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|  | United Nations | ECE/TRANS/WP.15/AC.2/2016/36 | |
| _unlogo | **Economic and Social Council** | | Distr.: General  2 June 2016  Original: English |

**Economic Commission for Europe**

Inland Transport Committee

**Working Party on the Transport of Dangerous Goods**

**Joint Meeting of Experts on the Regulations annexed to the  
European Agreement concerning the International Carriage  
of Dangerous Goods by Inland Waterways (ADN)  
(ADN Safety Committee)**

**Twenty-ninth session**

Geneva, 22–26 August 2016

Item 3 (c) of the provisional agenda

**Implementation of the European Agreement concerning   
the International Carriage of Dangerous Goods by Inland Waterways (ADN):**

**interpretation of the Regulations annexed to ADN**

Sub-section 3.2.3.1 of ADN, explanations concerning Table C

Transmitted by the Government of Germany[[1]](#footnote-1), [[2]](#footnote-2)

|  |  |
| --- | --- |
| *Summary* | |
| **Analytical summary:** | Sub-section 3.2.3.1 of ADN, explanations concerning Table C, contains an explanatory note on Column (5).  The 4th paragraph of this explanatory note provides that for substances or mixtures with CMR properties the code “CMR” be added to the information.  CMR properties are divided into Categories 1A, 1B and 2.  It is not clear whether the code CMR should also be added in Column (5) for substances and mixtures of CMR Category 2. |
| **Action to be taken:** | Discussion within the ADN Safety Committee |
| **Related documents:** | None |
|  | |

I. Introduction

1. The discussion was triggered by no. 1 of multilateral agreement ADN/M 005 in accordance with which, in the absence of a CMR property, UN 3082 (heavy heating oil) was permitted to be carried in open type N tank vessels until 31 December 2014. Here, it was assumed that the CMR property of a substance or a mixture entailed the requirement of a closed cargo tank.

2. According to information from the petroleum industry, it was assumed that there was no heavy heating oil to be assigned to UN number 3082 without CMR properties on the market. For this reason, the above agreement was not renewed.

3. There are various Material Safety Data Sheets available on the internet for heavy heating oil in which partly CMR Category 1B and partly Category 2 is given.

4. In accordance with GHS, the CMR properties of a substance or a mixture are divided into three categories:

* Category 1A: Known to have CMR potential for humans
* Category 1B: There is sufficient evidence that indicates CMR properties
* Category 2: Substances suspected to have CMR properties; there is some evidence but it is not sufficiently convincing

5. In accordance with the flowchart in 3.2.3.3 of ADN, a *“closed type N vessel”* is only required for substances with CMR properties of Category 1A or 1B. (3rd box).

6. Section 3.2.4 of ADN (Modalities for the application of section 1.5.2 on special authorizations concerning transport in tank vessels) contains sub-section 3.2.4.2 (Application form for special authorizations under section 1.5.2). Under no. 4 (Physiological hazards) in that sub-section, information on the following is requested, among other things:

“CMR properties according to Categories 1A and 1B of chapters 3.5, 3.6 and 3.7 of GHS.”.

7. The explanatory note on Column (5) (Dangers) in sub-section 3.2.3.1 of ADN does not specify which CMR property categories should result in the code “CMR” being added.

II. Interpretation issue

8. The regulations mentioned under nos. 2 and 3 above suggest that, within ADN as a whole and thus also with regard to the information in Table C, only Categories 1A and 1B are of interest as regards the CMR properties of a substance or a mixture.

9. Germany would like to ask the Safety Committee to discuss this issue and decide on the correct interpretation of sub-section 3.2.3.1 of ADN.

III. Preliminary conclusions

10. Substances or mixtures to which the code “CMR” has been added in Column (5) require either cargo tank design “1 pressure cargo tank” or “2 closed cargo tank”, or this decision has to be taken in keeping with the flowchart in sub-section 3.2.3.2 of ADN.

11. There is only one substance with the code CMR in Column (5) for which cargo tank design “3 open cargo tanks with flame arresters” is sufficient:

*UN 3256 ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S., with flash-point above 60 °C, at or above its flash-point*

12. On the other hand, a *pressure cargo tank* or a *closed cargo tank* may also be required for a substance or mixture **without** a CMR hazard and **without** an environmental hazard   
(N1 – N3):

| *(1)* | *(2)* | *(3a)* | *(3b)* | *(4)* | ***(5)*** | *(6)* | ***(7)*** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *UN number or substance identification number* | *Name and description* | *Class* | *Classification code* | *Packing group* | ***Dangers*** | *Type of tank vessel* | ***Cargo tank design*** |
| 1088 | ACETAL | 3 | F1 | II | **3** | N | **2** |
| 1090 | ACETONE | 3 | F1 | II | **3** | N | **2** |
| 1106 | AMYLAMINE (n-AMYLAMINE) | 3 | FC | II | **3+8** | C | **2** |
| 1107 | AMYL CHLORIDES (1-CHLOROPENTANE) | 3 | F1 | II | **3** | C | **2** |
| 1107 | AMYL CHLORIDES (1-CHLORO-3-METHYLBUTANE) | 3 | F1 | II | **3** | C | **2** |
| 1107 | AMYL CHLORIDES (2-CHLORO-2-METHYLBUTANE) | 3 | F1 | II | **3** | C | **2** |
| 1107 | AMYL CHLORIDE (1-CHLORO-2,2-DIMETHYLPROPANE) | 3 | F1 | II | **3** | C | **2** |
| 1120 | BUTANOLS (tert-BUTYLALCOHOL) | 3 | F1 | II | **3** | N | **2** |
| 1123 | BUTYL ACETATES (sec-BUTYLACETATE) | 3 | F1 | II | **3** | N | **2** |
| 1127 | CHLOROBUTANES (1-CHLOROBUTANE) | 3 | F1 | II | **3** | C | **2** |
| 1127 | CHLOROBUTANES (2-CHLOROBUTANE) | 3 | F1 | II | **3** | C | **2** |
| 1127 | CHLOROBUTANES (1-CHLORO-2-METHYLPROPANE) | 3 | F1 | II | **3** | C | **2** |
| 1127 | CHLOROBUTANES (2-CHLORO-2-METHYLPROPANE) | 3 | F1 | II | **3** | C | **2** |
| 1165 | DIOXANE | 3 | F1 | II | **3** | N | **2** |
| 1170 | ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), aqueous solution with more than 70 % alcohol by volume | 3 | F1 | II | **3** | N | **2** |
| 1173 | ETHYL ACETATE | 3 | F1 | II | **3** | N | **2** |
| 1193 | ETHYL METHYL KETONE or METHYL ETHYL KETONE | 3 | F1 | II | **3** | N | **2** |
| 1199 | FURALDEHYDES (a-FURALDEHYDE) or FURFURALDEHYDES (a-FURFURALDEHYDE) | 6.1 | TF1 | II | **6.1+3** | C | **2** |
| 1219 | ISOPROPANOL or ISOPROPYL ALCOHOL | 3 | F1 | II | **3** | N | **2** |
| 1220 | ISOPROPYLE ACETATE | 3 | F1 | II | **3** | N | **2** |
| 1230 | METHANOL | 3 | FT1 | II | **3+6.1** | N | **2** |
| 1231 | METHYL ACETATE | 3 | F1 | II | **3** | N | **2** |
| 1244 | METHYLHYDRAZINE | 6.1 | TFC | I | **6.1+3+8** | C | **2** |
| 1245 | METHYL ISOBUTYL KETONE | 3 | F1 | II | **3** | N | **2** |
| 1274 | n-PROPANOL or n-PROPYL ALCOHOL | 3 | F1 | II | **3** | N | **2** |
| 1277 | PROPYLAMINE (1-aminopropane) | 3 | FC | II | **3+8** | C | **2** |
| 1278 | 1-CHLOROPROPANE (propyl chloride) | 3 | F1 | II | **3** | C | **2** |
| 1545 | ALLYL ISOTHIOCYANATE, STABILIZED | 6.1 | TF1 | II | **6.1+3+inst.** | C | **2** |
| 1593 | DICHLOROMETHANE (methyl chloride) | 6.1 | T1 | III | **6.1** | C | **2** |
| 1648 | ACETONITRILE (methyl cyanide) | 3 | F1 | II | **3** | N | **2** |
| 1715 | ACETIC ANHYDRIDE | 8 | CF1 | II | **8+3** | N | **2** |
| 1717 | ACETYL CHLORIDE | 3 | FC | II | **3+8** | C | **2** |
| 1789 | HYDROCHLORIC ACID | 8 | C1 | II | **8** | N | **2** |
| 1831 | SULPHURIC ACID, FUMING | 8 | CT1 | I | **8+6.1** | C | **2** |
| 1922 | PYRROLIDINE | 3 | FC | II | **3+8** | C | **2** |
| 1987 | ALCOHOLS, N.O.S.  (tert-BUTANOL 90 % (MASS)/METHANOL 10 %(MASS) MIXTURE) | 3 | F1 | II | **3** | N | **2** |
| 2014 | HYDROGEN PEROXIDE, AQUEOUS SOLUTION with not less than 20 % but not more than 60 % hydrogen peroxide (stabilized as necessary) | 5.1 | OC1 | II | **5.1+8+inst.** | C | **2** |
| 2022 | CRESYLIC ACID | 6.1 | TC1 | II | **6.1+8+3+S** | C | **2** |
| 2056 | TETRAHYDROFURAN | 3 | F1 | II | **3** | N | **2** |
| 2205 | ADIPONITRILE | 6.1 | T1 | III | **6.1** | C | **2** |
| 2206 | ISOCYANATES, TOXIC, N.O.S. (4-CHLOROPHENYL ISOCYANATE) | 6.1 | T1 | II | **6.1+S** | C | **2** |
| 2247 | n-DECANE | 3 | F1 | III | **3+F** | C | **2** |
| 2263 | DIMETHYLCYCLOHEXANES (cis-1,4-DIMETHYLCYCLOHEXANE) | 3 | F1 | II | **3** | C | **2** |
| 2263 | DIMETHYLCYCLOHEXANES (trans-1,4-DIMETHYLCYCLOHEXANE) | 3 | F1 | II | **3** | C | **2** |
| 2266 | DIMETHYL-N-PROPYLAMINE | 3 | FC | II | **3+8** | C | **2** |
| 2311 | PHENETIDINES | 6.1 | T1 | III | **6.1** | C | **2** |
| 2333 | ALLYL ACETATE | 3 | FT1 | II | **3+6.1** | C | **2** |
| 2350 | BUTYL METHYL ETHER | 3 | F1 | II | **3** | N | **2** |
| 2356 | 2-CHLOROPROPANE | 3 | F1 | I | **3** | C | **2** |
| 2381 | DIMETHYL DISULPHIDE | 3 | FT1 | II | **3+6.1** | C | **2** |
| 2397 | 3-METHYLBUTAN-2-ONE | 3 | F1 | II | **3** | N | **2** |
| 2398 | METHYL tert-BUTYL ETHER | 3 | F1 | II | **3** | N | **2** |
| 2404 | PROPIONITRILE | 3 | FT1 | II | **3+6.1** | C | **2** |
| 2485 | n-BUTYL ISOCYANATE | 6.1 | TF1 | I | **6.1+3** | C | **2** |
| 2486 | ISOBUTYL ISOCYANATE | 6.1 | TF1 | I | **6.1+3** | C | **2** |
| 2487 | PHENYL ISOCYANATE | 6.1 | TF1 | I | **6.1+3** | C | **2** |
| 2490 | DICHLOROISOPROPYL ETHER | 6.1 | T1 | II | **6.1** | C | **2** |
| 2518 | 1,5,9-CYCLODODECATRIENE | 6.1 | T1 | III | **6.1+F** | C | **2** |
| 2527 | ISOBUTYL ACRYLATE, STABILIZED | 3 | F1 | III | **3+inst.** | C | **2** |
| 2615 | ETHYL PROPYL ETHER | 3 | F1 | II | **3** | N | **2** |
| 2683 | AMMONIUM SULPHIDE SOLUTION | 8 | CFT | II | **8+3+6.1** | C | **2** |
| 2754 | N-ETHYL TOLUIDINES (N-EHTYL-o-TOLUIDINE) | 6.1 | T1 | II | **6.1+F** | C | **2** |
| 2754 | N-ETHYL TOLUIDINES (N-EHTYL-m-TOLUIDINE) | 6.1 | T1 | II | **6.1+F** | C | **2** |
| 2754 | N-ETHYL TOLUIDINES (N-EHTYL-o-TOLUIDINE and N-EHTYL-m-TOLUIDINE MIXTURES) | 6.1 | T1 | II | **6.1+F** | C | **2** |
| 2754 | N-ETHYL TOLUIDINES (N-EHTYL-p-TOLUIDINE) | 6.1 | T1 | II | **6.1+F** | C | **2** |
| 2785 | 4-THIAPENTANAL (3-METHYLMERCAPTOPROPIONALDEHYDE) | 6.1 | T1 | III | **6.1** | C | **2** |
| 2789 | ACETIC ACID, GLACIAL or ACETIC ACID SOLUTION, more than 80% acid, by mass | 8 | CF1 | II | **8+3** | N | **2** |
| 2790 | ACETIC ACID SOLUTION, not less than 50% but not more than 80% acid, by mass | 8 | C3 | II | **8** | N | **2** |
| 2790 | ACETIC ACID SOLUTION, more than 10% and less than 50% acid, by mass | 8 | C3 | III | **8** | N | **2** |
| 2811 | TOXIC SOLID, ORGANIC, N.O.S.  (1,2,3-TRICHLOROBENZENE, MOLTEN) | 6.1 | T2 | III | **6.1+S** | C | **2** |
| 2811 | TOXIC SOLID, ORGANIC, N.O.S.  (1,2,3-TRICHLOROBENZENE, MOLTEN) | 6.1 | T2 | III | **6.1+S** | C | **2** |
| 2811 | TOXIC SOLID, ORGANIC, N.O.S. (1,3,5-TRICHLOROBENZENE, MOLTEN) | 6.1 | T2 | III | **6.1+S** | C | **2** |
| 2811 | TOXIC SOLID, ORGANIC, N.O.S. (1,3,5-TRICHLOROBENZENE, MOLTEN) | 6.1 | T2 | III | **6.1+S** | C | **2** |
| 2920 | CORROSIVE LIQUID, FLAMMABLE, N.O.S. (AQUEOUS SOLUTION OF HEXADECYLTRIMETHYLAMMONIUM CHLORIDE (50%) AND ETHANOL (35%)) | 8 | CF1 | II | **8+3+F** | N | **2** |
| 2924 | FLAMMABLE LIQUID, CORROSIVE, N.O.S. (AQUEOUS SOLUTION OF DIAKYL-(C8-C18)-DIMETHYLAMMONIUM CHLORIDE AND 2-PROPANOL) | 3 | FC | II | **3+8+F** | C | **2** |
| 2935 | ETHYL-2-CHLORO-PROPIONATE | 3 | F1 | III | **3** | C | **2** |
| 2947 | ISOPROPYL CHLOROACETATE | 3 | F1 | III | **3** | C | **2** |
| 2966 | THIOGLYCOL | 6.1 | T1 | II | **6.1** | C | **2** |
| 2984 | HYDROGEN PEROXIDE, AQUEOUS SOLUTION with not less than 8%; but less than 20% hydrogen peroxide (stabilized as necessary) | 5.1 | O1 | III | **5.1+inst.** | C | **2** |
| 3264 | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (AQUEOUS SOLUTION OF PHOSPHORIC ACID AND CITRIC ACID) | 8 | C1 | I | **8** | N | **2** |
| 3276 | NITRILES, TOXIC, LIQUID, N.O.S. (2-METHYLGLUTARONITRILE) | 6.1 | T1 | II | **6.1** | C | **2** |
| 3412 | FORMIC ACID with not less than 5% but not more than 10% acid by mass | 8 | C3 | III | **8** | N | **2** |
| 3426 | ACRYLAMIDE SOLUTION | 6.1 | T1 | III | **6.1** | C | **2** |
| 3429 | CHLOROTOLUIDINES, LIQUID | 6.1 | T1 | III | **6.1+S** | C | **2** |
| 9004 | DIPHENYLMETHANE-4,4’-DIISOCYANATE | 9 |  |  | **9+S** | N | **2** |

13. Thus, contrary to earlier assumptions, there is no apparent unambiguous single “CMR” criterion on which the requirement of a closed cargo tank can be based.

14. As a consequence of requiring a closed cargo tank, it is necessary to return ashore the gas/air mixtures during loading operations in accordance with paragraph 7.2.4.25.5 of ADN. Therefore, besides the CMR hazards discussed in connection with proposal ECE/TRANS/WP.15/AC.2/2016/26 - (FuelsEurope), other reasons could make it necessary to return ashore the gas/air mixture. Thus, it should be examined in more detail what reasons, other than CMR, there were for requiring a closed cargo tank and whether these reasons apply for UN 3082 (heavy heating oil).

1. Distributed in German by the Central Commission for the Navigation of the Rhine under the symbol CCNR-ZKR/ADN/WP.15/AC.2/2016/36. [↑](#footnote-ref-1)
2. In accordance with the programme of work of the Inland Transport Committee for 2016–2017 (ECE/TRANS/2016/28/Add.1 (9.3.)). [↑](#footnote-ref-2)