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COMMITTEE OF EXPERTS ON THE
TRANSPORT OF DANGEROUS GOODS

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

Draft amendments to the Model Regulations

Chapter 3.2

Creation of a new entry
"Ammonium nitrate emulsion matrix"

Transmitted by the expert from France

1. Introduction

1.1 Ammonium nitrate emulsion matrices for the manufacture of type E blasting explosives, UN Nos. 0241 and 0332, consist of emulsions of minute droplets of an aqueous solution of nitrates in an oily phase. The overall nitrates content is generally greater than 70%.

Although used as raw material for the manufacture of explosives, such emulsions are generally excluded from Class 1.

1.2 In present practice they are carried either as n.o.s. entries of another class, frequently Class 5.1 or sometimes 4.1, or are simply not carried as dangerous goods.

A common solution is to assign them to Division 5.1 with UN No. 3139, oxidizing liquid n.o.s.

1.3 From the point of view of safety during carriage it is, of course, preferable to carry the emulsions, which are processed into explosives at the site where they are to be used, rather than carry the explosive itself.

1.4 The quantities carried of goods of this type are tending to increase. It is preferable to be able to carry them in tanks, or in shells on mobile units for the manufacture of explosives. The lack of a specific entry means that appropriate instructions cannot be issued. The disparities mentioned in paragraph 1.2 above also need to be eliminated.

1.5 We therefore propose that a new entry for these substances should be inserted in chapter 3.2.

1.6 The properties of these emulsions, which are relatively well known since they have now been in use in industry for about 20 years, vary in terms of the composition and fineness of the emulsion. The attached data sheet gives some limit values for emulsions currently in use.

1.7 From known experience, their danger characteristics correspond to Class 5, Division 5.1, and we propose that they should be assigned to this class in accordance with the provisions of paragraph 2.5.2.1.1 of the Model Regulations. The packing group depends on properties such as those described in paragraph 1.6 and we propose that its determination should be subject to the approval of the competent authority.

1.8 The appropriate packing instructions are those for liquids of Class 5.1: P502 for packing group I and P504 for packing groups II and III.

1.9 The instruction for the use of the appropriate IBC is IBC02, in accordance with the rationalized approach adopted by the Committee in the course of its work.

1.10 Carriage in tanks is permitted at the present time by the competent authorities of many countries in austenitic steel equipment subject to type T2, or less stringent, requirements. We therefore propose that this instruction should be assigned to the carriage in tanks of packing groups II and III of these substances.

2. Proposal

2.1 Add a new UN number to chapter 3.2 of the United Nations Recommendations as follows:

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
33XX	AMMONIUM NITRATE EMULSION MATRICES	5.1		I	YYY	NONE	P502			
		5.1		II	YYY	500g	P504 IBC02		T2	TP17 TP25
		5.1		III	YYY	1kg	P504 IBC02		T2	TP17 TP25

2.2 Add special provision yyy to chapter 3.3, as follows:

The term "ammonium nitrate emulsion matrix" used in these Regulations designates a substance intended for the manufacture of type E blasting explosives, UN Nos. 0241 and 0332; it constitutes an ammonium nitrate-based aqueous solution (which may also comprise small quantities of other mineral nitrates) in the form of droplets dispersed in an oily phase. This substance is classified on the basis of known experience, in accordance with the provisions of paragraph 2.5.2.1.1. The packing group is assigned by the competent authority.

2.3 Add the following special provision to paragraph 4.2.4.3:

TP25 The tank shall be made of austenitic steel.

3. Changes stemming from this amendment

If this amendment is adopted, the following changes should be made:

In the "ALPHABETICAL INDEX OF SUBSTANCES AND ARTICLES", after "AMMONIUM NITRATE, 5.1, 1942", insert "AMMONIUM NITRATE, EMULSION MATRICES, 5.1, 33XX" and after "ELEVATED TEMPERATURE SOLID, N.O.S., 9, 3258", insert "Emulsion matrices, see 5.1, 33XX".

Annex

DATA SHEET CONCERNING THE CLASSIFICATION OF
AMMONIUM NITRATE EMULSION MATRICES

Section 1. SUBSTANCE IDENTITY

1.1 Chemical name: N/A

1.2 Chemical formula: N/A

1.3 Other names/synonyms: N/A

1.4.1 UN number: 33 XX

1.4.2 CAS number: N/A

1.5 Proposed classification for the Recommendations

1.5.1 proper shipping name (3.1.2*): ammonium nitrate emulsion
matrices

1.5.2 class/division: 5.1 subsidiary risk(s):
packing group:

1.5.3 proposed special provisions, if any: see proposal,
paragraph 2.2

1.5.4 proposed packing method: PG I: P502; PG II and III:
P504, IBC02

Section 2. PHYSICAL PROPERTIES

2.1 Melting point or range: N/A

2.2 Boiling point or range: N/A

2.3 Relative density at:

2.3.1 15° C:

2.3.2 20° C: 1.3 to 1.5

2.3.3 50° C:

2.4 Vapour pressure at:

2.4.1 50° C: depends on composition

2.4.2 65° C: depends on composition

* This and similar references are to chapters and paragraphs in the
Model Regulations on the Transport of Dangerous Goods.

- 2.5 Viscosity at 20° C*: depends on composition (can be pumped)
- 2.6 Solubility in water on 20° C: N/A
- 2.7 Physical state at 20° C (2.2.1*): liquid
- 2.8 Appearance at normal carriage temperatures, including colour and odour:
Beige or light-brown paste, fuel oil odour
- 2.9 Other relevant physical properties:

Section 3. FLAMMABILITY

- 3.1 Flammable vapour
 - 3.1.1 Flash point (2.3.3*): depends on composition, generally greater than 105° C/cc
 - 3.1.2 Is combustion sustained? (2.3.1.2*): No
- 3.2 Autoignition temperature: greater than 200° C
- 3.3 Flammability range (LEL/UEL): N/A
- 3.4 Is the substance a flammable solid? (2.4.2*): No

Section 4. CHEMICAL PROPERTIES

- 4.1 Does the substance require inhibition/stabilization or other treatment such as nitrogen blanket to prevent hazardous reactivity?: No
- 4.2 Is the substance an explosive according to paragraph 2.1.1.1? (2.1*): No
- 4.3 Is the substance a desensitized explosive? (2.4.2.4*): No
- 4.4. Is the substance a self-reactive substance? (2.4.1*): No
- 4.5 Is the substance pyrophoric? (2.4.3*): No
- 4.6 Is the substance liable to self-heating? (2.4.3*): No
- 4.7 Is the substance an organic peroxide? (2.5.1*): No
- 4.8 Does the substance in contact with water emit flammable gases? (2.4.4*): No
- 4.9 Does the substance have oxidizing properties? (2.5.1*): Yes
 - 4.9.1 If yes, give details: classified on the basis of known experience according to paragraph 2.5.2.1.1.

4.10 Corrosivity (2.8*) to:

packaging materials: no known corrosivity

4.11 Other relevant chemical properties:

Section 5. HARMFUL BIOLOGICAL EFFECTS

5.1 LD 50, oral (2.6.2.1.1*): mg/kg Animal species:

5.2 LD 50, dermal (2.6.2.1.2*): mg/kg Animal species:

5.3 LC 50, inhalation (2.6.2.1.3*): mg/litre Exposure time:hours
or:ml/m³ Animal species:

5.4 Saturated vapour concentration at 20° C (2.6.2.2.4.3*): ml/m³

5.5 Skin exposure (2.8*) results Exposure time: hours/minutes
Animal species:

5.6 Other data:

5.7 Human experience: no known toxic properties but irritant effect on
dermal tissue

Section 6. SUPPLEMENTARY INFORMATION

6.1 Recommended emergency action

6.1.1 Fire (include suitable and unsuitable extinguishing agents):
.....

6.1.2 Spillage:

6.2 Is it proposed to transport the substance in:

6.2.1 Intermediate Bulk Containers (7.5*)?: Yes

6.2.2 Portable tanks (6.6*)?: Yes

If yes, give details in Sections 7 and/or 8.

Section 7. INTERMEDIATE BULK CONTAINERS (IBCs) (only complete if yes in
2.6.2.1.1)

7.1 Proposed type(s): IBC02

Section 8. PORTABLE TANK TRANSPORT (only complete if yes in 2.6.2.1.2)

8.1 Description of proposed tank: Type T2, austenitic steel only.
