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Working Party on the Transport of Dangerous Goods

English

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)

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Item 5 of the provisional agenda

Reports of informal working groups

Report of the eleventh meeting of the informal working group on "Substances"

Transmitted by the Central Commission for the Navigation of the Rhine (CCNR)

Introduction

1. The eleventh meeting of the informal working group on "substances" took place in Strasbourg from 13–15 May, 2019 in the Palais du Rhin at the invitation of the Central Commission for the Navigation of the Rhine (CCNR).
2. Mr. Krischok (Germany) chaired the meeting, which was attended by the representatives of Germany, the Netherlands, the European Chemical Industry Council (CEFIC), the European Barge Union (EBU), the European Skippers Organisation (ESO), FuelsEurope and the recognized classification societies.

Results

3. In accordance with the mandate given to it by the Safety Committee, the group dealt with the following issues.

A. Master table

4. The informal working group on "substances" was tasked by the Safety Committee with submitting a proposal on how inconsistencies in the names and descriptions in Tables A and C, including the various ADN language versions, and which are to be found in a number of specific cases, might be avoided. To this end, a so-called "master table" was submitted. All four language versions of Tables A and C of the ADN 2019 were brought together in the Excel table. Key fields were also set up for the master table as a whole and for each of the individual eight tables to ensure unambiguous identification of the entries. There are additional columns at the end of the table that enable the consistency of UN / substance numbers and packing groups in successive rows and the consistency of UN / substance numbers within a row across all tables to be checked.
5. Discrepancies between Tables A and C and between the individual language versions are easily recognised and removed in such a "master table". Provided that amendments, additions and deletions are made solely in this "master table", it is a simple matter to generate the harmonised Tables A and C in the individual language versions as an extract from the "master table". Extending this to additional languages is easy.

6. The informal working group concludes that the use of such a table could be an appropriate internal tool whereby future discrepancies between individual tables and language versions can be largely avoided.

B. Heated substances handed over for carriage - name and description

7. In the discussion of German document ECE/TRANS/WP.15/AC.2/2018/29 and of the informal document INF. 19 submitted by the Secretariat in relation to it, the group came to the following conclusions:

- As usual, the singular is to be used.
- “Limiting” can be dispensed with in the English version because a range is always limited.
- The wording “carried or handed over for carriage” can also be dispensed with as the ADN regulates carriage in general and, as defined, carriage also includes the handing over for carriage.
- The range stipulation “15 K” is a correct scientific notation. Alternatively, the ADN does however provide for the option of describing the temperature range as “15° C” in 1.2.2. This does not however imply any difference in terms of content.
- Upper and lower case should be standardised across all languages.
- The use of “heated” in the descriptions of the two classification codes F2 and F4 appears to the Informal Working Group to be justified because in both instances the same technical content and the same danger are being described. The only difference is in the temperature.

Proposal:

8. The name and description for substance number 9001 should be worded the same for Tables A and C, as follows: “HEATED SUBSTANCE WITH A FLASHPOINT ABOVE 60° C within a range of 15 K below the flashpoint”.

C. Shipping name in Table A, Table B and Table C

9. The informal working group examined the proposals and information in French documents ECE/TRANS/WP.15/AC.2/2018/41 (paragraph 6 to 13) and ECE/TRANS/WP.15/AC.2/2018/42 (paragraph 7).

10. In the points relating to the amendment of the name and description for UN 1177 in Table C of the French version (paragraph 6 and 7 in document ECE/TRANS/WP.15/AC.2/2018/41) and to the harmonisation of the information in: column (8) of Table A to the entries in Table C (paragraph 8 to 11 in document ECE/TRANS/WP.15/AC.2/2018/41), the group agreed with the French delegation’s opinion.

11. For UN 2785 the informal working group thinks that the bracket in the French version of Table A in column (2) should be deleted. The accents in column (2) in the English version of Table C should be deleted.

12. In the name and description of substance number 9000 AMMONIA, DEEPLY REFRIGERATED (paragraphs 12 and 13 in document ECE/TRANS/WP.15/AC.2/2018/41) attention is drawn to the fact that as proposed by the informal working group at the 33rd session of the Safety Committee, it was decided to delete “ANHYDROUS” for substance number 9000 in column (2) of Table C.

13. Substance numbers 9001 and 9002 are to be found in all languages in the list of collective entries 2.2.3.3 and substance numbers 9005 and 9006 are to be found in English, French and Russian in the list of entries 2.2.9.3. Substance numbers 9003 and 9004 on the other hand are missing in the list of entries 2.2.9.3 in all language versions.

4. In class 3 substance numbers 9001 and 9002 are assigned the classification codes F4 and F5 exceeding ADR. In the informal working group’s opinion, the problem is that no similarly clear rule was decided on for class 9. In the English, French and Russian language

version, substance numbers 9005 and 9006 are obviously interpreted as belonging to classification code M6. That is not quite correct inasmuch as the criteria defined for the classification code M6 in ADR result in assignment to UN 3082; assignment to substance numbers 9005 and 9006 is only possible if these criteria (UN 3082) are not met. No classification code is assigned to substance numbers 9003 and 9004 in any language version.

15. The problem could be resolved by introducing an additional classification code in class 9 for carriage in tankers exceeding ADR.

Proposals:

16. Replace “ACÉTATE D’ÉTHYLBUTYLE” in Table C: column (2) of the French version of UN 1177 with “ACÉTATE DE 2 ÉTHYLBUTYLE”.

17. For UN 2074, UN 3468 and UN 1153, packing group II, delete “T” in column (8) of Table A and for UN 3456 in column (8) of Table A delete “T3”.

18. For UN 2288, UN 2582, UN 2785, UN 2984 and UN 3429 in column (8) of Table A insert “T”.

19. For UN 2785 in Table A column (2) of the French version, delete “(MÉTHYLTHIO-3 PROPANAL)” and in Table C column (2) of the English version replace “(3-MÉTHYLMERCAPTO- PROPIONALDÉHYDE)” with “(3-METHYLMERCAPTO-PROPIONALDEHYDE).”

20. In 2.2.9.1.2. insert at the end:

„M12 Other substances and articles presenting a danger during carriage in tank vessels, but not meeting the definitions of another Class“.

In 2.2.9.3 of the English, French and Russian language versions, delete the entries for substance numbers 9005 and 9006 in classification code M6.

In 2.2.9.3 add at the end for all language versions:

	Only substances and articles listed in Table A of Chapter 3.2 are subject to the provisions for Class 9 under this classification code, as follows:
Other substances and articles presenting a danger during carriage in tank vessels, but not meeting the definitions of another Class	M12
	9003 SUBSTANCES WITH A FLASH-POINT ABOVE 60 °C AND NOT MORE THAN 100 °C, which do not belong to another class
	9004 DIPHENYLMETHANE-4, 4'-DIISOCYANATE
	9005 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., MOLTEN
	9006 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

and for substance numbers 9003, 9004, 9005 and 9006 insert “M12” in column 3(b) of Table A and C respectively.

D. Examination of carriage prohibitions in ADR, RID and ADN

21. The informal working group on “substances” investigated the pertinent texts of the ADR, RID and ADN on the subject of carriage bans. The differences between the different modes of transport are essentially to do with carriage under temperature control conditions. The group noted that as with maritime transport the temperature control requirements and associated measures for the carriage of dangerous goods by inland waterways are technically capable of implementation. It was therefore concluded that the requirements in the ADN on carriage prohibition should largely be modelled on those in the ADR.

22. The informal working group endorsed the French delegation’s opinion (document ECE/TRANS/WP.15/AC.2/2018/42 paragraph 6) that the carriage ban for UN 0224 BARIUM AZIDE, dry or wetted with a water content less than 50% mass can be deleted. This is also in the context that, unlike in the RID, other class 1 substances with compatibility group A can be carried in accordance with ADN regulations.

Proposal:

23. At the end of 2.2.41.2.3 delete: „- Barium azide with a water content less than 50% (mass).“.

E. Table C - UN No. 3295 HYDROCARBONS, LIQUID, N.O.S.

24. The additional data and information announced by CEFIC at the 33rd session are not yet fully available. Once this information has been provided, the informal working group will look into this matter further.

F. Examples in 3.1.2.8.1.4

25. In Table C the only information about vapour pressures and boiling points is as part of the proper shipping name. In this context, as proposed by the informal working group at the 33rd session of the Safety Committee, remark 29 has been deleted. Moreover, the working group is unaware of any further requirements for the insertion of information about vapour pressures or boiling points in the proper shipping name. Which is why the description of related examples can also be dispensed with.

Proposal:

26. Delete 3.1.2.8.1.4.

G. Sludge and Bilge Water as environmentally hazardous substances of UN 3082

27. Unlike inland navigation vessels, heavy heating oil is used as a fuel in seagoing vessels. This also affects the composition and characteristics of the bilge water. In the course of the discussion the informal working group came to the conclusion that this issue can be addressed by means of two separate entries for bilge water (“bilge water, contains sludge” and “bilge water, free of sludge”).

8. The informal working group has been tasked with examining the need for transitional provisions in connection with the new entry for sludge decided for ADN 2021. The same question arises in the event that the Safety Committee adopts the proposal to amend the existing bilge water entry and incorporate a second new entry for bilge water in Table C. For the working group’s part, a transitional provision is only deemed necessary for small single hull oil separator vessels with a carrying capacity of less than 300 t. A transitional provision until 2038 is recommended for these boats. But it should already refer to the new entries for “sludge” and, as the case may be, “bilge water, contains sludge”.

For craft other than the aforementioned oil separator vessels, the group recommends having the economic necessity of such a transitional provision examined by the industry.

29. Should the Safety Committee accept the proposal to adopt a second new entry for “bilge water, contains sludge”, the working group would like to point out that vapour recovery is prescribed when loading into enclosed cargo tanks. However, seagoing vessels are not equipped for vapour recovery when discharging “sludge” or “bilge water, contains

sludge". A change in the regulations should therefore be considered which would enable equivalent alternatives to vapour recovery to be used (e.g. filtration systems).

Proposals:

30. For UN 3082 amend Environmentally hazardous substance, liquid, N.O.S (bilge water) in Table C: column (2) as follows: “ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BILGE WATER, FREE OF SLUDGE)”

31. Add the following row to Table C:

(1)	(2)	(3a)	(3b)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
UN No. or substance identification No.	Name and description	Class	Classification code	Packing group	Dangers	Type of tank vessel	Cargo tank design	Cargo tank type	Cargo tank equipment	Opening pressure of the pressure relief valve/high velocity vent valve, in kPa	Maximum degree of filling in %	Relative density at 20 °C	Type of sampling device	Pump room below deck permitted	Temperature class	Explosion group	Anti-explosion protection required	Equipment required	Number of cones/blue lights	Additional requirements/Remarks
3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BILGE WATER, CONTAINS SLUDGE)	9	M6	III	9+CMR+N1	N	2	3		10	97		3	yes			no	PP, EP, TOX, A	0	

Comment:

Assignment of the N double-hull tanker to the aforementioned new row was in consideration of the entry for sludge envisaged for 2021.

After the Informal Working Group session, however, some members noted that according to the flow chart a C-vessel would be required for hazard N1 as the vapour pressure - owing to the water content - exceeds 1 kPa at 50° C. A member of the Informal Working Group therefore subsequently proposed inserting a comment clarifying the classification of the N-vessel (e.g. the environmentally hazardous component sludge with hazard N1 exerts a vapour pressure of ≤ 1 kPa at 50° C), whereas other members do not consider this to be necessary.

The Safety Committee is therefore requested, should the aforementioned proposal be accepted, to discuss inserting an explanatory note or instructing the Informal Working Group on “substances” to do so.

H. Examination of the list of entries 2.2.9.3 M11 and 2.2.9.1.14

32. After examining the entries for UN 2216 in 2.2.9.1.14, 2.2.9.3 and in Table A in all four language versions of the ADN, the informal working group recommends harmonising the spelling in Table A and amending the lists in 2.2.9.3 on classification code M11 accordingly.

Proposals:

33. In Table A column (2) show the alternative names (“FISH MEAL, STABILISED” and “FISH SCRAP, STABILISED”) capitalised, separated by a lower case “or” (all language versions).

34. In the list in 2.2.9.3 classification code M11 in the French version, add the alternative name “2216 FISH SCRAP, STABILISED”.

35. In the English, Russian and German version of the ADN in the lists in 2.2.9.3 on classification code M11, add the alternative names “2216 FISH MEAL, STABILISED” and “2216 FISH SCRAP, STABILISED”.

I. Flowchart 3.2.3.3 - scheme A

36. After a fundamental discussion, the informal working group determined that there are currently no grounds for challenging or amending the established three-stage system for specifying the conditions of carriage for tankers (C-vessel – calculation of internal tank overpressure / C-vessel with insufficient data – initial boiling point / N-vessel – vapour pressure).

37. Based on a CEFIC room document, the proposal to depict the contents of schemes A, B and C as well in flowchart form was discussed for the first time and will be continued at the informal working group’s next session.

38. It was pointed out during the discussion that the flowchart contains an error. In the current version, substances which exhibit no other dangerous characteristic than an auto-ignition temperature < 200 °C would technically have to be classified as not dangerous goods. Subject to the Safety Committee’s approval, the informal working group could develop a proposal for resolving the problem at its next session.

39. The proposal submitted by the Dutch side to improve the legibility of schemes A, B and C by changing the sequence of the columns and adding additional explanations to the schemes, was approved. At the working group’s suggestion, the Dutch delegation agreed to examine whether general explanatory notes in respect of the flowchart in 3.2.3.3, improving clarity when using the diagram, can be proposed.

Proposals:

40. Amend scheme A such that it reads:

“Scheme A: Criteria for cargo tank equipment in vessels of type C

Ascertain which substance/cargo tank characteristics in the first three columns are relevant. Select the applicable row in the relevant column. The cargo tank equipment requirements for C-vessels are then described in this row in the fourth column.

Substance/cargo tank characteristics			Requirements arising
Cargo tank internal pressure at liquid temperature of 30 °C and gaseous phase temperature of 37.8 °C > 50 kPa	Cargo tank internal pressure at liquid temperature of 30 °C and gaseous phase temperature of 37.8 °C ≤ 50 kPa	Cargo tank internal pressure unknown, owing to absence of certain data	Cargo tank equipment
Refrigerated			With refrigeration (No. 1 in column (9))
Non-refrigerated	Cargo tank internal pressure at 50 °C > 50 kPa without water spraying	Boiling point ≤ 60°C	Pressure tank (400 kPa)
	Cargo tank internal pressure at 50 °C > 50 kPa with water spraying	60 °C < boiling point ≤ 85°C	Pressure relief valve/high velocity vent valve opening pressure: 50 kPa, with water-spraying system (No. 3 in column (9))
	Cargo tank internal pressure at 50 °C ≤ 50 kPa		Pressure relief valve/high velocity vent valve opening pressure as calculated, but at least 10 kPa
		85 °C < boiling point ≤ 115°C	Pressure relief valve/high velocity vent valve opening pressure: 50 kPa
		Boiling point > 115°C	Pressure relief valve/high velocity vent valve opening pressure: 35 kPa

41. Amend scheme B such that it reads:

Scheme B: Criteria for equipment of vessels of type N with closed cargo tanks

Ascertain which substance/characteristics in the first six columns are relevant. Select the applicable row in the relevant column. The cargo tank equipment requirements for N-vessels with enclosed cargo tanks are then described in this row in the seventh column.

Substance characteristics						Requirements arising
Class 3, flash-point < 23°C				Corrosive substances	CMR substances	Cargo tank equipment
175 kPa ≤ P _{d50} < 300 kPa without refrigeration						Pressure tank (400 kPa)
175 kPa ≤ P _{d50} < 300 kPa, with refrigeration (No. 1 in column (9))	110 kPa ≤ P _{d50} < 175 kPa without water spraying					Pressure relief valve/high velocity vent valve opening pressure: 50 kPa (with refrigeration (No. 1 in column (9)))
		110 kPa ≤ P _{d50} < 150 kPa with water spraying (No. 3 in column (9))	P _{d50} < 110 kPa	Packing group I or II with P _{d50} > 12.5 kPa or reacting dangerously with water or with gases in solution	Pressure relief valve/high velocity vent valve opening pressure: 10 kPa; with water spraying when vapour pressure > 10 kPa (calculation of the vapour pressure according to the formula for column 10, except that v _a = 0.03)	Pressure relief valve/high velocity vent valve opening pressure: 10 kPa (with water spraying (No. 3 in column (9)))

42. Amend scheme C such that it reads:

“Scheme C: Criteria for equipment of vessels of type N with open cargo tanks

As certain which substance/characteristics in the first three columns are relevant. Select the applicable row in the relevant column. The cargo tank equipment requirements for N-vessels with open cargo tanks are then described in this row in the fourth column.

Substance characteristics			Requirements arising
Classes 3 and 9	Flammable substances	Corrosive substances	Cargo tank equipment
$23^{\circ}\text{C} \leq \text{flash-point} \leq 60^{\circ}\text{C}$	Flash-point $> 60^{\circ}\text{C}$ carried while heated to $\leq 15\text{ K}$ below flash-point or Flash-point $> 60^{\circ}\text{C}$, at or above their flash-point	Acids, transported while heated or flammable substances	With flame-arrester
$60^{\circ}\text{C} < \text{flash-point} \leq 100^{\circ}\text{C}$ or elevated temperature substances of Class 9		Non-flammable substances	Without flame-arrester

J. Substances permitted for carriage in membrane tanks and criteria

43. The informal working group on “substances” began by taking note of a verbal report from the last session of the informal “membrane tanks” working group.

44. The group then addressed the 16 UN numbers (1005, 1010, 1011, 1012, 1020, 1030, 1033, 1038, 1055, 1063, 1077, 1086, 1965, 1972, 1978 and 2187) that had been initially selected by the informal “membrane tanks” working group as being suitable for carriage in membrane tanks. In the process, particular attention was paid to whether the special requirements of the IGC code pose any contradictory or additional requirements for carriage by inland waterway tankers as compared with the ADN.

45. In the course of these investigations, the informal working group came to the following conclusions:

- (i) Because carriage in G-vessels, some of them refrigerated, of all the relevant substances in the ADN is already regulated, in the informal “substances” working group’s opinion there are no new or amended requirements as concerns personal protection equipment.
- (ii) In the opinion of the informal working group on “substances” the special requirements for UN 2187 carbon dioxide, refrigerated, liquid (both entries) contained in the IGC code indicate carriage in a pressure tank. This being so, it is recommended that the informal “membrane tanks” working group re-examine whether carriage in membrane tank should be stipulated.
- (iii) The discussion in the informal working group on “substances” was unable to provide any definitive clarity on whether membrane tanks fully comply in all cases with the definition of an independent cargo tank, as required in some instances in the IGC code. The informal working group on “substances” recommends having this issue re-examined by the informal working group on “membrane tanks”. The findings should be taken into account in the ADN in the definition of the new tank type for membrane tanks.
- (iv) As a precaution, the informal working group on “substances” would also like to point out that in developing the requirements for carriage in membrane tanks, the latter must be compatible and compliant with the requirements arising from the new explosion protection concept, especially with regard to autonomous protective systems.

46. Based on the fact that it is initially only envisaged to carry gases in membrane tanks, the informal working group on “substances” recommends the following approach to integration into the ADN system:

- (i) In conjunction with the flowchart and classification criteria for substances, substances that are earmarked for carriage in membrane tanks should initially be included as a separate list.
- (ii) In accordance with the aforementioned list, additional new rows should then be inserted in Table C.

47. In the informal working group’s opinion, this approach currently entails the least effort in implementing and maintaining the new requirements for carriage in membrane tanks. This will enable experience to be gathered first, while not restricting the opportunities for further developments in requirements.

K. Any other business

48. In the course of its work, in Table C in the row for entry UN 2924 Flammable liquid, corrosive, N.O.S. packing group III, citing explosion protection subgroup II B3 in column (16) the informal working group on “substances” noted that the information for remark 44 in column (20) is missing.

49. It was also pointed out that remark 37 (“For this substance, the cargo tank system shall be capable of resisting the vapour pressure of the cargo at higher ambient temperatures whatever the system that has been adopted for treating the boil-off gas.”) is not used in the current Table C.
