

Economic Commission for Europe

Inland Transport Committee

Working Party on the Transport of Dangerous Goods

Joint Meeting of the RID Committee of Experts and the

Working Party on the Transport of Dangerous Goods

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Item 5 (b) of the provisional agenda

Proposals for amendments to RID/ADR/ADN: new proposals

Comments on document TRANS/WP.15/AC.1/2010/24, transmitted by the Government of the United Kingdom

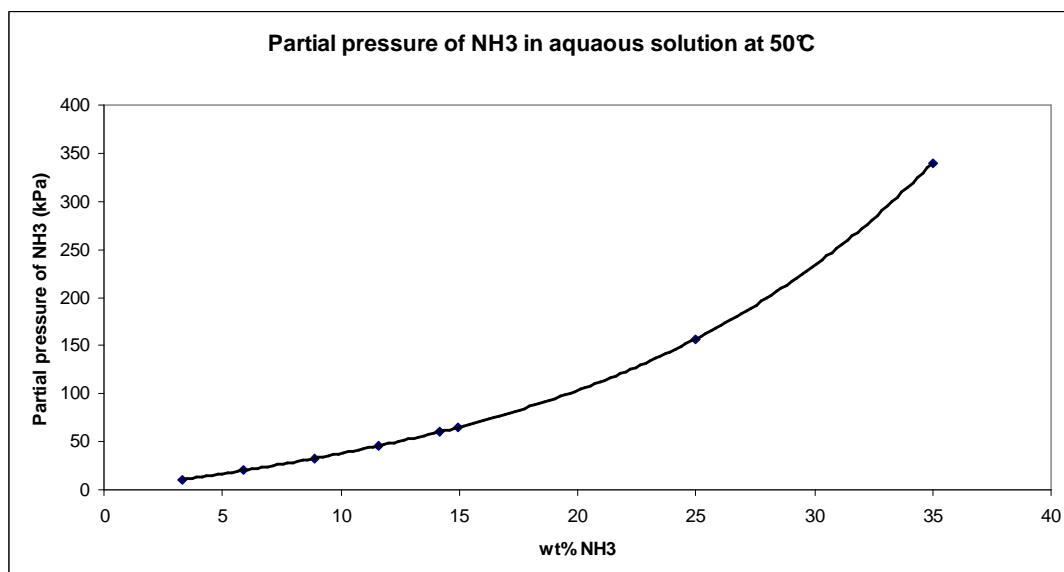
Transport of ammonia solution in IBC's

Transmitted by the Government of Belgium

Comments

1. In working document TRANS/WP.15/AC.1/2010/24 the United Kingdom formulates proposals concerning the carriage of UN 2672 containing higher concentrations of ammonia. These proposals are unacceptable from a safety point of view, because of the pressure build-up at higher temperatures and the harmful and irritating effects of the substance when released.

2. Proposal 1 allows the carriage of UN 2672 ammonia solution in concentrations up to 25 % in certain IBC's (31H1, 31H2 and 31HZ1). However, the graph below shows that, in agreement with the informal document INF. 34 by Portugal at the March 2009 meeting, solutions of ammonia in excess of 20 wt % reach ammonia vapour pressures higher than 110 kPa.



Sub-section 4.1.1.10 explicitly prohibits substances with a vapour pressure in excess of 110 kPa at 50°C from being carried in IBC's (which are, unlike tanks, not designed to withstand higher pressures).

3. Proposal 2 and 3 of TRANS/WP.15/AC.1/2010/24, allowing still higher ammonia concentrations, are of course even more unacceptable. The vapour pressure for the 25% ammonia solution is 157 kPa at 50°C and increases dramatically to around 340 kPa at 50°C for solutions with 35% ammonia. This largely exceeds the pressures for which IBC's are intended and constructed, at a temperature that is considered to be the maximum transport temperature under normal conditions in ADR/RID/ADN. Moreover, where proposal 1 in TRANS/WP.15/AC.1/2010/24 at least could claim to strive for multimodal harmonization with IMDG, proposal 2 and 3 would create a new disharmony by introducing special packing provisions for ammonia solutions between 25% and 35%, which are not present in IMDG today.

4. The UK proposes to use a "pressure relief" vent in accordance with sub-section 4.1.1.8 to ensure that safety is not compromised when excessive pressures are generated. But it is not only the excessive pressures that have to be taken into account ; the vented gas itself would create health risks that are not to be neglected. Moreover, sub-section 4.1.1.8, that allows IBC's to be fitted with a vent to release overpressure due to increased temperatures, does not state at which pressure level the vent has to be set, even though this has a very serious impact on the amount and the speed of the vapour released. Its concentration can easily exceed 25 ppm locally (which is the MAC value of ammonia in many countries, including the United Kingdom) and even at much lower concentrations its irritating properties can cause dangerous situations (especially when driving). Also, the jet of ammonia vapour itself will damage specifically human mucous membranes and cornea, as illustrated below.



5. Finally, it should be noted that UN 2672 has to be carried in tanks tested at 4 bars (tank code L4BN) and that in the recent past the RID/ADR experts already decided that the carriage of ammonia solutions with vapour pressures higher than 110 kPa at 50 °C and 130 kPa at 55 °C in IBC's is unacceptable from a safety point of view.
