Joint Meeting of the RID Safety Committee
and the Working Party on the Transport of
Dangerous Goods
(Bern, 18-22 March 2002)

INF.11

Proposal to modify 6.8.2.1.17 of the RID/ADR

Transmitted by the European Committee for Standardisation (CEN)

Reasons for the proposal

Several standards for the design and construction of tanks have been drafted (or are under preparation) by different Technical Committees of the CEN.

These standards include formulas to calculate the minimum wall thickness to resist pressure and dynamic forces (as defined in 6.8.2.1.1. and 6.8.2.1.14) for the various shapes that the tanks may have (cylindrical, conical, spherical, ellipsoidal, etc) with the stress limitations determined in 6.8.2.1.16.

The standards refer to the relevant requirements 6.8.2.1.18 to 6.8.2.1.21 for the minimum wall thickness to protect tanks against damage.

6.8.2.1.17 includes two other formulas to determine a minimum wall thickness irrelevant of the shape(s) of the tanks. One formula –without welding coefficient- is based on the calculation pressure that appears in the tank code; the other formula –with welding coefficient- is based on the test pressure that is either equal or lower to the calculation pressure.

CEN finds those additional formulas for minimum wall thickness in contradiction with the principle that wall thickness for resistance to pressure is determined by a pressure vessel code (i.e. EN standards) and proposes that chapter 6.8 follows the same logic as in 6.7.2.4.1 for the determination of the wall thickness:

a) the minimum wall thickness to protect against damage is determined according to 6.8.2.1.18 to 6.8.2.1.21 and

b) the minimum wall thickness to resist pressure and dynamic loads is determined according to a pressure vessel code approved by the competent authority and according to the calculation pressure and the stress limitations determined in chapter 6.8.

c) 6.7.2.4.1 includes a third criteria which is the minimum wall thickness defined in the Tank Instructions for some goods. In chapter 6.8, this is achieved by an increased calculation pressure in the tank code. This increased calculation pressure leads to an increased wall thickness that applies to the whole shell.

Since this last requirement is product specific, CEN proposes to add in 6.8.4 a Special Provision TCxx in order to cover this requirement.

Proposals

Proposal 1: CEN proposes to replace the present text in 6.8.2.1.17 with the following text

6.8.2.1.17   The minimum shell thickness shall be the greater thickness based on:
(a)   The minimum thickness determined in accordance with the recognized pressure vessel code including the requirements in 6.8.2.1.14 and 6.8.2.16; and

(b)   The minimum thickness determined in accordance with the requirements of 6.8.2.1.18 to 6.8.2.1.21.   ⎪ 6.8.2.1.18 to 6.8.2.1.20.

Proposal 2: CEN proposes also to refer in 6.8.2.1.14 to the tank codes for the gases of class 2 and proposes to add the underlined text.

6.8.2.1.14   The calculation pressure is in the second part of the code (see <u>4.3.3.1 and</u> 4.3.4.1) according to Column (12) of Table A of Chapter 3.2.

Proposal 3: CEN proposes to add in 6.8.4 a new Special Provision TCxx as follows:

TCxx   The shell thickness of the shell shall not be less than the value determined by the formula

$$e \, ? \, \frac{P_C D}{2?}$$

where:

e   =   minimum shell thickness in mm

P_C =   calculation pressure in MPa as specified in 6.8.2.1.14

D   =   internal diameter of shell in mm

?   =   permissible stress, as defined in 6.8.2.1.16, in N/mm^2

This Special provision should be added in column 13 for the goods where the tankcode includes a calculation pressure higher than the test pressure (i.e. when the calculation pressure in the tank code equals 10, 15, 21 or 22 bars).

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