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INLAND TRANSPORT COMMITTEE

Working Party on the Transport of Dangerous Goods

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Working Party on the Transport of Dangerous Goods

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TRANSPORT OF AMMONIA SOLUTION

Transmitted by the Government of Portugal

1. Introduction

At the Joint Meeting held last March, Portugal presented informal document 34 which in brief gave our opinion about transport of ammonia solution in IBC.

Transport of ammonia solution (UN 2672) in rigid and composite plastics IBC's, have been object of several multilateral agreements since the year 2000 when agreement M98 was signed, followed by agreement M138 signed in the year 2003 and afterwards by agreement M193, presently in force and valid till 31.01.2013 (hitherto signed by United Kingdom and Czech Republic).

Concerning the commercial concentrations of ammonia solution the tendency is in general that it has a concentration up to 25% (there are exceptions). This is consequence of Directive 2003/105/CE from December the 16.th. (Seveso Directive II), which established a frame to the dangerous goods for environment. However the ammonia solution is dangerous for environment mainly for concentrations above 25%, obliging a readjustment of the commercial concentrations due to general demands of European clients.

2. Problem

As already explained in our inf. Doc. 34 presented to March session we believe that above 20% of concentration the transport of ammonia solution does not respect 4.1.4.2 (packaging instructions concerning the use of IBC's). If pressure is too much high there is a risk of explosions or at least the production of flammable gases which can escape and potentially to ignite.

For this reason Portugal decided not to sign multilateral agreement M193 for finding that the derogation included in this agreement is excessive. The values of the vapour pressure of ammonia solution are very high for levels of concentration above 25%, and that's why we think IBC's used for transporting ammonia solution must be object of strict pressure tests.

Now the United Kingdom in informal document 15 to September session presents several alternative proposals to solve this situation, bearing in mind the practical questions of industry, regional climatic variations and safety questions.

Let's analyse one by one those proposals:

UK Proposal 1

In the interests of multimodal harmonisation, add a special packing provision B11 to Packing Instruction IBC03 for inclusion in RID/ADR/ADN to cover concentrations of ammonia solutions up to and including 25%:

“B11 Notwithstanding the provisions of 4.1.1.10, UN 2672 ammonia solution in concentrations not exceeding 25% may be carried in rigid or composite plastics IBCs (31H1, 31H2 and 31HZ1).”

Add “B11” in Column (9a) against UN2672 in Table A of Chapter 3.2.

Comments: This is to extend the ideas of multilateral agreement M193 to ADR and for the reasons already exposed we do not agree. We believe that for higher concentrations there could be a problem especially in those countries where weather is warmer. We think that if certain countries for their climacteric conditions (low temperatures) can afford themselves to transport ammonia solution at higher concentrations that shall continue to be done in the frame of multilateral agreements. We must realise that ADR/RID/AND are intended for all contracting-parties, and in certain cases we should considerer higher temperatures for transport operations.

UK Proposal 2

The United Kingdom would propose to WP.15 the following further texts for ADR to deal with the carriage by road of higher strength solutions, since this is current practice. If there is a consensus that carriage by rail or inland waterway should also be included, this text can be adapted at the Joint Meeting for inclusion in RID/ADR/ADN.

Add a new special packing provision BBXX to IBC03 as follows: -

“BBXX Notwithstanding the provisions of 4.1.1.10, UN 2672 ammonia solution in concentrations between 25% and up to 35% may be carried in rigid or composite plastics IBCs (31H1, 31H2 and 31HZ1) provided they are vented in accordance with 4.1.1.8”;

Add “BBXX” in column (9a) against UN 2672 in table 3.2A; and

Comments: In this proposal there is something new referring to the prescriptions for the use of IBC's in the transport of ammonia solution: IBC's must be vented, and reference appears to 4.1.1.8 from ADR. In fact this point of ADR refers that “where pressure may develop” the package may be fitted with a vent “provided the gas emitted will not cause danger on account of its toxicity, its flammability or the quantity released, for example”.

The point is “the flammable limits to free ammonia are from 16% to 25% by volume in air” (American National Standard Safety Requirements for the Storage and Handling of Anhydrous Ammonia, fifth Edition). Does this mean that these dangerous concentrations cannot happen for solutions with concentration of more than 25% in a sheeted vehicle? And what kind of IBC’s should we use? What relief valves are we speaking about? And finally, what are the conditions for doing a transport operation with such high concentrations of ammonia?

To summarize we believe the risks of toxicity and ignition should be assessed very carefully.

Finally, as we explain in our former inf. doc. 34 we believe that in any case we should comply with pressure tests which should be more strict for concentrations above 25%, since for 35% for example of ammonia concentration we can attain pressures of the order of 345 kPa at 50°C.

UK Proposal 3

If restricted to road transport, add a new special provision Vxx to 7.2.4 as follows: -

“Vxx IBCs subject to special packing provision BBXX shall be carried in open or sheeted vehicles, vehicles with fabric sides or tops, or open or sheeted containers”; and

Add “Vxx” in Column (16) against UN 2672 in table 3.2A

Comments: According to our comments to proposal 2 it is clear that this UK proposal alone it is not enough to assure the goals. By other hand, isn’t there a risk in open vehicles to produce in IBC very high temperatures due to weather exposition and therefore to develop dangerous pressures inside IBC?

3. Draft proposal

We believe UK should reformulate proposal 2. This complete proposal should consider two aspects: the type of IBC to be used in higher concentrations of ammonia, and the conditions of the transport operation.

4. Justification

The goal is above all, to allow the transport of ammonia solution in security and practical conditions for consignees that do not have large capacity for loading ammonia solution and also, to assure a high standard of security, bearing in mind that the most critical aspect is to ensure that IBC’s shall withstand without loss of contents, the internal pressure due to high values of vapour pressure of the ammonia solution, mainly for concentrations above 25%.