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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
(Twenty-first session, 1-10 July 2002, agenda item 5 (b))

TANKS

Miscellaneous proposals

Multimodal tank transport
MAWP, design pressure and test pressure of portable tanks

Transmitted by the International Union of Railways (UIC/IUR)

Reference is made to previous discussions in the sessions of the Committee and Sub-Committee of Experts on the Transport of Dangerous Goods and to the document INF. 5 presented by the UIC at the twentieth session of the Sub-Committee in December 2001.
After the presentation the document was discussed by a small working group.
A new document would be drafted on the basis of the agreements obtained by the working group and submitted for discussion at the next session of the Sub-Committee.
The proposals agreed by the working group are as follows:

6.7.2.1 Definition *Design pressure*:

the definitions under (b) and (c) should be presented as alternatives:

(b) in the case of dedicated tanks or in the case of applicability of the TP27, 28 or 29.
(c) in the case of multi-purpose tanks

Furthermore the working group proposes to simplify the condition for the head pressure under b (iii) in such a way, that the complicated determination on the basis of the forces specified in 6.7.2.2.12 would not be needed anymore, but the head pressure should in all cases be equal to 0.35 bar.

The text of (b) and (c) could then be merged into one new text for (b).

Proposal for a revised text for the definition of *Design pressure:*

Design pressure means the pressure to be used in calculations required by a recognized pressure vessel code. The design pressure shall be not less than the greater of the two pressures determined in accordance with (a) and (b) as follows：

(a) The maximum effective gauge pressure allowed in the shell during filling or discharge: or
(b) Either:
  (i) the sum of the absolute vapour pressure (in bar) of the substance at 65 °C (for elevated temperature substances transported above 65 °C at highest temperature during filling, discharge or transport), minus 1 bar; and

  (ii) the partial pressure (in bar) of air or other gases in the ullage space being determined by a maximum ullage temperature of 65 °C and a liquid expansion due to an increase in mean bulk temperature of $t_r - t_f$ (t_r = filling temperature usually 15 °C; t_r = 50 °C maximum mean bulk temperature); and
  (iii) a head pressure equal to 0.35 bar;

or:

two thirds of the minimum test pressure specified in the applicable portable tank instruction in 4.2.5.2.6;

Definition *Maximum allowable working pressure*:

This definition could then be simplified substantially as follows:
Maximum allowable working pressure (MAWP): means the design pressure less 0.35 bar;

Definition *test pressure*: no amendments proposed; there should be however one line of space between the definitions of Structural equipment and test pressure.

6.7.3.1
Definition *Design pressure*: for the same reasons as under 6.7.2.1, amend (b) (ii) to read:
a head pressure equal to 0.35 bar

Test pressure for portable tanks for non-refrigerated liquefied gases.

As explained in doc UN/SCETDG/20/INF.5 the relation between design pressure and test pressure is not clear from the existing definition. It can be understood only from the text in 6.7.3.3.2.

It is therefore proposed to add the following text at the end of the definition of test pressure in 6.7.3.1:

The minimum test pressure is equal to 1.3 times the design pressure (see 6.7.3.3.2), which means 1.3 x (MAWP + 0.35) bar (see tank instruction T50 in 4.2.5.2.6).

The test pressures are, however, not indicated in the table of T50, in spite of the fact that the test pressure should be indicated according to 6.7.4.15.1 on the tank plate. The Sub-Committee might therefore for reasons of user-friendliness of the Model regulations and all other regulations based upon them, consider the possibility to introduce in the table of T50 a new column indicating the test pressures.

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