CETDG/21/INF/23

COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS
(Twenty first session)
Geneva, 4-13 December 2000,
agenda item 2(b),

WORK OF THE SUB-COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS

Draft Amendments to the Recommendations on the Transport of Dangerous Goods .

Comments on ST/SG/AC.10/ 2000/7, (Section 4.2.4.2.6 Portable tank Instructions, T50)

Transmitted by the Expert from the United Kingdom

1. The expert from the United Kingdom is presenting this Information Paper to the Committee of Experts on the Transport of Dangerous Goods to highlight problems that are revealed in the tables on portable tank instructions (T50) [see page 30 of ST/SG/AC.10/2000/7]. These changes to the portable tank instructions were as the result of agreement by the gases working group to the proposals in ST/SG/AC.10/2000/37, presented by the expert from Italy.

2. The expert from the United Kingdom believes the title of the 6th column should remain as "maximum filling ratio" because that is what these values are usually known as and this change was not proposed in document ST/SG/AC.10/C.3/2000/37 from the Expert of Italy. This would also ensure consistency of terminology with that proposed by the Working Group on Gas Receptacles and MEGCs in ST/SG/AC.10/2000/22.

3. The Expert from the United Kingdom also believes that the values of the maximum filling ratios for these three refrigerant gases should remain as they are in the current UN Model Regulations, i.e.

R404A	0·82 kg/l
R407A	0·94 kg/l
R407B	0·93 kg/l

In agreeing to this proposal in 2000/37 (Proposal 1), it appears to have been overlooked that, in addition to the maximum filling ratio not exceeding the density of the liquefied gas at 50º C multiplied by 0·95 (as indicated in the document), there is a requirement set out in the last sentence of 4.2.2.7.2, that "Furthermore, the shell shall not be liquid full at 60º C.".

4. If the filling ratios given in 2000/7 were adopted, using liquid density data from NIST's Refprop programme, a tank would become liquid full at the following temperatures: -

R404A	57·5º C (using 0·84 kg/l)
R407A	59º C (using 0·95 kg/l)
R407B	58º C (using 0·95 kg/l)

Using Refprop 6.01 (1998) data:

	Temp. º C	Density (L) kg/l
R404A	60	815·6
	50	900·7

95% liquid density at 50º C = 0·86 kg/l
100% liquid density at 60º C = 0.82 kg/l

lower value 0.82 gives maximum filling ratio

	Temp. º C	Density (L) kg/l
R407A	60	944·5
	50	1014

95% liquid density at 50º C = 0·96 kg/l
100% liquid density at 60º C = 0.94 kg/l

lower value 0.94 gives maximum filling ratio

	Temp. º C	Density (L) kg/l
R407B	60	930·5
	50	1018

95% liquid density at 50º C = 0·97 kg/l
100% liquid density at 60º C = 0.93 kg/l

lower value 0.93 gives maximum filling ratio

5. This would also ensure consistency with the filling ratios proposed for these same liquefied gases by the Working Group on Gas Receptacles and MEGCs in 2000/22 where the same formulae apply (see Packing Instruction P200(3)4. and the table of liquefied gases and dissolved gases for UN 3337 (R404A), UN 3338 (R407A) and UN 3339 (R407B).

6. In the light of this information, the Committee is invited to review whether or not it wishes to confirm the draft amendments to portable tank instruction T50 proposed by the Sub-Committee.

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