensions of the portable tank or MEGCs shall be measured after every impact to ensure conformity with the dimensional requirements regarding handling, securing and transfer from one means of transport to another.”
