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COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS

Eighth session
Geneva

REPORT OF THE COMMITTEE OF EXPERTS ON ITS EIGHTH SESSION

(2-10 December 1974)

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REPORT

1. The Committee of Experts on the Transport of Dangerous Goods held its eighth session from 2 to 10 December 1974. The session was attended by experts appointed by the following countries: Canada; France; Germany, Federal Republic of; Italy; Norway; Poland; Union of Soviet Socialist Republics; United Kingdom; and United States of America. The following organizations were represented by observers who took part in the Committee's work in an advisory capacity: World Health Organization (WHO), Inter-Governmental Maritime Consultative Organization (IMCO), Central Office for International Railway Transport (OCTI), International Chamber of Commerce (ICC), International Air Transport Association (IATA), International Road Transport Union (IRU) and International Chamber of Shipping (ICS). In addition representatives of the European Council of Chemical Manufacturers' Federations (CEFIC) were consulted when items of direct concern to their organization were under consideration. An official of the Commission of the European Communities took part in the session as an observer.

2. An expert from the Netherlands was invited by the Committee to take part as an observer in the work of the session.

ADOPTION OF THE AGENDA

3. The Committee adopted the provisional agenda submitted by the Secretariat (E/CN.2/CONF.5/R.420 and Add.1) and, on the basis of proposals made by the expert from the United Kingdom (E/CN.2/CONF.5/R.437), agreed on an order of discussion for the various items.

ELECTION OF CHAIRMAN

4. On the nomination of the expert from the United Kingdom, seconded by the experts from France, Italy and the Union of Soviet Socialist Republics, Mr. W. BYRD (United States of America) was elected Chairman by acclamation.

RESOLUTIONS 1743 (LIV) AND 1744 (LIV) ADOPTED BY THE ECONOMIC AND SOCIAL COUNCIL

Resolution 1744 (LIV)

5. The Committee took note of Economic and Social Council resolution 1744 (LIV).

6. It also took note of the comments by Governments and interested international organizations (E/CN.2/CONF.5/R.419 and Add.1) on the Committee's revised Recommendations (ST/ECA/81/Rev.2/Amend.1).

7. The expert from Norway stated that his Government had begun the procedure for accession to the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). He also said that regulations on the transport of dangerous goods in his country would in essentials be consistent with the corresponding international regulations and recommendations.

8. The communication received from WHO (E/CN.2/CONF.5/R.419/Add.1) stating that the Organization intended to propose a classification for pesticides in various circumstances, including transportation, gave rise to serious concern in the Committee. According to the communication, the classification criteria likely to be selected by WHO, inter alia for purposes of carriage, might be different from those adopted by the Committee in 1972 and might consequently cause confusion. The Committee thought that such a situation would be regrettable. It invited the Secretariat to draw the attention of the Director-General of WHO to the Committee's terms of reference as laid down in various resolutions adopted by the Economic and Social Council, particularly resolutions 645 G (XXIII) and 1488 (XLVIII).

9. The representative of IMCO said that there was no need to dwell on the well-known co-operation that had always been maintained between his Organization and the Committee. He reminded the Committee that the International Maritime Dangerous Goods Code was based on the Recommendations and that the IMCO Sub-Committee on Carriage of Dangerous Goods kept itself continuously informed of the Committee's decisions.

10. The representative of ICC said that the Recommendations on the Transport of Dangerous Goods were of great importance to the industries he represented. Millions of tons of harmful products were carried about the world. Not only safety but also trade was involved. Industry had a vital interest in ensuring that the conditions to be met for the different modes of transport were based on the Committee's Recommendations. The more fully such conditions were harmonized, the more favourable they would be to free and fair competition. In close co-operation with the international organizations concerned, ICC would render every possible assistance in attaining that objective.

11. The representative of CEFIC associated himself with that statement.

Resolution 1743 (LIV)

12. By its resolution 1743 (LIV), the Economic and Social Council requested the Committee to report to the Council on the progress of its investigations and recommendations concerning the steps that should be taken with a view to bringing about uniformity in the varicus modes of transport.

13. On the basis of a memorandum by the Secretariat (E/CN.2/CONF.5/R.438), the Committee prepared the report which it submits to the Economic and Social Council in response to the abovementioned resolution (E/CN.2/CONF.5/56).

14. In the course of preparation of the report, the expert from the Union of Soviet Socialist Republics informed the Committee that the only reason why his Government had not acceded to ADR was that the classification used in ADR was not consistent with the Committee's Recommendations.

ACTIVITIES OF INTERNATIONAL ORGANIZATIONS CONCERNED WITH DRAFTING, AT THE INTERNATIONAL LEVEL, REGULATIONS OR RECOMMENDATIONS ON THE TRANSPORT OF DANGEROUS GOODS

Statements

15. The representatives of the various international organizations described the results of the work performed by their organizations since 1 July 1973, the date specified in the Committee's report to the Economic and Social Council under resolution 1743 (LIV). They expressed their concurrence with that report.

Possible international convention on the transport of dangerous goods

16. Resolution 1 adopted by the International Conference on the Safety of Life at Sea, 1974, to which the IMCO Secretariat had drawn attention (E/CN.2/CONF.5/R.434), gave rise to an exchange of views concerning the need, emphasized by the expert from the Union of Soviet Socialist Republics in his proposal (E/CN.2/CONF.5/R.439), for an international convention on the transport of dangerous goods.

17. After the representative of IMCO had introduced the resolution and stressed that it had been adopted unanimously, the expert from the Union of Soviet Socialist Republics reviewed the background to the question. He mentioned in particular that his proposal, which had been laid before IMCO, had been submitted to the Committee as the authority competent to settle questions involving more than one mode of transport.

18. He urged the Committee to take up the matter with a will to reach agreement, not of course on the details of his proposal, but on the principle of such a convention. His proposals were not unalterable, but he considered it essential that the Committee should decide at the current session whether an international convention was needed and, if so, on the main issues to be settled in that connexion. In his estimation, a draft convention could be prepared by about 1978-1979 with a view to adoption in 1980 or thereabouts. The Committee's decision would be transmitted to the Economic and Social Council.

19. The expert from Poland supported the proposal made by the expert from the Union of Soviet Socialist Republics.

20. The representative of IATA stated that his organization viewed with interest the proposal made by the expert from the Union of Soviet Socialist Republics concerning an international convention; however, such a convention would probably take a long time to prepare. His organization was currently beset by an extremely important practical problem: although more than 40 Governments had subscribed to the IATA Regulations, some of them had changed their attitude as a result of recent accidents. However, none of the accidents had been due to the IATA Regulations; the cause had been failure to comply with them. In the future, penalties would have to be prescribed for breach of the Regulations, but that was a matter for domestic government legislation. In the meantime it was essential for international air traffic that Governments should accept dangerous goods classified, labelled and packed in accordance with the IATA Regulations.

21. The expert from the United States of America said that the opening of a convention for signature by States and, above all, ratification of or accession to such a convention would take a long time. That was particularly true for the United States of America and for other States with the same institutional structure. However, he did not feel in a position to comment one way or another on the proposal submitted to the Committee. He suggested that the Committee should take note of the proposal. For his part, he would have to seek instructions from his Government on the subject.

22. The expert from the United Kingdom said that, in his view, an international convention was quite sound as a long-term approach. The time required for ratification by enough States to bring such a convention into force made it desirable to think carefully before taking a position with regard to action on the proposal.

23. The expert from Norway said that he shared the views expressed by the experts from the United States of America and the United Kingdom.

24. The expert from the Federal Republic of Germany approved the idea of an international convention but drew attention to the practical difficulties of obtaining one.

25. The expert from France said that he could take no position on the matter. The expert from Canada said that he too felt unable to give an opinion without instructions from the competent organs of his Government.

26. In conclusion the Committee took the view that it was not in a position to adopt the decision sought by the expert from the Union of Soviet Socialist Republics. It expressed its gratitude to that expert for his proposal, which would be useful to the Committee in its future work.

27. The expert from the Union of Soviet Socialist Republics said that in the first stage it would not, in his view, be a matter of dealing with problems specific to each mode of transport but simply of bringing together in an international instrument the provisions common to all modes of transport - essentially, those concerning classification, listing, packing, labelling and the transport document, and perhaps other matters to be determined. At that stage, the provisions relating to each mode of transport would be kept in the regulations to which they belonged. In short, the aim would be to confirm the Committee's Recommendations and put them in mandatory form.

28. At a later stage, thought might be given to widening the scope of the convention to include provisions relating to the various modes of transport.

29. The expert from the United Kingdom expressed keen interest in the explanations given by the expert from the Union of Soviet Socialist Republics regarding the scope of a possible convention. He considered that, in the circumstances, it would be desirable for the Economic and Social Council to request the Committee to examine the matter at its next session and report to the Council.

30. The representative of IRU said that his organization had consistently maintained that the provisions in the Recommendations should be made more binding in order to resolve the difficulties created by the existence of different sets of regulations.

31. The representative of IATA reminded the Committee that he had already expressed a similar opinion in the course of the discussion.

32. The expert from the United States of America, after citing certain difficulties that might arise from mandatory provisions if there was a convention, said that the Committee should adopt the position taken by the expert from the United Kingdom, subject to amendment in the course of discussion.

33. In conclusion the Committee decided to adopt the proposal made by the expert from the United Kingdom.

34. On the proposal of the expert from the United Kingdom, the Committee agreed that, if the Economic and Social Council gave the matter favourable consideration, the question of a possible international convention would be referred to the Group of Rapporteurs for examination at its next session.

Harmonization of Packing requirements

35. Returning to problems of harmonization, the expert from the United Kingdom spoke of difficulties caused by some countries requiring shippers to comply with their domestic legislation in connexion with packages conforming to the IATA Regulations or the IMCO International Maritime Dangerous Goods Code.

36. The question of the acceptability of packages which conformed in packing and marking to the IATA Regulations had already been examined by the Inland Transport Committee of the Economic Commission for Europe, which had adopted a resolution on the subject. In order to resolve the difficulties, the Committee should propose to the Economic and Social Council the adoption of a resolution requesting Governments to accept packages packed and marked in conformity with the IATA Regulations and the IMCO International Maritime Dangerous Goods Code.

37. The representative of IATA thanked the expert from the United Kingdom for his statement.

38. The expert from the United States of America gave particulars of the air traffic accident that had prompted the United Kingdom expert's statement. The air traffic situation affecting his country was alarming and the authorities had been compelled to adopt stricter controls in order to ensure that the packing used did in fact conform to his Government's regulations - something that was not always easy to establish owing to the absence of markings.

39. A lengthy discussion took place on packing, tests and marking, in which the experts from the United Kingdom, the United States of America and the Union of Soviet Socialist Republics, an expert from the Netherlands and the representatives of IMCO, IATA and ICS took part.

40. In conclusion the Committee deemed it desirable that the Governments of Member States should:

> In the interests of harmonizing packing requirements, facilitate as a general principle the carriage of dangerous goods to and from seaports

and airports in conformity with the requirements of IMCO or IATA provided that the packagings satisfy the Recommendations of the United Nations Committee of Experts on the Transport of Dangerous Goods or more stringent requirements;

Take appropriate steps for the enforcement of adequate packing standards for the carriage of dangerous goods by sea and air, based in principle on the IMCO or IATA regulations, provided that the packagings satisfy the Recommendations of the United Nations Committee of Experts or more stringent requirements.

41. The expert from the Union of Soviet Socialist Republics said that his Government had special procedural difficulties with the IATA Regulations.

LISTING AND CLASSIFICATION OF SUBSTANCES AND ARTICLES

Work of the Group of Experts on Explosives

42. The Committee examined the reports of the Group of Experts on its fourteenth and fifteenth sessions (E/CN.2/CONF.5/50 and Add.1, 54 and Add.1 and Add.1/Corr.1), in so far as they relate to listing and classification, and the related documents on the particular points referred to below. These were approved subject to the changes shown in annex 1 to this report.

43. The expert from the Union of Soviet Socialist Republics stated that he was unable to adopt a position with regard to matters dealt with by the Group of Experts on Explosives, which did not include an expert appointed by his country.

Description of "cartridge" in general

44. The Committee examined a proposal by the expert from France for the insertion of a description of "cartridge" in the "Description of some substances and articles in Class 1" (E/CN.2/CONF.5/R.436). This proposal was adopted, subject to an amendment submitted by the expert from the United States of America (see annex 1 to this report).

45. On a question raised by the representative of IATA concerning small-arms cartridges, the expert from the United Kingdom expressed the view that a substance could not be classified according to the use made of it and that the inclusion of a substance in the "safety explosives" division should therefore be determined by tests; that meant discarding the criterion of calibre.

Tests to determine and classify the hazards of explosives

46. On the proposal of the expert from the United Kingdom, the Committee agreed to replace the existing provisions of annex 1, appendix 2, to the Recommendations by those of the appendix 3 set forth in document E/CN.2/CONF.5/54/Add.1. The text of paragraph 13 of the Recommendations as set out in annex 2 to document E/CN.2/CONF.5/54 was amended accordingly (see annex 1 to this report).

Classification of nitrocelluloses

47. At the request of the Group of Experts on Explosives, the Committee examined the question of the classification of nitrocelluloses with not less than 25 per cent alcohol by weight and not exceeding 12.6 per cent nitrogen by dry weight (E/CN.2/CONF.5/54, para. 21).

48. During the discussion two experts expressed support for the solution proposed by the Group of Experts. The other experts, with the exception of the expert from the Union of Soviet Socialist Republics, took the view that the substances concerned should be classified in Division 4.1. The Committee so decided (see annexes 1 and 2 to this report).

49. In the course of this discussion the expert from the United Kingdom submitted an amendment designed to clarify the text of paragraph 5 of annex 3 to document E/CN.2/CONF.5/54. This amendment was adopted (see annex 1 to this report).

Other amendments

50. The Committee adopted a number of other amendments submitted by the expert from the United Kingdom to the reports of the Group of Experts on Explosives (see annex 1 to this report).

Classification of dangerous goods other than explosives - Definition of the notation "n.o.s."

51. The Committee began by examining the definition of "n.o.s." items given in annex 5 to document E/CN.2/CONF.5/53.

52. A long discussion ensued on whether such a definition should be included in the Recommendations, and on the wording of the proposal. The proposal was ultimately approved by the Committee (see annex 5 to this report).

Different states of gases

53. The representative of IMCO raised a number of questions regarding the proposals made with regard to gases by the Group of Rapporteurs in annex 5 to document E/CN.2/CONF.5/53 (see also annex 2 to this report). The Committee agreed to endorse the conclusions of the Group of Rapporteurs and approved the formulation of the items on gases. The representative of IMCO, however, still felt that the question warranted fresh study.

Information sheet for new substances to be added to the lists

54. The Committee examined the information sheet reproduced in annex 2 to the report of the Group of Rapporteurs on its sixteenth session (E/CN.2/CONF.5/55).

55. A detailed discussion was held on the additional information to be provided on the specimen sheet and on the purpose the sheet was intended to serve.

56. On the first point some experts expressed the view that additional items such as vapour pressure, particle size, etc., should be included in the specimen sheet, or alternatively that the last item should be expanded to accommodate any additional information. Other experts urged that the sheet should also give information on human experience.

57. With regard to the use of the sheet, the experts from the United States of America and the Union of Soviet Socialist Republics expressed the view that anyone proposing an addition to the lists should submit a sheet in support of his proposal, and that otherwise the proposal should not be considered.

58. The expert from the United Kingdom pointed out that the required information was sometimes expensive to supply; he thought it would be a mistake to go to such extremes. In response, the expert from the United States of America specified that the proposal for an addition would be receivable even if not all the prescribed particulars were supplied.

59. The expert from Italy reminded the Committee of the position taken by the Group of Rapporteurs. He proposed that the Committee should take the same position; in his view, too much importance was being attached to the wording of a sheet designed solely for guidance and not for incorporation in the Recommendations.

60. In conclusion, the Committee did not adopt the specimen sheet given in annex 2 to document E/CN.2/CONF.5/55; however, it decided that rapporteurs or experts, on proposing substances for addition to the lists, should furnish technical data and such other data as might be needed to arrive at the correct classification and grouping. The Committee requested the Group of Rapporteurs to consider the question afresh.

Principles for the classification of substances

61. Before examining the results of the work of the informal meeting of the Group of Rapporteurs, the Committee held an exchange of views on the principles which should govern the classification of substances in the appropriate class or division, the determination of a subsidiary risk if any, and the assignment of substances to a packaging group.

62. The expert from the United States of America said that the work of the informal meeting had led him to believe that some general principles should be established and observed, particularly with regard to the priority of the classification where there were subsidiary risks. The work of the meeting made him fear a proliferation of the use of subsidiary risks, with all the attendant disadvantages so far as carriage was concerned. Such a procedure could only undermine the usefulness of the Recommendations. In particular he requested clarification of the rules for Division 6.1, Group II, which covered a large number of substances.

63. The expert from France said that the essential problem was to define the principal risk. The Committee had so far considered inflammability a more serious risk than toxicity or corrosion. Such a tacitly recognized hierarchy of hazards was an aid to classification.

64. The representative of IATA said that a further difficulty was that the principal risk might vary according to the mode of transport: for instance, a product might be regarded as corrosive for purposes of carriage by air and toxic for purposes of other modes of transport.

65. The experts ultimately agreed that it was necessary to avoid the proliferation of subsidiary risks and to draw up some kind of list of hazards in order of priority.

66. Before this point was reached, the expert from the Federal Republic of Germany suggested that, in order to reduce the difficulties seen by some experts as obstructing agreement, the Committee should for the time being concentrate on devising a solution for Class 3, Division 6.1, Class 8 and, possibly, Class 9.

67. In connexion with the classification of polychlorinated biphenyls, referred to by the expert from the United States of America, the expert from the United Kingdom drew attention to resolutions 71 and 75 adopted by the United Nations Conference on the Human Environment and asked what authority the Committee had to deal with environmental protection.

68. The expert from the Federal Republic of Germany stated that the use, not the carriage, of polychlorinated biphenyls had first aroused concern. In his opinion the Committee should confine its efforts to preventing accidents during carriage and should go no further than that.

69. The expert from France pointed out that the proposals set forth in document E/CN.2/CONF.5/R.357 had been made by his Government at the request of the French Minister for the Environment and with the aim of protecting the environment.

70. The Committee requested the Secretariat to get into touch with the United Nations Environment Programme (UNEP) in order to affirm the Committee's role in the matter of pollution during the carriage of dangerous goods.

Enumeration of substances

71. Before taking up this item, the expert from the Federal Republic of Germany made a general statement. First of all he observed that the proposed classifications of gases had been made, in some cases, either according to European criteria or according to criteria accepted in the United States of America, and that divergencies would consequently exist. He then expressed misgivings concerning the classification proposed for concentrated ammonium nitrate (liquor). Lastly, he considered that proposals might have been made on the basis of erroneous data and that consequently each expert should be free to reopen the question of the classification of particular substances.

72. With regard to "toxic" subsidiary risks, the expert from the Union of Soviet Socialist Republics proposed that a distinction should be drawn between cases in which the "death's head" label was to be used and those in which the "wheat ear" label was to be used. The expert from the Federal Republic of Germany opposed that proposal on the grounds that, in the process of classification, the subsidiary risk was assigned only if it was substantial and therefore the "death's head" label should be used.

73. The experts from Canada, the Union of Soviet Socialist Republics and the United States of America expressed concern about the use of such a label on a package when in their opinion the toxic hazard would only warrant a Group III assignment within Division 6.1.

74. Certain other experts shared the opinion of the expert from the Federal Republic of Germany that all substances attracting a Division 6.1 subsidiary risk label had a Group II toxic hazard.

75. The Committee adopted the list of substances given in Part I of annex 2 to this report. This list also comprises changes which relate to substances already included and which have been made necessary by new insertions (Part II of annex 2 to this report).

76. Notwithstanding the provisions of paragraph 27 of the Recommendations, the Committee placed "polychlorinated biphenyls (PCBs), n.o.s." in Group III of Class 9 and invited the experts from the Federal Republic of Germany and France to submit proposals to the Group of Rapporteurs with a view to classifying certain polychlorinated biphenyls in Division 6.1. Those experts agreed to do so but expressed reservations regarding the classification of PCBs in Class 9 and the non-observance of paragraph 27 of the Recommendations.

77. When the isocyanates came up for classification, the expert from the Union of Soviet Socialist Republics requested clarification concerning the figure of 23°C used as a dividing line for the purpose of packing different inflammable liquids. After a lengthy discussion the Committee took the view that the question of flash-points was particularly important and should be re-examined by the Group of Rapporteurs. The expert from the Federal Republic of Germany had already requested that the flash-point of 23°C prescribed in the Recommendations should be brought into line with the figure of 21°C adopted at the European level. The expert from the Union of Soviet Socialist Republics said that he simply could not agree that the flash-point of 23°C prescribed in the Recommendations should be brought into line with the figure of 21°C prescribed at the European level.

78. In view of the foregoing, documents E/CN.2/CONF.5/R.399 (Canada), E/CN.2/CONF.5/R.388, R.390 and R.391 (United States of America), E/CN.2/CONF.5/R.360, R.384, R.396 and R.397 (France), E/CN.2/CONF.5/R.323 and Add.1 and Add.1/Rev.1 (United Kingdom), E/CN.2/CONF.5/R.320, R.337 and R.400 (IMCO) and E/CN.2/CONF.5/R.326/Rev.2 (IATA) should be regarded as no longer relevant.

PACKING OF DANGEROUS GOODS

Work of the Group of Experts on Explosives

79. The Committee examined and approved the sections of the report of the Group of Experts (E/CN.2/CONF.5/54 and Add.1) dealing with packing questions.

80. This discussion provided an opportunity for the expert from the United Kingdom to explain how he was setting about his work on packing sheets (E/CN.2/CONF.5/54, para.41). It was agreed that the expert from the United Kingdom would prepare preliminary draft packing sheets for fireworks, taking into account the acceptance by the Group of Experts of document E/CN.2/CONF.5/R.371. The preliminary draft will be primarily a compilation of existing packagings. In the course of preparation of the draft, a few points have arisen which suggest that, in some cases, existing recommended packagings might be altered slightly. Second drafts proposing the necessary alterations are therefore in preparation.

Work of the Group of Rapporteurs on the Packing of Dangerous Goods

81. The Committee approved those parts of the reports of the Group of Rapporteurs (E/CN.2/CONF.5/51, 53 and 55) that relate to packing (see in particular annex 5 concerning criteria for packing purposes for Class 8).

Grouping of dangerous goods for packing purposes by degree of danger

82. A lengthy discussion took place on whether or not Packaging Group IV should be retained. Some experts observed that the Group of Rapporteurs had included few substances in Group IV (some substances in Divisions 4.1, 4.2 and 4.3 and one substance in Class 8) and that it was pointless to retain the Group for exceptional cases. The Committee finally decided to place those few substances in Group III with a foot-note specifying that they are exempt from the labelling requirement and from packing tests but that they should be marked with the Class or Division number (4.1, 4.2, 4.3 or 8, as appropriate) and the Group III number.

83. The expert from the Union of Soviet Socialist Republics agreed to have his proposals, as set forth in document E/CN.2/CONF.5/R.440, examined at the next session of the Group of Rapporteurs.

84. At the suggestion of the representative of IMCO, the Committee decided that, in order to clarify the interpretation of the table showing percentages of active substance for each group of pesticides (Supplement 1970, page 149), the following sentence should be added to that given below the title of the table:

> "Pesticides in a concentration which is given as a dividing line between groups should be regarded as being in the higher-numbered group."

(See also annex 5 to this report.)

Tank-containers

85. The Committee examined annex 1 to the report of the Group of Rapporteurs on its sixteenth session (E/CN.2/CONF.5/55) and adopted it with some changes. The text adopted is shown in annex 3 to this report.

86. Some paragraphs gave rise to specific comments.

87. With regard to the scope of the provisions on tank-containers, the expert from France expressed reservations regarding retention of the lower limit of 450 litres when a limit of 1,000 litres for gas tanks had been adopted by the informal working group which had met at Washington.

88. The expert from the Federal Republic of Germany, supported by the expert from France, requested the deletion of paragraph 11.2 and expressed the view that the figure of 3 kp/cm^2 in paragraph 11.3 should be replaced by 1.75 kp/cm^2. The Committee did not adopt this proposal. The experts from the Federal Republic of Germany and France expressed reservations regarding the Committee's decision.

89. The values given in paragraphs 12.2 and 12.3 gave rise to comment by the expert from the Federal Republic of Germany and the expert from France. The former expressed reservations regarding the Committee's decision.

90. In connexion with paragraph 15, the expert from France called for the addition of equivalence formulae. The Committee decided to request the Group of Rapporteurs to consider the matter.

91. The expert from France entered a general reservation regarding the provisions adopted in document E/CN.2/CONF.5/55, which had failed to reach him owing to the postal strike in his country. The expert from the Union of Soviet Socialist Republics expressed some doubts concerning certain portions of Part II, which he had not had time to consider.

92. The Committee took the view that this reservation was not sufficient to warrant reconsidering the adoption of the provisions concerning tank-containers, since the documents containing them had undergone no change since being adopted by the Group of Rapporteurs in August.

93. The Committee examined the proposals of the expert from the United Kingdom (E/CN.2/CONF.5/R.431) designed to make the provisions of ADR and RID compatible with the provisions adopted by the Committee and vice versa. It decided to request the competent organs of ADR and RID to endeavour to bring the provisions of ADR and RID closer to and even into line with, those of the Recommendations.

Reference temperatures

94. In the light of document E/CN.2/CONF.5/R.432 submitted by the expert from the United Kingdom, the Committee agreed to request the Group of Rapporteurs to re-examine the matter. It adopted the text proposed by the Group of Rapporteurs at its fifteenth session (E/CN.2/CONF.5/53, annex 5) (see also annex 5 to this report).

Gas cylinders

95. The Committee requested the Group of Rapporteurs to study the question using all the information available, whether from ISO, the Commission of the European Communities or the European Free Trade Association.

ORGANIC PEROXIDES

96. The Committee adopted annex 3 to document E/CN.2/CONF.5/53. It also adopted annex 4 to document E/CN.2/CONF.5/55, subject to a correction to the French text of paragraph 8 of the section relating to page 387.

97. The expert from the United Kingdom then made a statement on the proposals set forth in document E/CN.2/CONF.5/R.424, which were supported by the expert from the Federal Republic of Germany and the expert from France.

98. The expert from the Union of Soviet Socialist Republics said that he had reservations regarding the proposals because he had been unable to take part in the informal meeting of the Group of Rapporteurs on Organic Peroxides and had not had time to study the proposals before the Committee's session. He proposed that the "E" mark for substance 2171 should be retained and that foot-note 8 should be deleted accordingly. This proposal was not adopted.

99. In conclusion the Committee adopted the proposals made in document E/CN.2/CONF.5/R.424. It was specified that these proposals were designed to supplement the annexes already adopted and that, in the event of any inconsistency, the provisions of document E/CN.2/CONF.5/R.424 would prevail over those of the annexes.

100. During the discussion, the expert from the United States of America requested the deletion of foot-note 2 to the table and an expert from the Netherlands suggested that the proposals, particularly those relating to Group I packagings, should be reviewed in detail. The United States proposal was not adopted; the Netherlands suggestion was withdrawn.

101. The Committee then examined document E/CN.2/CONF.5/R.425, which was presented by the expert from the United Kingdom. Since a number of additions needed to be made to this document, the expert from the United Kingdom withdrew his proposals and will be submitting them to the Group of Rapporteurs.

102. The Committee then examined documents E/CN.2/CONF.5/R.403 and R.410.

103. The expert from the Federal Republic of Germany suggested that the proposals made in document E/CN.2/CONF.5/R.403 should be referred back to the Group of Rapporteurs because he was unable to provide the Committee with the results of experiments carried out in his country, particularly with regard to the figure of 50 per cent which was specified in paragraph 2 of the document in question, and which he challenged.

104. The experts from the United Kingdom and France made statements which showed that the results of experiments conducted in their respective countries, although based on different methods, bore out the figure of 50 per cent challenged by the expert from the Federal Republic of Germany.

105. The expert from the United Kingdom proposed that the words "containing not more than 10% available oxygen" should be inserted after "50%". With that amendment, the proposals made in document E/CN.2/CONF.5/R.403 were adopted. The proposal made in document E/CN.2/CONF.5/R.410 was adopted without change.

106. The provisions relating to organic peroxides as a whole, as amended, are reproduced in annex 4 to this report.

HAZARD IDENTIFICATION SYSTEM

107. The expert from Canada outlined the main points in the report submitted by the Group of Rapporteurs and set forth in annex 5 to the Group's report on its sixteenth session (E/CN.2/CONF.5/55). He proposed that the Committee should adopt it without change.

108. The Committee then held a general discussion on the subject, during which a number of experts and representatives of international organizations stated their positions on the proposed system and expressed their views on an internationally valid system.

109. Differences of opinion emerged with regard to certain features of the system and to its scope. On the latter point, some experts expressed the view that the system should apply to consignments of all kinds, while other experts said that they would prefer it to apply only to goods carried in bulk.

110. The opportunity thus arose to take stock of the existing situation. The expert from the United Kingdom stated that his Government had already brought into effect, on a voluntary basis, the system to which he had referred on previous occasions; his Government expected to make the system a legal requirement in the future. He reminded the Committee that the system included an abbreviated code composed of letters and figures, with the number of the substance in the United Nations lists and the United Nations label. It would apply to consignments of all types, and eventually to the storage as well as the carriage of goods. The expert from France stated that the system which had been in force in his country since 1 July 1972 would be replaced on 1 April 1975 by a system very similar to that adopted in RID and ADR. He considered that the abbreviated code to be used in an international system should comprise a sufficient number of figures and that figures should in all cases have the same meaning so that they could be memorized by emergency services personnel. The expert from the United States of America described the system under study in his country; its introduction had been delayed in the hope that the Committee would reach an international solution in the light of which the United States would be able to modify its system so as to facilitate harmonization in the matter.

111. The representative of IMCO made a statement regarding the studies being conducted by his Organization; it was hoped that they would produce suggestions which could be submitted to the Group of Rapporteurs at its August 1975 session.

112. It was pointed out that the European system adopted in RID and ADR had entered into force on 1 April 1974.

113. After this general discussion, the experts were invited to express their views as to what action should be taken on the report set forth in annex 5 to document E/CN.2/CONF.5/55. Two alternatives were considered together: that the report should be referred back to the Group of Rapporteurs unchanged, or that it should be adopted, with or without amendments, either as a report of the Committee or as part of the Recommendations.

114. The choice between the alternatives was discussed at length. The expert from the United Kingdom, in particular, urged that the only possible solution was to refer the report back to the Group of Rapporteurs for more detailed consideration. The expert from the Union of Soviet Socialist Republics, on

the other hand, said that, with the likely proliferation of systems, the existing situation could only grow worse as time went on; he proposed that, in order to alleviate that situation, the Committee should consider the 17 principles set out in the report. The expert from Canada supported that proposal subject to the option of referring the report back to the Group of Rapporteurs if the Committee failed to adopt a sufficient number of principles. The expert from Poland supported the proposal made by the expert from the Union of Soviet Socialist Republics.

115. The representative of IATA said that, unfortunately, hazard identification systems to facilitate action in cases of accident would take a long time to harmonize at the international level. He drew the Committee's attention to the fact that widely different systems were planned - and in some cases were already being applied - on the two sides of the Atlantic; there was a risk that labels would have to be changed when dangerous packages arrived at airports and that, as a result, such packages would be kept standing in hangars for prolonged periods, with all the undesirable consequences that would entail as regards safety and as regards commercial and financial implications.

116. The Committee ultimately decided by majority vote to examine the 17 principles, and that the principles adopted would be included in its report but not in the Recommendations.

117. Principles 3.1 and 3.2 were adopted.

118. Principle 3.3 gave rise to a discussion centred on a proposal by the expert from the United Kingdom which would limit its scope by providing that the HIS should be capable of application and not automatically applicable, as indicated in the report. After an exchange of views as to the exact scope of the principle, the expert from the Federal Republic of Germany stated that, in his opinion, the decision taken by the Committee was unsound and the report should be referred back as it stood to the Group of Rapporteurs. This statement, which was supported by the expert from the United Kingdom, prompted the expert from Canada to review the origins of the Committee's decision and to express flat opposition to the previous statements.

119. The expert from Norway observed that only recommendations were involved; he thought it would be a mistake to go into too much detail. The Committee could adopt the report as it stood, take note of it and send it back to the Group of Rapporteurs for further study of the system. The expert from the United Kingdom supported that view.

120. The expert from the Union of Soviet Socialist Republics, on the other hand, thought it would serve no purpose to send the report back to the Group of Rapporteurs without the necessary instructions.

121. After the United Kingdom expert had reiterated his opposition to some of the principles laid down in the report, the expert from France raised, in connexion with principle 3.7, the question how mixtures should be dealt with. The expert from the United States of America described the solution contemplated in his country.

122. The Chairman then suggested a way out of the Committee's present impasse. His suggestion was supported in turn by the expert from Canada, the expert from the United States of America, who proposed some amendments, and the expert from the Federal Republic of Germany, who asked what would be done about the various reservations; after the United Kingdom expert had suggested some additions, the proposal was accepted by the experts from the Union of Soviet Socialist Republics and the expert from Poland.

123. The experts from the United States of America, Canada and Italy in turn withdrew the reservations shown in foot-notes in the report. The United Kingdom expert did not feel able to take a similar position.

124. Ultimately, taking into account the need to agree on an international hazard identification system for world-wide use, the Committee reached general agreement on the principles laid down by the Group of Rapporteurs in annex 5 to document E/CN.2/CONF.5/55. However, the principles stated in items 3.3, 3.7, 3.9 and 3.10 will have to be revised if unanimity of purpose is to be achieved. The Group of Rapporteurs was therefore asked to proceed immediately with the work of developing a hazard identification system, taking annex 5 to the report (E/CN.2/CONF.5/55) as the background document for that purpose.

125. During the discussion, the representative of IATA suggested that the Committee should settle the vital question whether the system should be concerned with immediate action in the event of an accident or be designed to cover the whole series of steps to be taken. The representative of IRU said that his organization had always been in favour of a system indicating the nature of the hazard, not the nature of the substance carried; what mattered most was to provide for immediate emergency action. In such a system the code would consist of the shortest and simplest possible series of digits, and would above all establish a link with the instructions to be followed in the event of an accident. Such a system would put an end to the present chaotic situation in that field. The ICC representative drew attention to the difficulties which a multiplicity of systems would create for trade.

126. The expert from Canada agreed that his proposals, as set forth in document E/CN.2/CONF.5/R.442, should be examined at a future session of the Group of Rapporteurs.

LABELLING

127. The Committee examined the new labels for explosives of Divisions 1.4 and 1.5 (annex 5 to document E/CN.2/CONF.5/54). The expert from the Federal Republic of Germany raised the question of the proliferation of labels, to which the Committee has consistently been opposed. A number of other experts pointed out that this was a compromise solution and, as the expert from the Federal Republic of Germany did not suggest any alternative, the labels were approved. Following an observation made by the expert from the United Kingdom, it was decided that the full stop between the figures should be aligned with the base of the figures. During the discussion, the Committee confirmed that packages containing safety explosives of Division 1.4 should bear the classification symbol "1.4 S." in addition to the commercial, military or authorized short name of the explosive, but not the words "safety explosive".

128. The representative of IRU referred to the international regulations mentioned in paragraph 46 of the excellent Secretariat paper (E/CN.2/CONF.5/R.438). The Commission of the European Communities had adopted, in particular for the labelling of dangerous goods for purposes other than carriage, a directive which called for labels different from those used in the United Nations system. He expressed the hope that efforts would be made to render the system instituted by that directive consistent with the United Nations system and that, in general, efforts would be made to harmonize other regulations adopted or planned by the European Communities with those adopted or being prepared by the competent organs of the United Nations.

129. The expert from Italy endorsed the view expressed by the representative of IRU.

130. An official of the Commission of the European Communities explained that the system in question was the same as that which had been in force under RID and ADR at the time. The application of the United Nations system for rail and road transport had destroyed that harmony. Under the auspices of the Commission of the European Communities, a working group was considering the possibility of reconciling the systems.

131. The Committee examined a proposal by the expert from the United States of America that the contrast between labels should be increased. This proposal received the support of the expert from France, who requested that the black border should also be used on yellow labels. The expert from the Union of Soviet Socialist Republics and the expert from Canada endorsed the position of the experts from the United States of America and France. Other experts took the view that it would be premature to change the labels at the present stage.

132. The expert from the United States of America said that his proposal was intended merely to authorize improved labels and entailed no change in the essential characteristics of the labels. The expert from the Union of Soviet Socialist Republics also considered that the proposals in question were not intended to change the labels; they would make for increased safety of carriage. He too hoped that it would be possible to use the black border on yellow labels.

133. Ultimately the Committee did not adopt the proposals submitted by the expert from the United States of America. It did, however, adopt the labels for explosives of Division 1.4 (except safety explosives) and of Division 1.5 recommended by the Group of Experts (E/CN.2/CONF.5/54, annex 5) and the addition of a paragraph 5 to annex 3 to the Recommendations recommended by the Group of Rapporteurs (E/CN.2/CONF.5/53, annex 6) (see also annex 5 to this report).

134. The Committee invited the Group of Rapporteurs to examine the suggestions made by IRU in document E/CN.2/CONF.5/R.350.

COMMENTS ON AND APPROVAL OF THE REPORTS OF THE GROUP OF EXPERTS ON EXPLOSIVES AND THE GROUP OF RAPPORTEURS ON THE PACKING OF DANGEROUS GOODS

135. The Committee expressed its gratitude to the Group of Experts on Explosives and the Group of Rapporteurs on the Packing of Dangerous Goods for their contributions to its work. Subject to the decisions taken in the course of

the session, the Committee approved the reports of the Group of Experts on its fourteenth and fifteenth sessions (E/CN.2/CONF.5/50 and Add.1, E/CN.2/CONF.5/54 and Add.1 and Add.1/Corr.1) and the reports of the Group of Rapporteurs on its fourteenth, fifteenth and sixteenth sessions (E/CN.2/CONF.5/51, 53 and 55).

STRUCTURE AND PRESENTATION OF THE RECOMMENDATIONS

136. The Committee examined the proposals regarding presentation submitted by the experts from the United States of America, France and the Union of Soviet Socialist Republics in documents E/CN.2/CONF.5/R.411 and Add.1, R.418 and R.441 respectively, and the financial implications of a new edition prepared by the Secretariat (E/CN.2/CONF.5/R.433).

137. The Committee, after hearing various experts, agreed on a number of general points:

The new edition would be monolingual in English, French and Spanish;

With regard to the lists, it would contain:

(a) An alphabetical index comprising the name of the substance, the Class number and the serial number;

(b) A "chronological" table giving all necessary particulars;

The list by class and division would be deleted, and the notes and provisions given in it would so far as possible be inserted in the body of the Recommendations;

Consideration would be given to the idea of incorporating all or part of volume IV, "Packing", in the Recommendations of Volume I, and that would be done if found desirable;

The Recommendations should be reproduced in printed form, so as greatly to reduce their bulk;

They should be protected by a plastics cover.

138. The Committee agreed to recommend to the Economic and Social Council the publication of the new edition of the Recommendations in this form. This new edition should be sent by the Secretariat to Governments, specialized agencies, the International Atomic Energy Agency (IAEA) and other interested intergovernmental organizations, which would be asked to communicate to the Secretary-General any comments they deemed useful and to inform him how far the Recommendations would be applied in national or international legislation.

139. The Committee was informed by the Secretariat that the cost of the new edition would be about US$ 31,000, not counting the additional staff costs which would be incurred by the Secretariat, namely US$ 7,500 in consultancy fees. In mid-1974 it had been estimated that translation into each language would cost us $ 27,000.

140. The expert from the Union of Soviet Socialist Republics repeated the statement he had made at the previous session regarding the translation of the Committee's Recommendations into Russian.

141. The Committee invited the Group of Rapporteurs to examine documents E/CN.2/CONF.5/R.411 and Add.1, R.418 and R.441 as to matters of substance.

SUBSIDIARY BODIES OF THE COMMITTEE

142. The Committee decided that the Group of Rapporteurs on the Packing of Dangerous Goods should henceforth be named the "Group of Rapporteurs of the Committee of Experts on the Transport of Dangerous Goods". The Group should concentrate on harmonizing the rules concerning multimodal transport operations.

FUTURE WORK AND CALENDAR OF MEETINGS

143. The Committee decided on the list of future work and the calendar of meetings for 1975 and 1976.

144. For its subsidiary bodies it agreed to the following programme of work:

Group of Experts on Explosives

Possible revision of the definition of Class 1
Review of the classification of explosives in the light of test criteria
Revision of packing sheets for explosives

Group of Rapporteurs of the Committee of Experts

Possible international convention on the transport of dangerous goods

Definitions of classes and divisions:
Definition of Class 3

Listing and classification
Priorities in classification
Listing of various dangerous goods
Classification of polychlorinated biphenyls

Grouping of dangerous goods for packing purposes

Class 3
Division 6.1
Class 8

Organic peroxides

Tank-containers
Continuation of work on Part II
Equivalence formulae for thickness of metals
Use of intermediate-capacity tank-containers for the carriage of dangerous goods

Reference temperatures for the filling of containers

Gas cylinders

Unit and pallet loads

Labelling

Hazard identification system

145. With regard to the calendar of work, the Committee noted that the Secretariat had scheduled a two-week session for the Group of Rapporteurs in the first fortnight of August 1975; by that time it would know what decisions had been adopted by the Economic and Social Council, which would be examining the Committee's report at its session in spring 1975. In 1976 a one-week summer session would be scheduled for the Group of Experts on Explosives, while three weeks of meetings (a two-week session in February/March and a one-week session during the summer) would be scheduled for the Group of Rapporteurs.

146. The Committee recommended that its next session should be held in November 1976 and should last about eight working days.

147. The Committee was informed by the Secretariat that the operating costs of the Committee, the Group of Experts on Explosives and the Group of Rapporteurs in 1976 and 1977 were estimated at US$ 195,000, including $87,000 for staff of the Economic Commission for Europe assigned to work for the Committee.

RETIREMENT OF MR. BÜNING

148. The Committee was informed of the forthcoming retirement of Mr. Büning. The Committee warmly thanked Mr. Büning for his active contribution in the field of dangerous goods and for the spirit of co-operation and the competence he had shown in all circumstances; it wished him a happy retirement.

Annex 1

AMENDMENTS MADE BY THE COMMITTEE TO THE REPORTS OF THE GROUP OF EXPERTS ON EXPLOSIVES (E/CN.2/CONF.5/50, -/54, -/54/Add.1 AND -/54/Add.1/Corr.1)

(1) Insert the following description in annex 1, appendix 1 of the Recommendations:

CARTRIDGE	CARTOUCHE
Generic term, applied to any explosive article designed to deliver combustion gases, under pressure, with a view to performing a given mechanical action, for example to propel a projectile. In particular, it applies to assembled ammunition consisting of a case fitted with a primer, filled with propellant powder with or without projectile. The term cartridge is used also to indicate a unit charge of blasting explosive, wrapped in a thin envelope (of paper, or plastic ...) the shape of which is ordinarily a cylinder. However cartridged blasting explosives are not considered as articles, but as substances.	Terme générique s'appliquant à tout objet explosible destiné à fournir des gaz de combustion sous pression, en vue d'une action mécanique déterminée, par exemple l'expulsion d'un projectile. Il désigne en particulier les assemblages comprenant une douille portant une amorce et de la poudre propulsive avec ou sans projectile. Le mot cartouche sertaussi à désigner une charge unitaire d'explosif de mine, logée dans une enveloppe mince (en papier, en matière plastique,...), dont la forme est le plus souvent cylindrique. Cependant les explosifs de mine encartouchés ne sont pas considérés comme des objets, mais comme des substances.

(2) Annex 2 of E/CN.2/CONF.5/54, paragraph 1

Paragraph 1 should read:

"1. Paragraph 13 of the Recommendations should read:

"13. Appendix 2 of annex 1 gives a method of testing whether or not packages containing explosives constitute a mass explosion hazard and gives a scheme of procedure whereby a product may be classed as explosive and assigned a classification code."

(3) Paragraph 49 of E/CN.2/CONF.5/54, sub-paragraph "Safety explosives":

"Paragraph 54" should be deleted and "paragraph 48" substituted.

(4) Annex 3 of E/CN.2/CONF.5/54, paragraphs 4 and 5 should read:

"4. Nitrocellulose with not less than 25 per cent alcohol, by weight, and not exceeding 12.6 per cent nitrogen by dry weight - Division 4.1 1/

5. Nitrocellulose with not less than 18 per cent plasticizing substance, by weight, and not exceeding 12.6 per cent nitrogen by dry weight - Division 4.1 1/

(5) Annex 4 of E/CN.2/CONF.5/54, footnote 2/

Footnote 2/ should read:

"2/ AGENTS, BLASTING, may be used in place of "EXPLOSIVES, BLASTING," when approved by the competent authority."

Annex 2 - Annexe 2

AMENDMENTS MADE BY THE COMMITTEE IN THE LISTS ANNEXED TO THE RECOMMENDATIONS (ST/ECE/81/Rev.2 AND -/81/Rev.2/Amend.1) CONCERNING THE LISTING AND CLASSIFICATION OF SUBSTANCES AND ARTICLES (EXCEPT SUBSTANCES AND ARTICLES OF CLASS 1)

MODIFICATIONS APPORTEES PAR LE COMITE AUX LISTES ANNEXEES AUX RECOMMANDATIONS (ST/ECE/81/Rev.2 ET -/81/Rev.2/Amend.1) CONCERNANT LA CLASSIFICATION ET L'ENUMERATION DES MATIERES ET OBJETS (A L'EXCEPTION DE CEUX DE LA CLASSE 1)

Part I. Listing of items not included in the lists (including synonyms)

Partie I. Enumération de rubriques non incluses dans les listes (y compris les synonymes)

Class, Division, Sub-Division/Serial Number Classe, Division, Subdivision/Numéro d'ordre	Substance (or Group of substances) Article (or Group of articles)	Matière (ou groupe de matières) Objet (ou groupe d'objets)	Subsidiary risk (Class, etc.) Risque subsidiaire (Classe, etc.)	Packaging Group Groupe d'emballage
(a)	(b)	(c)	(d)	(e)
5.2.0/2178	2,2-Dihydroperoxy propane, maximum 25% with inert organic solid	Bis (hydroperoxy)-2,2 propane à 25 % au maximum avec un solide organique inerte	E	
5.2.0/2179	1,1-Bis-(tert. butylperoxy)-cyclohexane, technical pure	Bis (tertiobutyl peroxy)-1,1 cyclohexane techniquement pur	E	
5.2.0/2180	1,1-Bis-(tert.butylperoxy)-cyclohexane, maximum 77% in solution	Bis (tertiobutyl peroxy)-1,1 cyclohexane à 77 % au maximum en solution		
5.2.0/2181	1,2-Bis-(tert. butylperoxy)-cyclohexane, maximum 77% in solution	Bis (tertiobutyl peroxy)-1,2 cyclohexane à 77 % au maximum en solution		
5.2.0/2182	Diisobutyryl peroxide, maximum 52% in solution	Peroxyde de diisobutyryle à 52 % au maximum en solution		
5.2.0/2183	Tert. Butyl-percrotonate, maximum 76% in solution	Percrotonate de butyle à 76 % au maximum en solution		
5.2.0/2184	Ethyl-3,3 bis-(ter. butyl-peroxy)-butyrate, technical pure	Butyrate de bis (tertiobutyl peroxy)-3,3 éthyl techniquement pur	E	
5.2.0/2185	Ethyl-3,3 bis-(ter. butyl-peroxy)-butyrate, maximum 77% in solution	Butyrate de bis (tertiobutyl peroxy)-3,3 éthyl à 77 % au maximum en solution		
2.0.0/2186	Hydrogen chloride, refrigerated liquid	Acide chlorhydrique (Chlorure d'hydrogène) liquide réfrigéré	8	-
2.0.0/2187	Carbon dioxyde (Carbonic anhydride) refrigerated liquid	Anhydride carbonique (Dioxyde de carbone) liquide réfrigéré		-

(a)	(b)	(c)	(d)	(e)
-	Carbonic anhydride, see Carbon dioxide - 2.0.0/1013, 9.0.0/1845 and 2.0.0/2187	Dioxyde de carbone, voir Anhydride carbonique - 2.0.0/1013, 9.0.0/1845 et 2.0.0/2187		
2.0.0/2188	Arsin (Hydrogen arsenide)	Arsine (Hydrogène arsénié)	3; 6.1	-
-	Hydrogene arsenide, see Arsin - 2.0.0/2188	Hydrogène arsénié, voir Arsine - 2.0.0/2188	3; 6.1	
2.0.0/2189	Dichlorosilane	Dichlorosilane	3; 6.1	-
2.0.0/2190	Oxygen difluoride	Difluorure d'oxygène	6.1	-
2.0.0/2191	Sulphuryl fluoride	Fluorure de sulfuryle		-
2.0.0/2192	Germane (Germanium hydride)	Germane (Hydrogène germanié)	3; 6.1	-
-	Germanium hydride, see Germane - 2.0.0/2192	Hydrogène germanié, voir Germane - 2.0.0/2192		
2.0.0/2193	Hexafluroethane	Hexafluoréthane		
2.0.0/2194	Selenium hexafluoride	Hexafluorure de sélenium	6.1	-
2.0.0/2195	Tellurium hexafluoride	Hexafluorure de tellure	6.1	-
2.0.0/2196	Tungsten hexafluoride	Hexafluorure de tungstène	6.1	-
2.0.0/2197	Hydrogen iodide (Anhydrous hydriodic acid)	Iodure d'hydrogène (Acide iodhydrique anhydre)	8	-
-	Hydriodic acid, anhydrous, see Hydrogen iodide - 2.0.0/2197	Acide iodhydrique anhydre, voir Iodure d'hydrogène - 2.0.0/2197		
2.0.0/2198	Phosphorus pentafluoride	Pentafluorure de phosphore	6.1	-
2.0.0/2199	Phosphine (Phosphoretted hydrogen)	Phosphine (Hydrogène phosphoré)	3; 6.1	-
-	Phosphoretted hydrogen, see Phosphine - 2.0.0/2199	Hydrogène phosphoré, voir Phosphine - 2.0.0/2199		
2.0.0/2200	Propadiene (Allene)	Propadiène (Allène)	3	-
-	Allene, see Propadiene - 2.0.0/2200	Allène, voir Propadiène - 2.0.0/2200		
2.0.0/2201	Nitrous oxide, refrigerated liquid	Protoxyde d'azote (Hémioxyde d'azote) liquide réfrigéré		
-		Hémioxyde d'azote, voir Protoxyde d'azote - 2.0.0/2201		
2.0.0/2202	Hydrogen selenide (Hydro-selenic acid) anhydrous	Séléniure d'hydrogène (Acide sélenhydrique) anhydre	3; 6.1	-
-	Hydro-selenic acid, see Hydrogen selenide - 2.0.0/2202	Acide sélenhydrique voir Séléniure d'hydrogène - 2.0.0/2202		

(a)	(b)	(c)	(d)	(e)
2.0.0/2203	Silane (Hydrogen silicide)	Silane (Hydrogène silicié)	3; 6.1	-
-	Hydrogen silicide, see Silane - 2.0.0/2203	Hydrogène silicié - voir Silane - 2.0.0/2203		
2.0.0/2204	Carbonyl sulphide (Carbon oxysulphide)	Sulfure de carbonyle (Oxysulfure de carbone)	3; 6.1	-
-	Carbon oxysulphide, see Carbonyl sulphide - 2.0.0/2204	Oxysulfure de carbone, voir Sulfure de carbonyle - 2.0.0/2204		
6.1.0/2205	Adiponitrile (1,4-Dicyanobutane, Tetramethylene cyanide)	Adiponitrile (1,4-Dicyanobutane)		III
-	1,4-Dicyanobutane, see Adiponitrile - 6.1.0/2205	1,4-Dicyanobutane, voir Adiponitrile - 6.1.0/2205		
-	Tetramethylene cyanide, see Adiponitrile - 6.1.0/2205			
6.1.0/2206	Isocyanates with a boiling point below 300° C (572° F) and a flash point of 23° C (73° F) or above and their solutions 1/, n.o.s.	Isocyanates dont le point d'ébullition est inférieur à 300° C et le point d'éclair est égal ou supérieur à 23° C et leurs solutions 1/, n.s.a.		II
6.1.0/2207	Isocyanates with a boiling point of 300° C (572° F) and above and their solutions, n.o.s.	Isocyanates dont le point d'ébullition est égal ou supérieur à 300° C et leurs solutions, n.s.a.		III
5.1.0/2208	Calcium hypochlorite mixtures, dry, containing 39 % or less, but more than 10 % available chlorine (Bleaching powder)	Hypochlorite de calcium en mélanges secs contenant 39 % ou moins, mais plus de 10 % de chlore actif (Chlorure de chaux)		III
9.0.0/2209	Formaldehyde, solutions, with a flash point above 61° C (141° F) (Formalin, Formic aldehyde, Methanal)	Formaldéhyde en solutions ayant un point d'éclair supérieur à 61° C (Formaline, Aldéhyde formique, Méthanal)		III
-	Formalin, see Formaldehyde - 9.0.0/2209	Formaline, voir Formaldéhyde - 9.0.0/2209		
-	Formic aldehyde, see Formaldehyde - 9.0.0/2209	Aldéhyde formique, voir Formaldéhyde - 9.0.0/2209		
-	Methanal, see Formaldehyde - 9.0.0/2209	Méthanal, voir Formaldéhyde - 9.0.0/2209		

1/ If the flash point of the substance or its solution is 23° C (73° F) or above but less than 61° C (141° F) it should carry a subsidiary inflammable liquid label.

1/ Si le point d'éclair de la matière ou de sa solution est égal ou supérieur à 23° C mais inférieur à 61° C une étiquette de risque subsidiaire pour liquide inflammable doit être apposée.

(a)	(b)	(c)	(d)	(e)
4.2.0/2210	Maneb and preparations containing 60 % or more maneb	Manèbe et préparations contenant 60 % ou plus de manèbe		III
4.1.0/2211	Polystyrene beads, expandable, containing inflammable liquid	Polystyrène expansible en granulés contenant un liquide inflammable		III
9.0.0/2212	Crocidolite (Blue asbestos)	Crocidolite (Amiante bleue)		II
-	Asbestos, blue, see Crocidolite - 9.0.0/2212	Amiante bleue, voir Crocidolite - 9.0.0/2212		
4.1.0/2213	Paraformaldehyde	Paraformaldéhyde		III 1/
8.0.0/2214	Phtalic anhydride	Anhydride phtalique		III 1/
8.0.0/2215	Maleic anhydride	Anhydride maléique		III 1/
4.2.0/2216	Fish scrap, fish meal, antioxidant treated 1/	Déchets, farine de poisson, traités avec un anti-oxydant 1/		III 1/
4.2.0/2217	Seed cakes, containing not more than 1,5 % of oil and 11 % moisture 1/	Tourteaux ne contenant pas plus de 1,5 % d'huile et 11 % d'humidité 1/		III 1/
8.0.0/2218	Acrylic acid, inhibited	Acide acrylique stabilisé		II
3.0.0/2219	Allyl glycidyl ether	Ether allylglycidique (Allyloxy-1 époxy-2,3, propane)	6.1	III
		Allyloxy-1 époxy-2,3, propane, voir Ether allylglycidique - 3.0.0/2219		
4.2.0/2220	Aluminium alkyl halides, in solution	Halogénures d'aluminium alkyles en solution		II
4.2.0/2221	Aluminium alkyl halides, pure	Halogénures d'aluminium alkyles purs		I

1/ Exempt from labelling and from packaging tests, but should be marked with the class or division number.

1/ N'est pas soumise à l'étiquetage et aux épreuves d'emballage, mais doit être marquée du numéro de la classe ou de la division.

(a)	(b)	(c)	(d)	(e)
3.0.0/2222	Anisole	Anisole		III
8.0.0/2223	Aryl sulphonic acids	Acides arylsulfoniques		II
6.1.0/2224	Benzonitrile (Phenyl cyanide)	Benzonitrile		II
-	Phenyl cyanide, see Benzonitrile - 6.1.0/2224			
6.1.0/2225	Benzene sulphonyl chloride	Chlorure de benzène sulfonyle		III
6.1.0/2226	Benzotrichloride (Benzo sulphochloride)	Chlorure de benzylidine (Trichlorométhylbenzène)		II
-	Benzosulphochloride, see Benzotrichloride - 6.1.0/2226	Trichlorométhylbenzène, voir Chlorure de benzylidine - 6.1.0/2226		
3.0.0/2227	n-Butyl methacrylate	Méthacrylate de butyle normal		III
6.1.0/2228	Butyl phenols, liquid	Butylphénols liquides		III
6.1.0/2229	Butyl phenols, solid	Butylphénols solides		III
6.1.0/2230	Chlorinated anthracene oil	Huile d'anthracène chlorée		II
2.0.0/2231	Carbon dioxide compressed	Anhydride carbonique(Dioxyde de carbone) comprimé		-
6.1.0/2232	Chloroacetaldehyde	Aldéhyde chloracétique		II
6.1.0/2233	p-Chloro-o-anisidine	p-Chloro-o-anisidine		III
3.0.0/2234	Chlorobenzotrifluorides	Trifluorures de chlorobenzylidine		III
6.1.0/2235	p-Chlorobenzyl chloride	Chlorure de p-chlorobenzyle		III
6.1.0/2236	3-Chloro-4-methylphenyl-isocyanate	Isocyanate de chloro-3 méthyl-4 phényle (Isocyanate de chlorotoluylène)		II
-		Isocyanate de chlorotoluylène, voir Isocyanate de chloro-3, méthyl-4 phényle - 6.1.0/2236		
6.1.0/2237	Chloronitroanilines	Chloronitranilines		III

(a)	(b)	(c)	(d)	(e)
-	3-Chloroprop-1-ene see Allyl chloride -3.0.0/1100	Chloro 3 propène voir Chlorure d'allyle -3.0.0/1100		
3.0.0/2238	Chlorotoluenes	Chlorotoluènes		III
6.1.0/2239	Chlorotoluidines	Chlorotoluidines		III
8.0.0/2240	Chromosulphuric acid	Acide sulfochromique		I
3.0.0/2241	Cycloheptane	Cycloheptane		II
3.0.0/2242	Cycloheptene	Cycloheptène		II
3.0.0/2243	Cyclohexyl acetate	Acétate de cyclohexyle		III
3.0.0/2244	Cyclopentanol	Cyclopentanol		III
3.0.0/2245	Cyclopentanone	Cyclopentanone		II
3.0.0/2246	Cyclopentene	Cyclopentène		II
3.0.0/2247	n-Decane	Décane normal		III
8.0.0/2248	Di-(n-butyl) amine	Dibutylamine normal	3	II
6.1.0/2249	sym - Dichlorodimethyl ether 1/	Ether dichloro-diméthylique 1/		I
-	Dichlorophenols see Chlorophenols -6.1.0/2020 and 2021	Dichlorophénols voir Chlorophénols -6.1.0/2020 et 2021		III
6.1.0/2250	Dichlorophenyl isocyanates	Isocyanates de dichlorophényle		II
3.0.0/2251	Dicycloheptadiene	Dicycloheptadiène		II
3.0.0/2252	1,2-Dimethoxyethane	Diméthoxy-1,2 éthane (Ether diméthylique de l'éthylène glycol)		II

1/ The transport of this substance should be prohibited except with special authorization granted by the competent authorities.

1/ Le transport de cette matière devrait être interdit sauf permission spéciale délivrée par les autorités compétentes.

(a)	(b)	(c)	(d)	(e)
-		Ether diméthylique de l'éthylène glycol, voir Diméthoxy 1,2 éthane -3.0.0/2252		
6.1.0/2253	N,N-Dimethylaniline	N,N-Diméthylaniline		II
4.1.0/2254	Matches, fusee	Allumettes-tisons		III
5.2.0/2255	Samples, organic peroxides 1/	Echantillons de peroxydes organiques 1/		-
3.0.0/2256	Cyclohexene	Cyclohexène		II
4.3.0/2257	Potassium metal	Potassium		II
3.0.0/2258	Propylenediamine	Propylène diamine	8	II
8.0.0/2259	Triethylene tetramine	Triéthylène tétramine		II
3.0.0/2260	Tripropylamine	Tripropylamine	8	II
6.1.0/2261	Xylenols	Xylénols		II
6.1.0/2262	Dimethylcarbamoyl chloride	Chlorure de diméthyl carbamoyle		II
3.0.0/2263	1,4-Dimethylcyclohexane	Diméthyl-1,4 cyclohexane		II
3.0.0/2264	Dimethylcyclohexylamine	Diméthylcyclohexylamine	8	II
6.1.0/2265	N,N-Dimethylformamide	N,N-Diméthylformiamide		III
3.0.0/2266	Dimethyl-N-propylamine	N-Diméthyl-propylamine	8	II
8.0.0/2267	Dimethyl thiophosphoryl chloride	Chlorure de diméthyl thiophosphoryle		III
/2268				
8.0.0/2269	Dipropylene triamine	Dipropylène triamine		III

1/ Samples of new or existing organic peroxides may be transported and shipped as directed by the competent authorities.

1/ Les échantillons de peroxydes organiques nouveaux ou existants peuvent être transportés et chargés selon les instructions des autorités compétentes.

(a)	(b)	(c)	(d)	(e)
3.0.0/2270	Ethylamine 50-70 % solution in water	Ethylamine en solution aqueuse de 50 à 70 %		II
3.0.0/2271	Ethyl amyl ketone	Ethylamylcétone		III
6.1.0/2272	N-Ethylaniline	N-Ethylaniline		III
6.1.0/2273	2-Ethylaniline	Ethyl-2 aniline		III
6.1.0/2274	N-Ethyl-N-benzylaniline	N-Ethylbenzylaniline		III
3.0.0/2275	2-Ethylbutanol	Ethyl-2 butanol (Alcool éthyl-2 butylique)		III
8.0.0/2276	2-Ethylhexylamine	Ethyl 2 hexylamine		III
3.0.0/2277	Ethyl methacrylate	Méthacrylate d'éthyle		II
3.0.0/2278	n-Heptene	Heptène normal		II
6.1.0/2279	Hexachlorobutadiene	Hexachlorobutadiène		III
8.0.0/2280	Hexamethylenediamine, solid	Hexaméthylènediamine solide		III
6.1.0/2281	Hexamethylenediisocyanate	Diisocyanate d'hexaméthylène		II
3.0.0/2282	Hexanols	Alcools hexyliques		III
3.0.0/2283	Isobutyl methacrylate	Méthacrylate d'isobutyle		III
3.0.0/2284	Isobutyronitrile	Isobutyronitrile		II
6.1.0/2285	Isocyanatobenzotrifluorides	Fluorures d'isocyanatobenzylidine	6.1	II
3.0.0/2286	Isododecane (Pentamethylheptane)	Pentaméthylheptane		III
-	Pentamethylheptane, see Isododecane - 3.0.0/2286			
3.0.0/2287	Isoheptene	Isoheptène		II
3.0.0/2288	Isohexene	Isohexène		II
8.0.0/2289	Isophoronediamine	Isophoronediamine		III

(a)	(b)	(c)	(d)	(e)
6.1.0/2290	Isophoronediisocyanate	Diisocyanate d'isophorone		II
6.1.0/2291	Lead compounds, soluble, n.o.s.	Composés de plomb solubles, n.s.a.		III
/2292				
3.0.0/2293	4-Methoxy-4-methyl-pentan-2-one	Méthoxy-4 méthyl-4 pentanone-2		III
6.1.0/2294	N-Methyl aniline	N-Méthylaniline		III
3.0.0/2295	Methyl chloroacetate	Chloracétate de méthyle		II
3.0.0/2296	Methyl cyclohexane	Méthylcyclohexane		II
3.0.0/2297	Methyl cyclohexanone	Méthylcyclohexanone		III
3.0.0/2298	Methyl cyclopentane	Méthylcyclopentane		II
6.1.0/2299	Methyl dichloroacetate	Dichloracétate de méthyle		III
6.1.0/2300	2-Methyl-5-ethyl pyridine	Méthyl-2 éthyl-5 pyridine		III
3.0.0/2301	2-Methylfuran	Méthyl-2 furanne		II
3.0.0/2302	5-Methylhexan-2-one	Méthyl-5 hexanone-2		III
3.0.0/2303	α- Methylstyrene	α - Méthylstyrène		III
4.1.0/2304	Naphthalene, molten	Naphtaline fondue		III
8.0.0/2305	Nitrobenzenesulphonic acid	Acide nitrobenzène sulfonique		II
6.1.0/2306	Nitrobenzotrifluorides	Fluorure de métanitrobenzylidine Fluorure d'orthonitrobenzylidine		II
6.1.0/2307	3-Nitro-4-chlorobenzo-trifluoride	Fluorure de nitro-3 chloro-4 benzylidine		II
8.0.0/2308	Nitrosylsulphuric acid	Sulfate acide de nitrosyle		II

(a)	(b)	(c)	(d)	(e)
3.0.0/2309	Octadiene	Octadiène		III
3.0.0/2310	Pentan-2,4-dione	Pentanedione-2,4		III
6.1.0/2311	Phenetidines	Phénétidines		III
6.1.0/2312	Phenol (Carbolic acid), molten	Phénol fondu		II
-	Carbolic acid, see Phenol - 6.1.0/1671 and 2312	Acide carbolique, voir Phénol - 6.1.0/1671 et 2312		
3.0.0/2313	Picolines (Methyl piridines)	Picolines (Méthylpyridines)		II
-	Methyl pyridines, see Picolines - 3.0.0/2313	Méthylpyridines, voir Picolines - 3.0.0/2313		
8.0.0/2314	Phosphorus sulphochloride	Sulfochlorure de phosphore (Chlorure de thiophosphoryle)		II
-		Chlorure de thiophosphoryle, voir Sulfochlorure de phosphore - 8.0.0/2314		
9.0.0/2315	Polychlorinated biphenyls	Biphényles polychlorés (BPC)		III
6.1.0/2316	Sodium cuprocyanide, solid	Cuprocyanure de sodium solide		I
6.1.0/2317	Sodium cuprocyanide, solution	Cuprocyanure de sodium en solution		I
4.2.0/2318	Sodium hydrosulphide, solid	Sulfhydrate de sodium (Hydrogenosulfure de sodium)		II
-		Hydrogenosulfure de sodium, voir Sulfhydrate de sodium - 4.2.0/2318		
3.0.0/2319	Terpene hydrocarbons	Hydrocarbures terpéniques		III
8.0.0/2320	Tetraethylenepentamine	Tétraéthylènepentamine		III
6.1.0/2321	Trichlorobenzenes, liquid	Trichlorobenzènes liquides		III
6.1.0/2322	Trichlorobutene	Trichlorobutène		III
3.0.0/2323	Triethyl phosphite	Phosphite d'éthyle (Phosphite triéthylique)		III
-		Phosphite triéthylique voir Phosphite d'éthyle - 3.0.0/2323		

(a)	(b)	(c)	(d)	(e)
3.0.0/2324	Triisobutylene	Triisobutylène		II
3.0.0/2325	1,3,5-Trimethylbenzene (Mesitylene)	Triméthyl-1,3,5 benzène (Mésitylène)		III
-	Mesitylene, see 1,3,5-Trimethylbenzene - 3.0.0/2325	Mésitylène, voir Triméthyl 1,3,5 benzène - 3.0.0/2325		
8.0.0/2326	Trimethylcyclohexylamine	Triméthylcyclohexylamine		III
8.0.0/2327	3,3,5-Trimethyl-hexamethylenediamine	Triméthyl-3,3,5 hexaméthylènediamine		III
6.1.0/2328	Trimethylhexamethylene-diisocyanate	Diisocyanate de triméthyl-3,5,5 hexaméthylène		II
3.0.0/2329	Trimethyl phosphite	Phosphite de méthyle (Phosphite triméthylique)		III
-		Phosphite triméthylique, voir Phosphite de méthyle - 3.0.0/2329		
3.0.0/2330	Undecane	Undécane		III
8.0.0/2331	Zinc Chloride, anhydrous	Chlorure de zinc anhydre		III
3.0.0/2332	Acetaldehyde oxime	Acétaldoxime		II
3.0.0/2333	Allyl acetate	Acétate d'allyle	6.1	II
3.0.0/2334	Allylamine	Allylamine	6.1	I
3.0.0/2335	Allyl ethyl ether	Ether allyléthylique	6.1	II
3.0.0/2336	Allyl formate	Formiate d'allyle	6.1	I
3.0.0/2337	Benzene thiol (Thiophenol)	Benzènethiol (Thiophénol)		II
-	Thiophenol, see Benzene thiol - 3.0.0/2337	Thiophénol, voir Benzènethiol - 3.0.0/2337		
3.0.0/2338	Benzotrifluoride	Fluorure de benzylidine		II

(a)	(b)	(c)	(d)	(e)
3.0.0/2339	2-Bromobutane	Bromo-2 butane		II
3.0.0/2340	2-Bromoethyl ethyl ether	Ether bromo-2 éthyl éthylique		II
3.0.0/2341	1-Bromo-3-methylbutane	Bromo-1 méthyl-3 butane		II
3.0.0/2342	Bromomethylpropanes	Bromométhylpropanes		II
3.0.0/2343	2-Bromopentane	Bromo-2 pentane		II
3.0.0/2344	Bromopropanes	Bromopropanes		II
3.0.0/2345	3-Bromopropyne	Bromo-3 propyne		II
3.0.0/2346	Butanedione	Butanedione		II
3.0.0/2347	Butane-1-thiol	Butanethiol-1		II
-	Butan-2 ol, see Butanol - 3.0.0/1121	Butanol-2, voir Butanol - 3.0.0/1121		
-	Butanone, see Ethyl methyl ketone - 3.0.0/1193	Butanone, voir Ethyl méthylcétone - 3.0.0/1193		
-	But-1-ene-3-one, see Methyl vinyl ketone - 3.0.0/1251	Butène-3 one-2, voir Méthyl-vinylcétone - 3.0.0/1251		
3.0.0/2348	Butylacrylate	Acrylate de butyle		II
3.0.0/2349	Butyl ethyl ether	Ether butyléthylique		II
3.0.0/2350	Butyl methyl ether	Ether butylméthylique		II
3.0.0/2351	Butyl nitrite	Nitrite de butyle		II
3.0.0/2352	Butyl vinyl ether	Ether butylvinylique		II
-	But-2-yne, see Crotonylene - 3.0.0/1144	Butyne-2, voir Crotonylène - 3.0.0/1144		
3.0.0/2353	Butyryl chloride	Chlorure de butyryle	8	II
-	2-Chlorobutane, see Butyl chloride - 3.0.0/1127	Chloro-2 butane, voir Chlorure de butyle - 3.0.0/1127		

(a)	(b)	(c)	(d)	(e)
-	1-Chloro-3-methylbutane see Amyl chloride - 3.0.0/1107	Chloro-1 méthyl-3 butane, voir Chlorure d'amyle - 3.0.0/1107		
-	2-Chloro-2-methylbutane, see Amyl chloride - 3.0.0/1107	Chloro-2 méthyl-2 butane, voir Chlorure d'amyle - 3.0.0/1107		
3.0.0/2354	Chloromethyl ethyl ether	Ether chlorométhyl éthylique	6.1	II
3.0.0/2355	Chloromethyl methyl ether	Ether chlorométhyl méthylique	6.1	I
-	1-Chloro-2-methylpropane, see Butyl chloride - 3.0.0/1127	Chloro-1 méthyl-2 propane, voir Chlorure de butyle - 3.0.0/1127		
-	2-Chloro-2-methylpropane, see Butyl Chloride - 3.0.0/1127	Chloro-2 méthyl-2 propane, voir Chlorure de butyle - 3.0.0/1127		
-	3-Chloro-2-methylprop-1-ene, see Methylallyl chloride,- 3.0.0/2554	Chloro-3 méthyl-2 propène-1, voir Chlorure de méthyle allylique - 3.0.0/2554		
3.0.0/2356	2-Chloropropane (Isopropyl chloride)	Chloro-2 propane (Chlorure d'isopropyle)		I
-	Isopropyl chloride, see 2-Chloropropane,- 3.0.0/2356	Chlorure d'isopropyle, voir Chloro-2 propane - 3.0.0/2356		
3.0.0/2357	Cyclohexylamine	Cyclohexylamine		II
3.0.0/2358	Cyclooctatetraene	Cyclooctatétraène		II
3.0.0/2359	Diallylamine	Diallylamine		II
3.0.0/2360	Diallylether	Ether diallylique	6.1	II
3.0.0/2361	Diisobutylamine	Diisobutylamine		II
3.0.0/2362	1.1-Dichloroethane	Dichloro-1,1 éthane		II
3.0.0/2363	Ethyl mercaptan (Ethanethiol)	Mercaptan éthylique (Ethanethiol)		I
-	Ethanethiol see Ethyl mercaptan - 3.0.0/2363	Ethanethiol, voir Mercaptan éthylique - 3.0.0/2363		

(a)	(b)	(c)	(d)	(e)
3.0.0/2364	Propyl benzene	Propylbenzène		II
3.0.0/2365	4-Methylpentan-2-ol	Méthyl-4 pentanol-2		III
3.0.0/2366	Diethyl carbonate	Carbonate d'éthyle		II
3.0.0/2367	α -Methyl valeraldehyde	Méthyl valéraldéhyde		III
3.0.0/2368	α -Pinene	α -Pinène		III
6.1.0/2369	Ethylene glycol monobutyl ether	Ether monobutylique de l'éthylène glycol		III
3.0.0/2370	Hex-1-ene	Hexène-1		II
3.0.0/2371	Isopentenes	Isopentènes		I
-	Petroleum raffinate, see Petroleum distillates, n.o.s. - 3.0.0/1268	Raffinat de pétrole, voir Pétrole, distillats de, n.s.a. - 3.0.0/1268		
-	1,2-Dichloropropane, see Propylene dichloride - 3.0.0/1279	Dichloro-1,2 propane, voir Dichlorure de propylène - 3.0.0/1279		
3.0.0/2372	1,2-Bis (dimethylamino) ethane	Bis (dimethylamino) 1,2 éthane		II
3.0.0/2373	Diethoxymethane	Diéthoxyméthane		II
3.0.0/2374	3,3-Diethoxypropene	Diéthoxy-3,3 propane		II
3.0.0/2375	Diethyl sulphide	Sulfure d'éthyle		II
3.0.0/2376	2,3-Dihydropyran	Dihydro-2,3 pyranne		II
3.0.0/2377	1,1-Dimethoxyethane	Diméthoxy-1,1 éthane		III
3.0.0/2378	2-Dimethylaminoaceto-nitrile	Diméthylamino-acéto-nitrile	6.1	II
3.0.0/2379	1,3-Dimethylbutylamine	Diméthyl-1,3 butylamine		II

(a)	(b)	(c)	(d)	(e)
3.0.0/2380	Dimethyldiethoxysilane	Diméthyldiéthoxysilane		II
3.0.0/2381	Dimethyl disulphide	Bisulfure de méthyle		II
3.0.0/2382	Dimethylhydrazine, symmetrical	N,N-Diméthylhydrazine (diméthyl hydrazine symétrique)	8	I
3.0.0/2383	Dipropylamine	Dipropylamine		II
3.0.0/2384	Dipropyl ether	Ether propylique		II
3.0.0/2385	Ethyl isobutyrate	Isobutyrate d'éthyle		II
3.0.0/2386	1-Ethyl piperidine	Ethyl-1 pipéridine		II
3.0.0/2387	Fluorobenzene	Fluorobenzène		II
3.0.0/2388	Fluorotoluenes	Fluorotoluènes		II
3.0.0/2389	Furan	Furanne		I
3.0.0/2390	2-Iodobutane	Iodo-2 butane		II
3.0.0/2391	Iodo-methylpropanes	Iodométhylpropanes		II
3.0.0/2392	Iodopropanes	Iodopropanes		II
3.0.0/2393	Isobutyl formate	Formiate d'isobutyle		II
3.0.0/2394	Isobutyl propionate	Propionate d'isobutyle		II
3.0.0/2395	Isobutyrylchloride	Chlorure d'isobutyrile	8	II
3.0.0/2396	Methacrylaldehyde	Méthylacroléïne	6.1	II
3.0.0/2397	3-Methyl butan-2-one	Méthyl-3 butanone-2		II
3.0.0/2398	Methyl tert butylether	Ether méthyl tertiobutylique		II
-	2-Methylpentan-2-ol, see Amyl alcohools - 3.0.0/1105	Méthyl-2 pentanol-2, voir Alcools amyliques - 3.0.0/1105		

(a)	(b)	(c)	(d)	(e)
3.0.0/2399	1-Methylpiperidine	Méthyl-1 pipéridine		II
3.0.0/2400	Methyl isovalerate	Isovalérate de méthyle		II
-	Isopentylamine, see Amylamine - 3.0.0/1106	Isopentylamine, voir Amylamine - 3.0.0/1106		
-	Isopentyl nitrite, see Amyl Nitrite - 3.0.0/1113	Nitrite d'isopentyle, voir Nitrite d'amyle - 3.0.0/1113		
-	Pentyl nitrite, see Amyl Nitrite - 3.0.0/1113	Nitrite de pentyle, voir Nitrite d'amyle - 3.0.0/1113		
3.0.0/2401	Piperidine	Pipéridine		II
3.0.0/2402	Propanethiols	Propanethiols		II
3.0.0/2403	Isopropenyl acetate	Acétate d'isopropényle		II
3.0.0/2404	Propionitrile	Propionitrile (Nitrile propionique)	6.1	II
-		Nitrile propionique, voir Propionitrile - 3.0.0/2404		
3.0.0/2405	Isopropyl butyrate	Butyrate d'isopropyle		II
3.0.0/2406	Isopropylisobutyrate	Isobutyrate d'isopropyle		II
3.0.0/2407	Isopropyl chloroformate	Chloroformiate d'isopropyle	8	II
3.0.0/2408	Isopropyl formate	Formiate d'isopropyle		II
3.0.0/2409	Isopropyl propionate	Propionate d'isopropyle		II
3.0.0/2410	1,2,3,6-Tetrahydropyridine	Tétrahydro-1,2,3,6 pyridine		II
3.0.0/2411	Butyronitrile	Butyronitrile	6.1	II
3.0.0/2412	Tetrahydrothiophene	Tétrahydrothiophène		II
3.0.0/2413	Tetrapropylorthotitanate	Orthotitanate de propyle (Orthotitane tétrapropylique)		II
-		Orthotitanate tétrapropylique, voir Orthotitanate de propyle - 3.0.0/2413		
3.0.0/2414	Thiophene	Thiophène		II

(a)	(b)	(c)	(d)	(e)
3.0.0/2415	Triethyl borate	Borate d'éthyle (Borate triéthylique)		II
-		Borate triéthylique, voir Borate d'éthyle - 3.0.0/2415		
3.0.0/2416	Trimethyl borate	Borate de méthyle (Borate triméthylique)		II
-		Borate triméthylique, voir Borate de méthyle -3.0.0/2416		
2.0.0/2417	Carbonyl fluoride	Fluorure de carbonyle	6.1	-
2.0.0/2418	Sulphur tetrafluoride	Tétrafluorure de soufre	6.1	-
2.0.0/2419	Bromotrifluoroethylene	Bromotrifluoréthylène		-
2.0.0/2420	Hexafluoroacetone	Hexafluoracétone	6.1	-
2.0.0/2421	Nitrogen trioxide 1/	Sesquioxyde d'azote (Trioxyde d'azote) 1/	6.1	-
2.0.0/2422 /2423	Octafluorobut-2-ene	Octofluorobutène-2		-
2.0.0/2424 /2425	Octafluoropropane	Octofluoropropane		-
5.1.0/2426	Ammonium nitrate, liquid (not concentrated solution)	Nitrate d'ammonium, solution de (non concentrée)		2/
5.1.0/2427	Potassium chlorate, solution	Chlorate de potassium en solution		II
5.1.0/2428	Sodium chlorate, solution	Chlorate de sodium en solution		II
5.1.0/2429	Calcium chlorate, solution	Chlorate de calcium en solution		II

1/ The transport of this substance should be prohibited except with special authorization granted by the competent authorities.

2/ For bulk only. The transport of this substance should be prohibited except with special authorizarion granted by the competent authorities.

1/ Le transport de cette matière devrait être interdit sauf permission spéciale délivrée par les autorités compétentes.

2/ Pour chargement en vrac seulement. Le transport de cette matière devrait être interdit sauf permission spéciale délivrée par les autorités compétentes.

(a)	(b)	(c)	(d)	(e)
6.1.0/2430	Alkyl phenols n.o.s. (including C_2-C_8 homologues)	Alkylphénols, n.s.a. (comprenant les termes à chaînes de C_2 à C_8)		III
6.1.0/2431	Ortho-Anisidine	Orthoanisidine		III
6.1.0/2432	N,N-Diethyl aniline	Diéthylaniline		III
6.1.0/2433	Chloro-ortho-nitrotoluene	Chloro-orthonitrotoluène		III
8.0.0/2434	Dibenzyldichlorosilane	Dibenzyldichlorosilane		II
8.0.0/2435	Ethyl phenyl dichlorosilane	Ethylphényldichlorosilane		II
3.0.0/2436	Thioacetic acid	Acide thioacétique		II
8.0.0/2437	Methylphenyldichlorosilane	Méthylphényldichlorosilane		II
8.0.0/2438	Pivaloyl chloride	Chlorure de pivaloyle		II
8.0.0/2439	Sodium hydrogen fluoride (Sodium bifluoride)	Bifluorure de sodium		II
-	Sodium bifluoride, see Sodium hydrogen fluoride - 8.0.0/2439			
8.0.0/2440	Stannic chloride pentahydrate	Chlorure stannique pentahydraté		III
4.2.0/2441	Titanium trichloride	Trichlorure de titane	8	II
8.0.0/2442	Trichloroacetyl chloride	Chlorure de trichloracétyle		II
8.0.0/2443	Vanadium oxytrichloride	Oxytrichlorure de vanadium		II
8.0.0/2444	Vanadium tetrachloride	Tétrachlorure de vanadium		I
4.2.0/2445	Lithium alkyls	Lithium-alkyles		I
6.1.0/2446	Nitrocresols	Nitrocrésols		III
4.2.0/2447	Phosphorus white, molten	Phosphore blanc fondu	6.1	I
4.1.0/2448	Sulphur, molten	Soufre fondu		III
6.1.0/2449	Oxalates, water soluble	Oxalates solubles dans l'eau		III
-	Fluoroform, see Trifluoro-methane, 2.0.0/1484	Fluoroforme, voir Trifluoro-méthane, 2.0.0/1484		

(a)	(b)	(c)	(d)	(e)
2.0.0/2451	Nitrogen trifluoride	Trifluorure d'azote	6.1	-
2.0.0/2452	Ethyl acetylene (But-1-yne)	Ethylacétylène (Butyne-1)		
-	But-1-yne, see Ethyl acetylene - 2.0.0/2452	Butyne-1, voir Ethyl-acétylène - 2.0.0/2452		
2.0.0/2453	Ethyl fluoride (Fluoroethane)	Fluorure d'éthyle (Fluoréthane)		
-	Fluoroethane, see Ethyl fluoride - 2.0.0/2453	Fluoréthane, voir Fluorure d'éthyle - 2.0.0/2453		
2.0.0/2454	Methyl fluoride (Fluoromethane)	Fluorure de méthyle (Fluorométhane)	3	
-	Fluoromethane, see Methyl fluoride - 2.0.0/2454	Fluorométhane, voir Fluorure de méthyle - 2.0.0/2454		
2.0.0/2455	Methyl nitrite	Nitrite de méthyle		-
3.0.0/2456	2-Chloropropene	Chloro-2 propène		I
-	Perfluoropropane, see Octofluoropropane - 2.0.0/2424	Perfluoropropane, voir Octofluoropropane - 2.0.0/2424		
3.0.0/2457	2,3-Dimethylbutane	Diméthyl-2,3 butane		II
3.0.0/2458	Hexadiene	Hexadiène		II
3.0.0/2459	2-Methyl 1-butene	Méthyl-2 butène-1		I
3.0.0/2460	2-Methyl 2-butene	Méthyl-2 butène-2		II
3.0.0/2461	Methylpentadiene	Méthylpentadiène		II
3.0.0/2462	Methylpentanes	Méthylpentanes		II
4.3.0/2463	Aluminium hydride	Hydrure d'aluminium		I
5.1.0/2464	Beryllium nitrate	Nitrate de béryllium	6.1	II
5.1.0/2465	Dichloroisocyanuric acid, dry, containing more than 39 % available chlorine and its salts	Acide dichloro-isocyanurique sec contenant plus de 39 % de chlore actif et ses sels		I
5.1.0/2466	Potassium superoxide	Superoxyde de potassium		I
5.1.0/2467	Sodium percarbonate	Percarbonate de sodium		III
5.1.0/2468	Trichloroisocyanuric acid, dry, containing more than 39 % available chlorine	Acide trichloro-isocyanurique sec contenant plus de 39 % de chlore actif		I

(a)	(b)	(c)	(d)	(e)
5.1.0/2469	Zinc bromate	Bromate de zinc		III
-	Isooctane, see Octane, 3.0.0/1262	Isooctane, voir Octane, 3.0.0/1262		
-	Isopentane, see Pentane, 3.0.0/1265	Isopentane, voir Pentane, 3.0.0/1265		
-	Methyl sulphide, see Dimethyl sulphide, 3.0.0/1164			
-	Antu, see Naphthyl-thiourea - 6.1.0/1651	Antu, voir Naphtylthiourée - 6.1.0/1651		
6.1.0/2470	Benzyl cyanide (Phenylacetonitril), liquid	Cyanure de benzyle (Phényl acétonitryle) liquide		III
-	Flue dusts poisonous, see Arsenical dust - 6.1.0/1562	Cendres volantes toxiques, voir Poussière arsenicale - 6.1.0/1562		
-	Mercuric salts, see Mercury acetate, etc. - 6.1.0/1629, etc.	Sels de mercure, voir Acétate de mercure, etc. - 6.1.0/1629, etc.		
6.1.0/2471	Osmium tetroxide	Tétroxyde d'osmium		I
6.1.0/2472	Pindone (Pival)	Pindone (Pival)		III
-	Pival, see Pindone - 6.1.0/2472	Pival, voir Pindone - 6.1.0/2472		
6.1.0/2473	Sodium arsanilate	Arsanilate de sodium		III
6.1.0/2474	Thiophosgene	Thiophosgène		II
8.0.0/2475	Vanadium trichloride	Trichlorure de vanadium		III
6.1.0/2476	Warfarin	Warfarin		III
3.0.0/2477	Methyl isothiocyanate	Isothiocyanate de méthyle	6.1	II
3.0.0/2478	Isocyanates and their solutions with a flash point of less than 23° C (73° F)	Isocyanates et leurs solutions ayant un point d'éclair inférieur à 23° C	6.1	II

(a)	(b)	(c)	(d)	(e)
3.0.0/2479	Isocyanates and their solutions with a boiling point below 300° C (572° F) and a flash point of 23° C (73° F) or above and their solutions, n.o.s. 1/	Isocyanates et leurs solutions ayant un point d'ébullition inférieur à 300° C et un point d'éclair égal ou supérieur à 23° C 1/	6.1	II
3.0.0/2480	Methyl isocyanate and solutions	Isocyanate de méthyle et ses solutions	6.1	I
3.0.0/2481	Ethyl isocyanate	Isocyanate d'éthyle	6.1	I
3.0.0/2482	n-Propyl isocyanate	Isocyanate de propyle normal	6.1	I
3.0.0/2483	Isopropyl isocyanate	Isocyanate d'isopropyle	6.1	I
3.0.0/2484	tert-Butyl isocyanate	Isocyanate de butyle tertiaire	6.1	I
3.0.0/2485	n-Butyl isocyanate	Isocyanate de butyle normal	6.1	II
3.0.0/2486	Isobutyl isocyanate	Isocyanate d'isobutyle	6.1	II
6.1.0/2487	Phenyl isocyanate	Isocyanate de phényle		II
6.1.0/2488	Cyclohexyl isocyanate	Isocyanate de cyclohexyle		II
6.1.0/2489	Methylene bis (phenylene diisocyanate)	Bis (isocyanate phényl) méthylène		III
"	Diphenylmethane-4,4 diisocyanate, see Methylene bis (phenylene diisocyanate) - 6.1.0/2489	Diphénylméthane diisocyanate-4,4, voir Bis (isocyanate phényl) méthylène - 6.1.0/2489		
-	Methylene-bis (4-phenyl isocyanate), see Methylene bis (phenylene diisocyanate) - 6.1.0/2489	Bis (isocyanate-4 phényl) méthylène, voir Bis (isocyanate phényl) méthylène - 6.1.0/2489		
6.1.0/2490	Dichloroisopropyl ether	Ether dichloro-isopropylique		II

1/ If the flash point of the substance or its solutions is 23° C (73° F) or above but less than 61° C (141° F) it should carry a subsidiary inflammable liquid label.

1/ Si le point d'éclair de la matière ou de sa solution est égal ou supérieur à 23° C mais inférieur à 61° C une étiquette de risque subsidiaire pour liquide inflammable doit être apposée.

(a)	(b)	(c)	(d)	(e)
-	Dichloropropene and propylene dichloride mixture, see Propylene dichloride - 3.0.0/1279	Dichloropropène et dichlorure de propylène en mélange, voir Dichlorure de propylène - 3.0.0/1279		
8.0.0/2491	Ethanolamine and solutions thereof	Ethanolamine et solutions de		III
8.0.0/2492	Ethyl phenyl dichlorosilane	Ethyldichlorosilane de phényle		II
6.1.0/2493	Hexamethyleneimine	Hexaméthylèneimine		II
8.0.0/2494	Hexyltrichlorosilane	Hexyltrichlorosilane		II
5.1.0/2495	Iodine pentafluoride	Pentafluorure d'iode	6.1	I
8.0.0/2496	Propionic anhydride	Anhydride propionique		III
8.0.0/2497	Sodium phenolate, solid	Phénolate de sodium solide		III
3.0.0/2498	1,2,3,6-Tetrahydro-benzaldehyde	1,2,3,6-Tétrahydroben-zaldéhyde		III
8.0.0/2499	Toluene sulfonic acid, liquid	Acide toluène sulfonique liquide		III
8.0.0/2500	Trimethyl acetyl chloride	Chlorure de triméthyl-acétyle		II
6.1.0/2501	Tris-(1-aziridinyl) phos-phine oxide, solution	Oxyde de tris-(1-aziri-dinyl) phosphine en solution		II
8.0.0/2502	Valeryl chloride	Chlorure de valéryle		II
8.0.0/2503	Zirconium tetrachloride	Tétrachlorure de zirconium		III

(a)	(b)	(c)	(d)	(e)
6.1.0/2504	Acetylene tetrabromide (Tetrabromoethane)	Tétrabromure d'acétylène (Tétrabromoéthane)		III
-	Tetrabromoethane, see Acetylene tetrabromide - 6.1.0/2504	Tétrabromoéthane, voir Tétrabromure d'acéthylène - 6.1.0/2504		
6.1.0/2505	Ammonium fluoride	Fluorure d'ammonium		III
8.0.0/2506	Ammonium hydrogen sulfate (Ammonium bisulphate)	Sulfate acide d'ammonium (Bisulfate d'ammonium)		III
-	Ammonium bisulphate, see Ammonium hydrogen sulphate - 8.0.0/2506	Bisulfate d'ammonium, voir Sulfate acide d'ammonium - 8.0.0/2506		
8.0.0/2507	Chloroplatinic acid, solid	Acide chloroplatinique solide		III
8.0.0/2508	Molybdenum pentachloride	Pentachlorure de molybdène		III
8.0.0/2509	Potassium hydrogen sulfate (Potassium bisulphate)	Sulfate acide de potassium (Bisulfate de potassium)		III
/2510				
8.0.0/2511	α - Chloropropionic acid	Acide alphamonochloro-propionique		III
6.1.0/2512	Aminophenol and its isomers	Aminophénol et ses isomères		III
-	Aminobutane, see Butylamine - 3.0.0/1125	Aminobutane, voir Butylamine - 3.0.0/1125		
8.0.0/2513	Bromoacetyl bromide	Bromure de bromacétyle		II
3.0.0/2514	Bromobenzene	Bromobenzène		III

(a)	(b)	(c)	(d)	(e)
6.1.0/2515	Bromoform	Bromoforme		III
6.1.0/2516	Carbon tetrabromide	Tétrabromure de carbone		III
2.0.0/2517	1,1,1-Chlorodifluoro-ethane	Chloro-1 difluoro-1,1 éthane		-
-	Chlorodimethyl ether, see Chloromethyl methyl ether - 3.0.0/2355	Chlorodiméthyl éther, voir Chlorométhyl méthyl éther - 3.0.0/2355		
6.1.0/2518 /2519	1,5,9-Cyclododecatriene	Cyclododécatriène-1,5,9		III
3.0.0/2520	Cyclooctadiene	Cyclooctadiène		II
-	1,2-Dichloropropane, see Propylene dichloride - 3.0.0/1279	1,2-Dichloropropane voir Bichlorure de propylène - 3.0.0/1279		
3.0.0/2521	Diketene, inhibited	Dicétène stabilisé		II
6.1.0/2522	Dimethylaminoethyl methacrylate	Méthacrylate de diméthyl-aminoéthyle		II
3.0.0/2523	Ethylglycol acetate	Acétate de l'éthyle-glycol		III
3.0.0/2524	Ethyl orthoformate (Triethyl orthoformate)	Orthoformiate d'éthyle (Orthoformiate de triéthyle)		II
-	Triethyl orthoformate, see Ethyl orthoformate - 3.0.0/2524	Orthoformiate de triéthyle, voir Orthoformiate d'éthyle - 3.0.0/2524		
6.1.0/2525	Ethyl oxalate	Oxalate d'éthyle		III
3.0.0/2526	Furfurylamine	Furfurylamine		II
3.0.0/2527	Isobutyl acrylate	Acrylate d'isobutyle		II

(a)	(b)	(c)	(d)	(e)
3.0.0/2528	Isobutyl isobutyrate	Isobutyrate d'isobutyle		III
3.0.0/2529	Isobutyric acid	Acide isobutyrique		III
3.0.0/2530	Isobutyric anhydride	Anhydride isobutyrique		III
8.0.0/2531	Methacrylic acid, inhibited	Acide méthacrylique stabilisé		III
6.1.0/2532	Methyl dichloroacetate	Dichloracétate de méthyle		III
6.1.0/2533	Methyl trichloroacetate	Trichloracétate de méthyle		III
3.0.0/2534	Methyl chlorosilane[1/]	Chlorosilane méthylique[1/]	8	I
3.0.0/2535	Methylmorpholine	Méthylmorpholine	8	II
3.0.0/2536	Methyltetrahydrofuran	Méthyltétrahydrofuranne		II
2.0.0/2537	Chlorodifluoroethane	Chlorodifluoréthane		-
4.1.0/2538	Nitronaphtalene	Nitronaphtalène	4.1	III
3.0.0/2539	Octyl aldehyde	Aldéhyde octylique		III
-	Nitrochlorobenzene, see Chloronitrobenzene - 6.1.0/1578	Nitrochlorobenzène, voir Chloronitrobenzène - 6.1.0/1578		
8.0.0/2540	Toluene sulphonic acids, liquid or molten, containing not more than 5% sulphuric acid	Acides sulfoniques liquides ou fondus contenant au plus, 5 % d'acide sulfurique		III
3.0.0/2541	Terpinolene	Terpinolène		III
8.0.0/2542	Tributylamine	Tributylamine		III
-	Trifluorobromomethane, see Bromotrifluoromethane - 2.0.0/1009	Trifluorobromométhane, voir Bromotrifluorométhane - 2.0.0/1009		

1/ Substances beginning with the prefix "mono" are listed without this prefix, e.g. for "monochloroacetic" acid, see "chloroacetic acid".

1/ Les matières commençant par le préfixe "mono" sont énumérées sans tenir compte du préfixe. Ainsi : pour "Monopropylamine", voir "Propylamine".

(a)	(b)	(c)	(d)	(e)
8.0.0/2543	Aryl sulphonic acids, n.o.s., containing not more than 5% sulphuric acid	Acides arylsulfoniques, n.s.a., ne renfermant pas plus de 5 % d'acide sulfurique		III
8.0.0/2544	Alkane sulphonic acids, n.o.s.,containing not more than 5% sulphuric acid	Acides alcanesulfoniques, n.s.a.,ne renfermant pas plus de 5 % d'acide sulfurique		III
-	Alkyl sulphonic acids, n.o.s., see Alkane sulphonic acids, n.o.s. - 8.0.0/2544	Acides alkylsulfoniques, n.s.a., voir Acides alcanesulfoniques, n.s.a. - 8.0.0/2544		
4.2.0/2545	Hafnium metal powder, dry (a) Mechanically produced, having a particle size between 3 and 53 microns (b) Chemically produced, having a particle size between 10 and 840 microns 1/	Hafnium métallique sec, en poudre a) Produit mécaniquement, la dimension des particules étant comprise entre 3 et 53 microns b) Produit chimiquement, la dimension des particules étant comprise entre 10 et 840 microns 1/		
4.2.0/2546	Titanium metal powder, dry (a) Mechanically produced, having a particle size between 3 and 53 microns; (b) Chemically produced, having a particle size between 10 and 840 microns 2/	Titanium métallique sec, en poudre a) Produit mécaniquement, la dimension des particules étant comprise entre 3 et 53 microns; b) Produit chimiquement, la dimension des particules étant comprise entre 10 et 840 microns 2/		II

1/ Powders smaller in micron size should be shipped as in number 4.1.0/1958.

2/ Powders smaller in micron size should be shipped as in number 4.1.0/1352.

1/ Les poudres dont la dimension des particules est plus faible doivent être chargées comme le 4.1.0/1958.

2/ Les poudres dont la dimension des particules est plus faible doivent être chargées comme le 4.1.0/1352.

(a)	(b)	(c)	(d)	(e)
5.1.0/2547	Sodium superoxide	Superoxyde de sodium		I
-	Sodium peroxide, see Sodium superoxide - 5.1.0/2547	Peroxyde de sodium, voir Superoxyde de sodium - 5.1.0/2547		
2.0.0/2548	Chlorine pentafluoride	Pentafluorure de chlore	5.1;6.1	-
./2549				
5.2.0/2550	Methyl ethyl ketone peroxide(s), maximum concentration 50% with not more than 10% available oxygene	Peroxide(s) de méthyléthylcétone à 50 % au maximum et contenant au plus 10 % d'oxygène libre	I	
5.2.0/2551	tert-Butyl peroxy diethylacetate 33% with tert-Butyl perbenzoate 33% and solvent	Peroxydiéthylacétate de butyle tertiaire à 33 % avec du perbenzoate de butyle tertiaire à 33 % et du solvant		
6.1.0/2552	Hexafluoroacetone hydrate	Hydrate d'hexafluoracétane		
3.0.0/2553	Naphtha(Coal tar, crude and solvent)	Naphta (Goudron de houille, brut et solvant)		II
3.0.0/2554	Methyl allyl chloride (3-Chloro-2-methylprop-1-ene)	Chlorure de méthyle allylique (Chloro-3 méthyl-2 propène-1)		II
-	3-Chloro-2-methylprop-1-ene, see Methyl allyl chloride - 3.0.0/2554	Chloro-3 méthyl-2 propène-1, voir Chlorure de méthyle allylique - 3.0.0/2554		

(a)	(b)	(c)	(d)	(e)
4.1.0/2555	Nitrocellulose* with not less than 25% water, by weight	Nitrocellulose* avec au moins 25 % d'eau. en poids		
4.1.0/2556	Nitrocellulose* with not less than 25% alcohol, by weight and not exceeding 12.6% nitrogen by dry weight 1/	Nitrocellulose* avec au moins 25 % d'alcool en poids et une teneur en azote ne dépassant pas 12,6 % en poids sec 1/		
4.1.0/2557	Nitrocellulose* with not less than 18% plasticizing substance, by weight and not exceeding 12.6% nitrogen by dry weight 1/	Nitrocellulose* avec au moins 18 % de plastifiant en poids et une teneur en azote ne dépassant pas 12,6 % en poids sec 1/		
-		Trioxyde d'azote, voir Sesquioxyde d'azote - 2.0.0/2421		

1/ Receptacles should be so constructed that explosion is not possible by reason of increased internal pressure and should be subject to approval by the competent authority, otherwise the substance should be transported as Class 1.

1/ Les récipients doivent être construits de manière qu'une explosion ne puisse être provoquée par une augmentation de la pression intérieure et ils doivent être soumis à l'agrément de l'autorité compétente, sinon la matière doit être transportée comme une matière de la Classe 1.

Part II. Amendments to existing entries in the lists (including synonyms)

Partie II. Modifications aux rubriques existantes (y compris les synonymes)

Class, Division, Sub-Division/Serial Number Classe, Division, Subdivision/Numéro d'ordre	Substance (or Group of substances) Article (or Group of articles)	Matière (ou groupe de matières) Objet (ou groupe d'objets)	Subsidiary risk (Class, etc.) Risque subsidiaire (Classe, etc.)	Packaging Group Groupe d'emballage
(a)	(b)	(c)	(d)	(e)
2.0.0/1049	Hydrogen, refrigerated liquid	Hydrogène liquide réfrigéré		-
2.0.0/1050	-	Acide chlorhydrique anhydre (Chlorure d'hydrogène)		
-	-	Chlorure d'hydrogène, voir Acide chlorhydrique anhydre - 2.0.0/1050		
2.0.0/1073	Oxygen, refrigerated liquid	Oxygène liquide réfrigéré		-
3.0.0/1136	Coal tar, distillate, with a flash point equal to or below 32° C (90° F)	Goudron de houille, distillat de, ayant un point d'éclair égal ou supérieur à 32°C		II
3.0.0/1137	Coal tar, distillate, with a flash point above 32° C (90° F) but less than 61° C (141° F)	Goudron de houille, distillat de, ayant un point d'éclair supérieur à 32°C mais inférieur à 61° C		III
3.0.0/1138	Delete	Supprimer		
3.0.0/1143	Crotonaldehyde (β - methyl acrolein, 2-Butenal, Crotonic aldehyde), stabilized	Aldéhyde crotonique (β - méthylacroléine, 2-butanol, Crotonaldéhyde) stabilisé		I
3.0.0/1265	n-Pentane and Iso-pentane	Pentane normal et isopentane		I

(a)	(b)	(c)	(d)	(e)
4.1.0/1312	Borneol	Bornéol		III 1/
4.1.0/1326	Hafnium metal powder, wet with not less than 25% water (a visible excess of water must be present) (a) Mechanically produced, having a particle size between 3 and 53 microns; (b) Chemically produced, having a particle size between 10 and 840 microns	Hafnium métallique en poudre, humidifié avec au moins 25 % d'eau (un excès d'eau doit être apparent) a) Produit mécaniquement, la dimension des particules étant comprise entre 3 et 53 microns; b) Produit chimiquement, la dimension des particules étant comprise entre 10 et 840 microns		II
4.1.0/1327	Hay, straw or bhusa	Foin, paille ou bhusa		III 1/
4.1.0/1328	Hexamine	Hexamine (Hexaméthylène tétramine)		III 1/
4.1.0/1347	Silicon powder, amorphous 2/	Silicium en poudre amorphe 2/		III 1/
4.1.0/1352	Titanium metal powder, wet with not less than 25% water (a visible excess of water must be present) (a) Mechanically produced, having a particle size less than 53 microns; (b) Chemically produced, having a particle size less than 840 microns	Titanium métallique en poudre, humidifié avec au moins 25 % d'eau (un excès d'eau doit être apparent) a) Produit mécaniquement, la dimension des particules étant inférieure à 53 microns; b) Produit chimiquement, la dimension des particules étant inférieure à 840 microns		II

1/ Exempt from labelling and from packaging tests, but should be marked with the class or division number.

2/ This substance is not dangerous when in any other form.

1/ N'est pas soumise à l'étiquetage et aux épreuves d'emballage, mais doit être marquée d'un numéro de la classe ou de la division.

2/ Cette matière n'est pas dangereuse lorsqu'elle se présente sous tout autre forme.

(a)	(b)	(c)	(d)	(e)
4.1.0/1358	Zirconium metal powder, wet with not less than 25 % water (a visible excess of water must be present) (a) Mechanically produced, having a particle size less than 53 microns; (b) Chemically produced having a particle size less than 840 microns	Zirconium métallique en poudre, humidifié avec au moins 25% d'eau (un excès d'eau doit être apparent) a) Produit mécaniquement, la dimension des particules étant inférieure à 53 microns; b) Produit chimiquement, la dimension des particules étant inférieure à 840 microns		II
4.1.0/1359	Bags having contained sodium nitrate, empty, unwashed	Sacs ayant contenu du nitrate de sodium, vides, non lavés		III 1/
4.1.0/1363	Copra	Coprah		III 1/
4.1.0/1364	Cotton, waste, oily (only if it contains less than 5% oil)	Cotons gras, déchets de, contenant moins de 5 % d'huile		III 1/
4.1.0/1365	Cotton, wet	Coton humide		III 1/
4.2.0/1374	Fish scrap or fish meal (not antioxidant treated) containing 6-11% moisture and not more than 15% fat or containing 6-12% moisture and not more than 10% fat	Déchets ou farines de poisson (non traités avec un anti-oxydant) contenant 6 à 11 % d'humidité et au plus 15 % de matières grasses ou contenant 6 à 12 % d'humidité et au plus 10 % de matières grasses		III 1/

1/ Exempt from labelling and from packaging tests, but should be marked with the class or division nomber.

1/ N'est pas soumise à l'étiquetage et aux épreuves d'emballage, mais doit être marquée d'un numéro de la classe ou de la division.

(a)	(b)	(c)	(d)	(e)
4.2.0/1386	Seed cakes (seed expellers) containing not more than 1,5% oil and 11% moisture	Tourteaux contenant plus de 1,5 % d'huile et 11 % d'humidité		III 1/
5.1.0/1461	Chlorates, inorganic, n.o.s.	Chlorates inorganiques, n.s.a.		II
5.1.0/1481	Perchlorates, inorganic, n.o.s.	Perchlorates inorganiques, n.s.a.		II
5.1.0/1477	Nitrates, inorganic, n.o.s.	Nitrates inorganiques, n.s.a.		II
5.1.0/1479	Oxidizing substances, n.o.s.	Matières comburantes, n.s.a.		II
5.1.0/1478	Nitrates of soda and potash, mixtures	Nitrates de sodium et de potassium en mélanges		II
5.1.0/1483	Peroxides, metallic, n.o.s.	Peroxydes métalliques, n.s.a.		II
5.1.0/1497	Delete	Supprimer		
5.1.0/1504	Delete	Supprimer		
6.1.0/1558	Arsenic, metal	Arsenic métallique		II
6.1.0/1642	Mercury oxycyanide	Oxycyanure de mercure		II
6.1.0/1671	Phenol (Carbolic acid), solid	Phénol solide		II
6.1.0/1690	Sodium fluoride	Fluorure de sodium		III
6.1.0/1820	Delete	Supprimer		
8.0.0/1847	Potassium sulphide, hydrated, containing 30% and more of crystallization water	Sulfure de potassium hydraté contenant 30 % et plus d'eau de cristallisation		II

1/ The substance is to be classified under 4.2.0/1373 if it contains more than 5% animal or vegetable oil.

1/ Si elle contient plus de 5 % d'huile animale ou végétale, la matière doit être classée sous 4.2.0/1373.

(a)	(b)	(c)	(d)	(e)
4.2.0/1856	Rags, oily 1/	Chiffons gras 1/		III 2/
5.1.0/1874	Delete	Supprimer		
8.0.0/1899	Delete	Supprimer		
9.0.0/1910	Delete	Supprimer		
9.0.0/1931	Zinc dithionite	Hydrosulfite de zinc		III
2.0.0/1951	Argon, refrigerated liquid	Argon liquide réfrigéré		-
2.0.0/1963	Helium, refrigerated liquid	Hélium liquide réfrigéré		-
2.0.0/1970	Krypton, refrigerated liquid	Krypton liquide réfrigéré		-
2.0.0/1977	Nitrogen, refrigerated liquid	Azote liquide réfrigéré		-
5.1.0/2007	Delete	Supprimer		
4.2.0/2008	Zirconium metal powder, dry (a) Mechanically produced, having a particle size between 3 and 53 microns; (b) Chemically produced, having a particle size between 10 and 840 microns 3/	Zirconium métallique sec en poudre a) Produit mécaniquement, la dimension des particules étant comprise entre 3 et 53 microns; b) Produit chimiquement, la dimension des particules étant comprise entre 10 et 840 microns 3/		II
8.0.0/2032	Nitric acid, red fuming	Acide nitrique fumant		I
2.0.0/2039	Delete	Supprimer		
2.0.0/2040	Delete	Supprimer		
2.0.0/2041	Delete	Supprimer		

1/ The substance is to be classified under 4.2.0/1373 if it contains more than 5% animal or vegetable oil.

2/ Exempt from labelling and from packaging tests, but should be marked with the class or division number.

3/ Powders smaller in micron size should be shipped as in number 4.1.0/1358.

1/ Si elle contient plus de 5 % d'huile animale ou végétale, la matière doit être classée sous 4.2.0/1373.

2/ N'est pas soumise à l'étiquetage et aux épreuves d'emballage, mais doit être marquée d'un numéro de la classe ou de la division.

3/ Les poudres dont la dimension des particules est plus faible doivent être chargées comme le 4.1.0/1358.

(a)	(b)	(c)	(d)	(e)
2.0.0/2042	Delete	Supprimer		
-	Iso-Valeraldehyde, see Veraldehyde - 3.0.0/2058			
3.0.0/2058	Valeraldehyde (Amyl aldehyde, Iso-valeraldehyde, Penthanol, Valeral, n-Valeraldehyde, Valeric aldehyde)	Valéraldéhyde		II
3.0.0/2061	Delete	Supprimer		
3.0.0/2062	Delete	Supprimer		
4.1.0/2063	Delete	Supprimer		
4.1.0/2064	Delete	Supprimer		
5.2.0/2086	Benzoylperoxide more than 77% but less than 92% as a paste	Peroxyde de benzoyle à plus de 77 % mais à moins de 95 % sous forme de pâte		
5.2.0/2088	Benzoyl peroxide more than 77% but less than 95% with water	Peroxyde de benzoyle à plus de 77 % mais à moins de 95 % avec de l'eau	E	
5.2.0/2109	Delete	Supprimer		
5.2.0/2171	Diisopropylbenzene hydroperoxide, maximum concentration 72% in solution	Hydroperoxyde d'isopropyl-benzène d'une concentration maximale de 72 % en solution		

Annex 3

RECOMMENDATIONS CONCERNING MULTIMODAL TANK-CONTAINERS ADOPTED BY THE COMMITTEE

Preamble

The provisions of these recommendations apply to tank-containers intended for the carriage of dangerous substances by both land and sea modes of transport. They set out the requirements necessary for through carriage using both modes. Where a less stringent requirement can be applied to one only of the two modes, the fact is indicated.

Exceptionally, tanks not conforming strictly to the requirements set forth but having alternative arrangements which offer at least equivalent safety in use in respect of compatibility with the properties of the substances carried and equivalent or superior resistance to impact, loading and fire may be considered by the competent authority.

These provisions are presented in two Parts. The first contains requirements applicable to tank-containers intended for the carriage of dangerous goods of all Classes. The second comprises a table of dangerous goods, showing the particular provisions which modify or supplement the requirements of Part I for each particular substance. The list of substances in Part II will be required to be brought up to date from time to time by the possible addition of new substances and in the light of technical progress.

The construction, equipment, testing, marking and operation of multimodal tank-containers should be subject to acceptance by the competent authority of the country in which the tank-containers are approved. The general provisions of Part I of this document should be incorporated in the requirements laid down by the national competent authorities.

This document does not apply to road tank-vehicles, rail tank-wagons, tanks of less than 450 litres capacity, or non-metallic tanks.

Transitional measures

1. Tank-containers of a capacity below 1,000 litres built or being built before the entry into force of these requirements and not conforming to them may, if they were built in conformity with the requirements of a nationally accepted code for the carriage of dangerous goods, be used for a period of three years.

2. Such tank-containers of a capacity of not less than 1,000 litres may, with the approval of the competent authority of the owner country, if they were built in conformity with the requirements of an internationally accepted code for the carriage of dangerous goods, be used for a period of five years.

3. All tank-containers should after the periods prescribed in paragraphs 1 and 2 above either comply with these recommendations or be required to be judged fully equivalent within the meaning of the second paragraph of the preamble.

Definitions

For the purposes of these provisions:

"Tank container" means a tank having a capacity of 450 litres or more whose shell is fitted with items of service equipment and structural equipment necessary for the carriage of dangerous liquids. The tank-container should be capable of being carried by land or by sea and of being loaded and discharged without need of removal of its structural equipment, should possess stabilizing members external to the shell, and should be capable of being lifted when full;

"Shell" means the tank proper, including the openings and their closures;

"Service equipment of a shell" means filling and discharge, venting, safety, heating and heat-insulating devices and measuring instruments;

"Structural equipment" means the reinforcing, fastening, protective or stabilizing members external to the shell;

"Maximum working pressure" means the higher of the following two pressures:

(a) the highest effective pressure allowed in the shell during filling or discharge; and

(b) the effective pressure to which the shell is subjected by its contents, including such extraneous gases as it may contain, when the temperature of the contents reaches the reference temperature specified by the competent authority;

"Test pressure" means the highest effective pressure which arises in the shell during the hydraulic pressure tests;

"Discharge pressure" means the highest pressure actually built up in the shell when it is being discharged by pressure;

"Leakage test" means the test which consists of subjecting the shell to an effective internal pressure equivalent to the maximum working pressure, but not less than 0.2 kp/cm^2 (2.8 psig) (gauge pressure), by a procedure approved by the competent authority;

"Calculation pressure" means a theoretical pressure which, according to the degree of danger exhibited by the substance being carried, may differ more or less widely upwards from the working pressure. This pressure is used solely to determine the thickness of the cylindrical wall of the shell, to the exclusion of any external or internal reinforcing device. The minimum calculation pressure should in no case be lower than the test pressure;

"Total weight" means the weight of the shell and its service equipment and structural equipment and the heaviest load authorized to be carried.

PART I

GENERAL REQUIREMENTS FOR THE CONSTRUCTION AND OPERATION OF MULTIMODAL TANK-CONTAINER TANKS

1. Shells should be made of metallic materials suitable for shaping. For welded shells only a material whose weldability has been fully demonstrated should be used. Welds should be skilfully made and afford complete safety. The materials of the tank, including any devices and accessories that may come into contact with the contents, should not react dangerously with them. Suitable lining of tanks to prevent corrosion of the shell is an acceptable method of construction. Tank materials should be suitable for the external environment in which they may be carried. The use of aluminium as a material of construction should be restricted to tank-containers intended for land use or when specifically authorized for use in the marine mode in Part II. In those cases where aluminium is authorized, it should be insulated to prevent significant loss of physical strength properties for a period of 30 minutes when it is subjected to a heat load of 2.60 gcal/cm^2-sec (34,500 BTU/sq ft-h). The insulation should be approved by the national competent authority concerned.

2. Gaskets, where used, should be made of material not subject to attack by the contents of the tank.

2.1. Care should be taken to avoid damage by galvanic action due to the juxtaposition of dissimilar metals.

3. Tank-containers should be designed and fabricated with supports to provide a secure base during carriage, and with suitable lifting and tie-down attachments.

4. Shells, their attachments and their service and structural equipment should be designed to withstand, without loss of contents, at least the internal pressure due to the contents, and static and dynamic stresses in normal handling and carriage.

5. Tank-containers without vacuum-relief valves should be designed to withstand without permanent deformation an external pressure at least 0.4 kp/cm^2 (6.0 psi) above the internal pressure. Tanks equipped with vacuum-relief valves should be designed to withstand without permanent deformation an external overpressure of 0.21 kp/cm^2 (3 psig) or greater and should have their vacuum-relief valve set to relieve at minus (-) 0.21 kp/cm^2 (3 psig), except a greater negative setting may be utilized provided the external design pressure is not exceeded. All vacuum relief devices should be equipped with a flame trap.

6. Tank-containers and their fastenings should under the maximum permissible load be capable of absorbing the following forces:

In the direction of travel: twice the total weight;

Horizontally at right angles to the direction of travel: the total weight (where the direction of travel is not clearly determined, the maximum permissible load should be equal to twice the total weight);

Vertically upwards: the total weight; and

Vertically downwards: twice the total weight.

Under each of these loads, the safety factors to be observed should be the following:

- for metals having a clearly-defined yield point, a safety factor of 1.5 in relation to the determined yield stress or,

- for metals with no clearly-defined yield point, a safety factor of 1.5 in relation to the guaranteed 0.2 per cent proof stress.

It should be noted that the above loadings do not give rise to an increase in the pressure in the vapour space.

7. Tank-containers should be carried only on vehicles whose fastenings are capable, in conditions of maximum permissible loading of the tank-containers, of absorbing the forces specified in paragraph 6 above.

7.1. The securing of tank-containers to vehicles when carrying certain dangerous substances designated in Part II of this document should be effected by means of locks.

8. Tank-containers intended to contain certain dangerous substances should be provided with additional protection, which may take the form of additional thickness of the shell or a higher test pressure, the additional thickness or higher test pressure being determined in the light of the dangers inherent in the substances concerned, or of a protective device approved by the competent authority. The requirements for each substance are listed in the table in Part II.

9. Cross-sectional design: Tanks should be of a cross-section which is stress-determinant, i.e. the design should be capable of being stress-analysed mathematically, or experimentally by resistance strain gauges, or by some other method approved by the competent authority. (This provision does not apply to tanks intended for use on land only.)

10. The pressure on which the dimensioning of the tank-container shell is based should not be less than the calculation pressure, and should also take into account the stresses referred to in paragraph 6 above.

11. Except where special conditions laid down for the various substances provide otherwise, the following minimum requirements should be taken into account: 1/

11.1 The shell of a tank container - whatever its discharge system - intended for the carriage of substances having at the reference temperature a total pressure (i.e. vapour pressure plus partial pressure of inert gases, if any) of not more than 1.75 kp/cm^2 (absolute) (24.9 psia) should be designed to withstand a test pressure of at least 1.5 kp/cm^2 (21.4 psig) or 1.3 times the discharge pressure, whichever is the greater.

NOTE: Less stringent requirements may be applied to tank-containers for low-vapour-pressure liquids intended for carriage by land only.

11.2. The shell of a tank-container - whatever its discharge system - intended for the carriage of substances having at the reference temperature a total pressure (i.e. vapour pressure plus partial pressure of inert gases, if any) of more than

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1/ See Part II for specific restrictions regarding the use of aluminium.

1.75 kp/cm^2 (24.9 psia) (absolute), and less than 3 kp/cm^2 (43 psia) (absolute) should be designed to withstand a test pressure equal to the higher of the following two pressures:

(a) 1.5 times the total pressure at the reference temperature, less 1 kp/cm^2 (14.22 psig), subject to a minimum of 2.65 kp/cm^2 (37.7 psig); or

(b) 1.3 times the discharge pressure.

11.3. The shell of a tank-container - whatever its discharge system - intended for the carriage of substances having at the reference temperature a total pressure (i.e. vapour pressure plus partial pressure of inert gases, if any) of more than 3 kp/cm^2 (43 psia) (absolute) should be designed to withstand a test pressure equal to the higher of the following two pressures:

(a) 1.5 times the total pressure at the reference temperature, less 1 kp/cm^2 (14.22 psig), subject to a minimum of 4 kp/cm^2 (56.9 psig); or

(b) 1.3 times the discharge pressure.

12. In choosing the material and determining wall thickness, the maximum and minimum filling or working temperature should be taken into account, having regard to the risk of brittle fracture.

At the test pressure or calculation pressure which ever is greater, the stress σ (sigma) at the most severely stressed point of the tank-container shell should conform to the material-dependent limitations prescribed below:

12.1. For metals and alloys exhibiting a clearly-defined yield point or characterized by a guaranteed conventional yield stress Re (generally 0.2 per cent residual elongation; for austenitic steels, 1 per cent residual elongation).

12.2. Where the ratio Re/Rm is not more than 0.50 1/2/ (Re = apparent yield stress or 0.2 per cent proof stress; Rm = guaranteed minimum tensile strength)

$$\sigma \leq 0.75 \text{ Re}$$

12.3. Where the ratio Re/Rm exceeds 0.50 1/2/

$$\sigma \leq 0.375 \text{ Rm}$$

13. For metals and alloys exhibiting no apparent yield stress and characterized only by a guaranteed minimum tensile strength Rm: 1/2/

$$\sigma \leq 0.375 \text{ Rm}$$

1/ Less stringent requirements may be applied to tank-containers intended for land use only.

2/ These values have not yet been specified for tanks intended for the carriage of gases; until such time as they are laid down, values specified by the national competent authority concerned may be utilized.

13.1. In the case of steel the elongation at fracture, in per cent, should not be less than $\frac{1,000}{Rm}$ where Rm is in kg/cm^2, with an absolute minimum of 20 per cent. In the case of aluminium the elongation at fracture, in per cent, should not be less than $\frac{1,000}{6\ Rm}$ where Rm is in kg/cm^2, with an absolute minimum of 12 per cent.

NOTE: The specimens used to determine the elongation at fracture should be taken transversely to the direction of rolling and be so secured that:

$$Lo = 5\ d,$$

where Lo = length of the specimen before the test; and

d = diameter.

14. Tank-containers intended for the carriage of inflammable liquids having a flash-point of not more than 55°C, and for the carriage of inflammable gases and fine powder, should be capable of being electrically earthed.

15. Minimum shell thickness

15.1. Tank-containers should be built to an approved technical code which is recognized by the national competent authority concerned. The following formula should be utilized in conjunction with the calculation pressure, as listed for each commodity in Part II, only for the purpose of obtaining a minimum thickness (in mm) of the cylindrical wall of the shell:

$$e = \frac{Pc \times D}{200 \times \sigma}\ \text{(sigma)},$$

where Pc = calculation pressure in kg/cm^2

D = diameter of the tank in mm

σ = permissible stress, as defined in paragraphs 12.2, 12.3 and 13, in kg/mm^2

The thickness should in no case be less than that prescribed in paragraphs 15.2 and 15.3 below.

15.2. The cylindrical portions of the shells and ends of tanks not more than 1.80 metre (6 feet) in diameter should be not less than 5 mm (3/16 inch) thick if of mild steel 1/ (as specified in paragraph 12) or equivalent thickness if of other metal. In tanks more than 1.80 metre (6 feet) in diameter they should be not less than 6 mm (1/4 inch) thick

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1/ "Mild steel" means a steel having a breaking strength between 37 kp/mm^2 (52,500 psi) and 44 kp/mm^2 (62,500 psi).

if of mild steel 1/ (as specified in paragraph 12) or of equivalent thickness if of other metal. The cylindrical portions and ends of all tanks should be at least 3 mm (1/8 inch) thick regardless of the material of construction.

15.3. Where additional protection of the tank against damage is provided, the competent authority may authorize a reduction in these minimum thicknesses in proportion to the protection provided. However, the barrels and ends of tanks not more than 1.80 metre (6 feet) in diameter should be not less than 3 mm (1/8 inch) thick if of mild steel 1/ or of equivalent thickness if of other metal, and those of tanks more than 1.80 metre (6 feet) in diameter should be not less than 4 mm (5/32 inch) thick if of mild steel 1/ or of equivalent thickness if of other metal.

15.4. The additional protection referred to in paragraph 15.3 may be provided (a) by overall external structural protection, such as suitable "sandwich" construction with the outer shielding secured to the tank, or (b) in part by tank protection and in part by operational factors (e.g. tank supported in a complete framework with longitudinal and transverse structural members and carried at sea in a fully cellular container ship and on land on special-purpose road vehicles or special-purpose flat wagons).

15.5. There should be no sudden change of plate thickness at the head of attachment to the cylindrical portion of the shell and in no case should the plate thickness at the knuckle be less. The material of construction of the head and the cylindrical portion of the shell should be the same.

15.6. All parts of the shell should have a minimum thickness as determined by paragraphs 15.1, 15.2 or 15.3 above.

16. Service equipment

16.1. Service equipment (valves, fittings, safety devices, gauging devices and the like) should be so arranged to be protected against the risk of being wrenched off or damaged during carriage and handling. If the connexion between the frame and the tank shell allows relative movement as between the sub-assemblies, the equipment should be so fastened as to permit such movement without risk of damage to working parts. Equipment protection should offer a degree of safety comparable to that of the tank shell.

16.2. All tank-shell openings other than openings for pressure-relief devices and inspection openings should be provided with manually operated stop-valves situated as near to the shell as is practicable.

16.3. A tank-container or each of its compartments should be provided with an opening large enough to enable the tank-container or compartment to be inspected.

16.4. External fittings should preferably be grouped together.

16.5. All tank connexions should be clearly marked to indicate the function of each.

1/ "Mild steel" means a steel having a breaking strength between 37 kp/mm^2 (52,500 psi) and 44 kp/mm^2 (62,500 psi).

16.6. Stop-valves with screwed spindles should close by clockwise rotation.

16.7. No moving parts such as covers, components of closures, etc., which are liable to come into frictional or percussive contact with aluminium tank-containers intended for the carriage of inflammable liquids having a flash-point of not more than 55°C (131°F) or for the carriage of inflammable gases should be made of unprotected corrodible steel.

17. Bottom openings

17.1. Certain substances listed in Part II should not be carried in tank-containers with bottom openings (bottom-discharge tank-containers).

17.2. Every bottom-discharge tank-container should be equipped with two serially mounted and mutually independent shut-off devices, the first being an internal stop-valve 1/ and the second being a sluice-valve or other equivalent device, such as a bolted blank flange or a specially approved screw-cap arrangement, mounted one at each end of the discharge piping (save as may be otherwise provided in the case of tank shells intended for the carriage of certain crystallizable or highly viscous substances). The stop-valve may be operable from above or from below. If possible, the setting - open or closed - of the internal stop-valve should be capable of being verified from the ground in both cases. Stop-valve control devices should be so designed as to prevent any unintended opening through impact or an inadvertent act.

17.2.1. For certain products which are required to comply with this paragraph as indicated in Part II and referred to in this paragraph a bottom-discharge tank container should be equipped with three serially mounted shut-off devices consisting of an internal valve, an external valve and a bolted blank flange or other equivalent device such as a specially approved screw-cap arrangement.

17.2.2. The internal shut-off device should continue to be effective in the event of damage to the external control device.

17.2.3. In order to avoid any loss of contents in the event of damage to the external discharge fittings (pipe sockets, lateral shut-off devices), the internal stop-valve and its seating should be protected against the danger of being wrenched off by external stresses or should be so designed as to resist them. The filling and discharge devices (including flanges or threaded plugs) and protective caps (if any) should be capable of being secured against any unintended opening.

18. Safety relief

18.1. All tank-containers, except as provided in paragraph 18.2 below, should be closed and fitted with a pressure-relief device.

1/ "Internal stop-valve" means a stop valve within the tank or within a welded flange or its companion flange, or within a coupling which is an integral part of the tank.

18.2. If the competent authority authorizes the use of a tank-container with no relief device, the tank-container should be approved only if the tank is capable of withstanding the developed vapour pressure of the contents after complete engulfment in fire for 30 minutes, with heat input as defined in paragraph 23 below. The required additional strength may be provided by increasing the pressure used in the design calculations or by providing adequate fire-resistant insulation.

19. Pressure-relief devices

19.1. Every tank shell of 1,900 litres (500 gal) or more, or every independent compartment of a tank shell of similar capacity, should be provided with one or more pressure-relief valves of the spring-loaded type and may in addition have a frangible disc or fusible element.

19.2. Tank shells for the carriage of substances designated in Part II should have a pressure-relief valve of the spring-loaded type and may in addition have a frangible disc or fusible element.

19.2.1. Tank shells for the carriage of substances designated in Part II should have a pressure-relief device approved by the competent authority. Such device should comprise a frangible disc preceding a spring-loaded valve. The space between the frangible disc and the valve should be provided with a pressure gauge or a suitable tell-tale indicator. This arrangement permits the detection of disc rupture, pinholing or leakage which could cause a malfunction of the pressure-relief device.

19.3. Every tank-container with a capacity of less than 1,900 litres (500 gal) should be fitted with a pressure-relief device which may be a frangible disc if the latter complies with the requirements of paragraph 22.1 below.

19.4. All pressure-relief devices should be situated in the vapour space of the tank and be so arranged as to ensure that the escaping gas is discharged unrestrictedly and upwards (i.e. above the horizontal) in such manner that it cannot impinge upon the tank shell. Pressure-relief devices should be situated as nearly as is practicable midway along the length of the tank or compartment.

20. Setting of pressure-relief devices

20.1. It should be noted that the safety device should operate only in conditions of excessive rise in temperature, as the tank will not during carriage be subject to undue fluctuations of pressure due to operating procedures (see however paragraph 23.2).

20.2. The required pressure-relief valve should be set to start to discharge at a nominal pressure of 83 per cent of the test pressure in the case of tanks having a test pressure below 4.5 kp/cm^2 (64 psi) and of two-thirds of the test pressure in the case of tanks having a test pressure of 4.5 kp/cm^2 (64 psi) or more. The valve should after discharge close at a pressure not lower than 10 per cent below the pressure at which discharge starts, and should remain closed at all lower pressures, provided that this requirement not be so construed as to prevent the use of vacuum-relief valves or combination pressure-relief and vacuum-relief valves.

21. Fusible elements

21.1. Fusible elements, if allowed under Part II, should function at a temperature between 110°C (230°F) and 149°C (300°F) provided that the developed pressure in the tank at the fusing temperature of the element does not exceed the test pressure of the tank.

21.2. Fusible elements should not be utilized on tanks with a test pressure which exceeds 2.65 kp/cm^2 (37.6 psig).

22. Frangible discs

22.1. Frangible discs, if used, should rupture at a nominal pressure equal to the test pressure. Particular attention should be given to the requirements of paragraphs 16.1 and 19.4 if frangible discs are used. Frangible discs should not operate within the ambient-temperature range envisaged.

22.2. If the tank-container is fitted with arrangements for air-pressure of inert-gas-pressure discharge, the inlet line should be provided with a suitable pressure-relief device set to operate at a pressure not higher than the maximum allowable working pressure of the tank shell. A stop-valve should be provided at the entry to the tank shell.

23. Capacity of relief devices

23.1. The spring-loaded relief valve required by paragraph 19.1 should have a minimum diameter of 31.75 mm (1.25 in). Vacuum relief valves, if used, should have a minimum through area of 2.84 cm^2 (0.44 sq in).

23.2. The combined delivery capacity of the relief devices in conditions of complete engulfment of the tank in fire should be sufficient to limit the pressure in the tank to the hydraulic test pressure. 1/ Emergency pressure-relief devices may be used to achieve the full relief capacity prescribed. Emergency pressure-relief devices may be of the spring-loaded, frangible or fusible type.

1/ To determine the total certified capacity of the relief devices, which may be regarded as being the sum of the individual capacities of the several devices, one of the following equivalent formulae may be used:

1(a) $$Q = 5.66 \times 10^6 \left(\frac{FA}{LC}\right)^{0.82} \sqrt{\frac{ZT}{M}}$$

where Q = minimum required rate of discharge in cubic metres of air per hour at standard conditions 15.6°C and 1 atm

A = exposed surface area of tank shell (in square metres);
L = latent heat of evaporation in cal/g;
Z = compressibility factor for the vapour in g, m, °K units;
T = absolute temperature in degrees Kelvin (°C + 273) at relieving conditions
M = molecular weight of vapour in g units;
C = a constant depending on ratio of specific heats of vapour, to be taken as 315 in metre, g, hour and °K units;

23.3. In determining the capacity of such pressure-relief devices the competent authority should take account of the heat input into the tank in conditions of exposure to fire. 2/ Particular items which should be considered are the unit heat flux into the tank, the area of the tank exposed to the fire, the external environmental factors (wind, drainage, fire-extinguishing arrangements) and the adjacent environmental factors (insulation).

24. Markings on relief devices

24.1. Every pressure-relief device should be plainly and permanently marked with the pressure or temperature at which it is set to discharge and the rated free-air delivery of the device.

F = insulation factor; use 1 for uninsulated tanks and $\frac{8U\ (921-t)}{93.5 \times 10^6}$ for insulated tanks, where t is the external ambient temperature in °C;

U = thermal conductivity of the insulation at 311°K in gcalories/h (sq metre) (°K). This shall be a function of the thickness of the insulation.

1(b) $Q = \frac{37,980,000}{LC} A^{0.82} F \sqrt{\frac{ZT}{M}}$,

where Q = minimum required rate of discharge in cubic feet of air per hour at 14.7 lb/in^2 abs. and 60°F;

A = exposed surface area of tank shell (in square feet);

L = latent heat of evaporation in BTU/lb;

Z = compressibility factor for the vapour in lb, ft, °F units;

T = absolute temperature in degrees Rankin (0°F + 460) at relieving conditions;

M = molecular weight of vapour in lb units;

C = a constant depending on ratio of specific heats of vapour, to be taken as 315 in inch, lb, hour and °F units;

F = insulation factor; use 1 for uninsulated tanks, and $\frac{8U\ (1200-t)}{34,500}$ for insulated tanks, where t is the external ambient temperature in °F;

U = thermal conductivity of the insulation at 100°F in BTU/h (sq ft) (°F). This should be a function of the thickness of the insulation.

2/ To determine the capacity of the pressure-relief devices, one of the following equivalent formulae may be used:

2(a) $H = 93.5 \times 10^6\ A^{0.82} XF$, gcalorie/hour

where H = heat input in gcalorie/hour;

A = exposed tank surface area (sq metre);

F = insulation or environmental factor. At present the value for non-insulated tanks should be taken to be 1.

2(b) $H = 34,500\ A^{0.82} F$, BTU/hour,

where H = heat input in BTU/hour;

A = exposed tank surface area (square feet);

F = insulation or environmental factor. At present the value for non-insulated tanks should be taken to be 1.

25. Connexions to pressure-relief devices

25.1. Connexions to pressure-relief devices should be of sufficient size to enable the required discharge to pass unrestricted to the safety device. No stop-valve should be installed between the tank shell and the pressure-relief devices except where duplicate devices are provided for maintenance or other reasons and the stop-valves serving the devices actually in use are locked open or the stop-valves are interlocked so that at least one of the duplicate devices is always in use. Vents from the pressure-relief devices, where used, should deliver the relieved vapour or liquid to the atmosphere in conditions of minimum back-pressure on the relieving device.

26. Siting of pressure-relief valves

26.1. Pressure-relief valves should be sited on top of the tank and be of such design that means are available for ascertaining that the valve disc is free to lift on its seat. Arrangements should be made to prevent access to the valves by unauthorized persons and to protect the valves from damage caused by the tank overturning.

27. Gauging devices for tank-containers

27.1. Glass level-gauges, or gauges made of other easily destructible material, which are in direct communication with the contents of the tank should not be used.

28. Tank support, frameworks and lifting attachments

28.1. Tank-containers should be designed and fabricated with a support structure to provide a secure base during carriage. Skids, frameworks, cradles or other similar devices are acceptable. The loadings specified in paragraph 6 should also be considered in this aspect of design.

28.2. The combined stresses caused by tank mountings (e.g. cradles, frameworks, etc.) and tank lifting and tie-down attachments should not cause excessive stress in any portion of the tank shell. Permanent lifting attachments and permanent tie-down attachments should be fitted to all tanks. Any tie-down attachments added directly to the tank shell should be secured to doubling plates. Lifting lugs should not normally be attached to the shell; it is recommended that permanently attached stiffening rings or equivalent devices should be used for the attachment of lifting devices in such cases.

28.3. In the design of supports and frameworks due regard should be paid to the effects of environmental corrosion, and in calculations for all structural members not constructed of corrosion-resistant materials a minimum corrosion allowance of 1.6 mm should be provided.

28.4. Tank-container frameworks intended to be lifted or secured by their corner casting should be subjected to internationally accepted special tests. The use of such tank-container frameworks within an integrated system is generally encouraged. */

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*/ For example, the ISO system.

28.5. Fork-lift pockets of tank-containers of 10,000 litres (2,642 gal) or more capacity should be capable of being closed off.

29. Approval, testing and marking of tanks

29.1. The competent approval authority or a body authorized by that authority should issue in respect of every new design of tank-container a certificate attesting that the tank-container and its attachments surveyed by that authority or that body are suitable for the purpose for which they are intended and meet the construction and equipment requirements of Part I of this document and, where appropriate, the special requirements for substances of Part II. The prototype-test results, the substances for whose carriage the tank-container is approved, and an approval number, should be specified in a test report. If the tank-containers are manufactured without change in structural design, this approval should be deemed to be design approval. The approval number should consist of the distinguishing sign or mark of the State in whose territory the approval was granted, i.e., the distinguishing sign for use in international traffic, as prescribed by the Convention on Road Traffic, Vienna 1968 and a registration number.

29.2. Design approval should be given in respect of at least one tank of each design and each size, it being, however, understood that a set of tests made on a tank of one size may serve for the approval of smaller tanks made of material of the same kind and thickness by the same fabrication technique and with identical supports and equivalent closures and other appurtenances.

30.1. The shell and items of equipment of each tank-container should be inspected and tested, either together or separately, first before being put into service (initial inspection and test) and thereafter at intervals (periodic inspection and test). The initial inspection and test should include a check of the design characteristics, an internal and external examination and a hydraulic pressure test. If the shell and equipment have been pressure-tested separately, they should together be subjected after assembly to a leakproofness test. The periodic inspections and tests should include an internal and external examination and, as a general rule, a pressure test. Sheathing, thermal insulation and the like should be removed only to the extent required for reliable appraisal of the tank-container's condition. The initial and the periodic pressure tests should be carried out, by an expert approved by the competent authority, at the test pressure indicated on the data plate of the tank-container, except in cases where periodic tests at lower test pressures are authorized.

While under pressure the tank should be inspected for leakage, corroded areas, dents, or other conditions which indicate weakness that might render the tank unsafe in carriage and if any evidence of such unsafe condition is discovered the tank should not be placed in or returned to service until it has been repaired and the test, repeated, has been passed.

30.2. Tank-containers should, first before being put into service and thereafter at intervals not exceeding five years, be tested in conformity with the provisions of paragraph 30.1. Before tank-containers are put into service, and thereafter at intervals not exceeding two and one-half years, a leakproofness test, a test of the satisfactory operation of all service equipment, and an internal and external inspection of the tanks and their fittings with due regard to the substances carried should be performed; however, the internal inspection may be waived by the competent authority concerned in the case of tanks intended for the carriage of one substance.

NOTE: Departures from these intervals may be allowed in respect of tanks intended for land transport only.

30.3. When a tank-container is damaged it should be so repaired as to comply with these recommendations. In all cases where welded repairs are made on a tank, a hydrostatic test of at least the original test pressure is required.

30.4. Certificates showing the results of the test should be issued by the expert approved by the competent authority.

31. Marking

31.1. Every tank-container should be fitted with a rust-proof metal plate permanently attached to the shell in a place readily accessible for inspection. The following particulars should be marked on the plate by stamping or by any other similar method. These particulars may be engraved directly on the walls of the shell itself if the walls are sufficiently thick so that the strength of the shell is not impaired.

Country of manufacture .....

Approval number .....

Manufacturer's name or mark .....

Registration number .....

Year of manufacture .....

Test pressure ..... kp/cm^2 (psig)

Maximum allowable working pressure ..... kp/cm^2 (psig)

Capacity 1/ ..... litres (gallons)

Original hydrostatic test date and witness identification .....

Code to which tank is designed - UN - ....

Metallurgical design temperature (only if above + 50°C or below - 20°C) ..... °C (.....°F)

Maximum allowable working pressure for coils (where coils used) ..... kp/cm^2 (psig)

Tank material .....

Lining material (if any) .....

Capacity of each compartment (in compartmented containers) .....

1/ The water capacity should be established to within 1 per cent by practical test rather than by calculation.

Month, year and test pressure of most recent periodic test .....

Month, year kp/cm^2 (psig)

Stamp of expert who carried out most recent test .....

31.2. The following particulars should be inscribed either on the tank-container itself or on a board:

Name of owner or operator .....

Name of substance being carried 1/ .....

Date of the last visual inspection .....

Maximum permissible gross weight ..... kg (pounds)

Unladen (tare) weight ..... kg (pounds)

In addition, tank-containers should bear the recognized danger symbols.

31.3. Tanks intended and designed for carriage by sea should be suitably marked on the top portion of the metal plate required by paragraph 31.1 with a symbol representing an "anchor".

31.4. A copy of the certificate specified in paragraph 29.1 should accompany every shipment for which the tank is used.

32. Carriage requirements

32.1. During carriage, tank-containers should be adequately protected against lateral and longitudinal impact and against overturning. If the shells and the service equipment are so constructed as to withstand impact or overturning they need not be protected in this way.

Examples of protection of shells against collision:

(1) Protection against lateral impact may consist, for example, of longitudinal bars protecting the shell on both sides at the level of the median line;

(2) Protection against overturning may consist, for example, of reinforcement rings or bars fixed across the frame;

(3) Protection against rear impact may consist, for example, of a bumper or frame.

1/ For carriage by sea the correct technical name is required in accordance with the International Convention for the Safety of Life at Sea. For carriage by land a collective description or an index number may be given instead of the name.

32.2. Tank-containers should carry only cargoes specifically authorized by the competent authority.

33. Filling ratios

33.1. Inflammable liquids and low-concentration acids and lyes:

$$\text{Degree of filling} = \frac{97}{1 + \alpha (T_r - t_f)}$$

33.2. High-concentration toxic liquids and high-concentration acids and lyes:

$$\text{Degree of filling} = \frac{95}{1 + \alpha (T_r - t_f)}$$

33.3. In these formulae α is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (t_f) and the maximal mean bulk temperature (T_r) and is calculated by the formula:

$$\alpha = \frac{d_{15} - d_{50}}{35 \cdot d_{50}}$$

in which d_{15} and d_{50} are the density of the liquid at 15°C (59°F) and 50°C (122°F) respectively.

33.4. The provisions of paragraphs 33.1 to 33.3 should not apply to tank-containers whose contents are maintained by means of a heating device at a temperature above 50°C (122°F) during carriage. In such a case the degree of filling at the outset should be such that, through the action of a temperature regulator, the tank-container is not full to more than 95 per cent of its capacity at any time during carriage.

34. Tank-containers should not be offered for carriage in an ullage condition liable to produce an unacceptable hydraulic force due to surge within the tank.

35. Tank-containers having residue of lading adhering to the outside of the tank shell should not be accepted for carriage until cleaned and approved for carriage.

36. Tank-containers found to be leaking or to be damaged to such an extent that the integrity of the tank or its lifting and securing arrangements may be affected should not be accepted for carriage.

37. Empty tank-containers not cleaned and not gas-free should comply with the same requirements as tanks filled with the previous substance.

38. Handling requirements

38.1. Fork-lift pockets of tank-containers of 10,000 litres (2,642 gal) or more capacity should be closed off when the tank is filled.

SPECIAL REQUIREMENTS APPLICABLE TO TANK-CONTAINERS INTENDED FOR THE CARRIAGE OF INFLAMMABLE LIQUIDS (CLASS 3)

39. The following general requirements relate particularly to tank-containers intended for the carriage of inflammable liquids (Class 3). Reference should also be made to the table, in Part II of this document, setting out special requirements for individual substances of this Class.

40. All tank-containers intended for the carriage of inflammable liquids should be closed tanks and be fitted with relief devices in accordance with paragraphs 18-26.

NOTE: For tank-containers intended for use only on land, the pertinent regulations governing carriage by land may allow open venting systems.

41. In the case of liquids having a vapour pressure of more than 1.75 kg/cm^2 (24.8 psia) (absolute) at 50°C (122°F) and a coefficient of cubical expansion of more than 150×10^{-5} the degree of filling for tank-containers should not exceed 90 per cent.

SPECIAL REQUIREMENTS APPLICABLE TO TANK-CONTAINERS INTENDED FOR THE CARRIAGE OF DANGEROUS GOODS OF OTHER CLASSES

42. Special requirements for the carriage of dangerous goods of all other classes in tank-containers are in preparation and will be published with the corresponding Part II for each class.

PART II

CLASS 3 INFLAMMABLE LIQUIDS[1]

Substance	United Nations number and group		Additional labels required	Minimum tank pressures (see para.11) Calc. (kp/cm^2)	Test	Bottom openings	Known unsuitable materials for tank and fittings	Pressure relief requirements	Degree of filling (see para. 33)	Special requirements
1	2		3	4		5	6	7	8	9
Acetal	1088	II	-	2.65	2.65	Allowed	-	Normal	-	-
Acetaldehyde	1089	I	-	-	See paras. 11.2. and 11.3.	Allowed	Copper, incompatible rubbers	Normal	90%	Load under nitrogen blanket
Acetic acid over 90% by weight	1842	II	8	4	2.65	Allowed	Mild steel	Normal	See para. 33.2.	See para. 17.2.1. for carriage by sea
Acetone	1090	II	-	2.65	2.65	Allowed	Incompatible plastics	Normal	-	-
Acetone oils	1091	II	-	2.65 (a) 1.5 (b)	2.65 (a) 1.5 (b)	Allowed	Incompatible plastics	Normal	-	(a) FP below 0°C (b) FP 0°C - 61°C
Acrolein,(Acraldehyde), inhibited	1092	I	6.1	10	4	Not allowed		Special relief, see para. 19.2.1.	See para. 33.2.	Load under nitrogen blanket
Acrylonitrile, inhibited	1093	I	6.1	10	4	Not allowed	All rubbers	Special relief, see para. 19.2.1	See para. 33.2.	No gloves, etc., made of leather, natural or nitrile rubber to be worn
Alcohol, denatured (Methylated spirit)	1095	II	-	1.5	1.5	Allowed		Normal	-	-
Alcohol, industrial	1096	II	-	1.5	1.5	Allowed		Normal	-	-
Allyl alcohol	1098	I	6.1	4	4	Not allowed	Rubber copper	Special relief, see para. 19.2.1.	See para. 33.2.	Breathing apparatus to accompany tank
Allyl bromide	1099	I	-	4	4	Not allowed	Aluminium or mild steel for external fittings	Special relief, see para. 19.2.1.	See para. 33.2.	Breathing apparatus to accompany tank

1/ Substances not included in Part II may be carried in accordance with the requirements prescribed by the national competent authority.

CLASS 3 INFLAMMABLE LIQUIDS (continued)

1	2		3	4		5	6	7	8	9
Allyl chloride	1100	I	6.1	10	4	Not allowed	Aluminium or mild steel for (i) tank, if cargo is wet (ii) fittings at all times	Special relief, see para. 19.2.1.	See para. 33.2.	Breathing apparatus to accompany tank
Amyl acetates	1104	II	-	1.5	1.5	Allowed	Incompatible plastics	Normal	-	
Amyl alcohols	1105	II	-	1.5	1.5	Allowed	Incompatible plastics	Normal	-	
Amyl chloride	1107	II	-	1.5	1.5	Allowed	-	Normal	-	
Amyl formates	1109	II	-	1.5	1.5	Allowed	-	Normal	-	
Amyl mercaptan	1111	II	-	2.65	2.65	Allowed	-	Normal	-	
Amyl methyl ketone (Methyl amyl ketone)	1110	III	-	1.5	1.5	Allowed	Incompatible plastics and rubbers	Normal	-	
Amyl nitrate	1112	II	-	1.5	1.5	Allowed	Incompatible plastics and rubbers	Normal	-	
Amyl nitrite	1113	II	-	2.65	2.65	Allowed	Incompatible plastics and rubbers	Normal	-	
Amylamine	1106	II	-	1.5	1.5	Allowed	-	Normal		
Amylene, normal	1108	I	-		See paras. 11.2. and 11.3.	Allowed	-	Normal		
Benzaldehyde	1990	III	-	1.5	1.5	Allowed	-	Normal		
Benzene (Benzol)	1114	II	-	2.65	2.65	Allowed	Incompatible rubbers	Normal		
Brake fluid, hydraulic	1118	II	-	2.65(a) 1.5 (b)	2.65(a) 1.5 (b)	Allowed	Incompatible rubbers	Normal		(a) FP below 0°C (b) FP 0°C - 61°C
Butanol (Butyl alcohol)	1120	II	-	1.5	1.5	Allowed	-	Normal		

CLASS 3 INFLAMMABLE LIQUIDS (continued)

1	2		3	4		5	6	7	8	9
sec. Butanol	1121	II	-	1.5	1.5	Allowed	-	Normal		
tert. Butanol	1122	II	-	1.5	1.5	Allowed	-	Normal		
Butyl acetate, normal	1123	II	-	1.5	1.5	Allowed	Incompatible plastics and rubbers	Normal		
sec. Butyl acetate	1124	II	-	1.5	1.5	Allowed	Incompatible plastics and rubbers	Normal		
Butyl acrylate	2348	II	-	2.65	2.65	Allowed	-	Normal		
Butyl bromide, normal	1126	II	-	1.5	1.5	Allowed	-	Normal		
Butyl chloride, normal	1127	II	-	2.65	2.65	Allowed	-	Normal		
Butyl formate, normal	1128	II	-	1.5	1.5	Allowed	-	Normal		
Butylamine, normal	1125	II	-	2.65	2.65	Allowed	Copper, aluminium, zinc, magnesium	Normal		
Butylpropionate	1914	II	-	1.5	1.5	Allowed	-	Normal		
Butyraldehyde	1129	II	-	2.65	2.65	Allowed	-	Normal		
Camphor oil	1130	III	-	1.5	1.5	Allowed	-	Normal		
Carbon disulphide (Carbon biculphide)	1131	I	6.1	10	4	Not allowed	Zinc, rubber, incompatible Plastics	Special relief, see para.19.2.1	See Para. 33.2	Breathing apparatus to accompany tank, load under nitrogen blanket
Cement, adhesive, containing an inflammable liquid	1133	II	-	2.65(a) 1.5 (b)	2.65(a) 1.5 (b)	Allowed	-	Normal		(a) F.P. below 0°C (b) F.P. 0°C-61°C
Chlorobenzene (Monochlorobenzene)	1134	II	-	1.5	1.5	Allowed	All rubbers	Normal		
2-Chloroethanol (Ethylene chlorohydrin)	1135	II	-	2.65	2.65	Not allowed	-	Special relief, see para. 19.2.1.		Breathing apparatus to accompany tank
Chloroprene, inhibited	1991	I	6.1	4	4	Not allowed	Copper	Special relief, see para. 19.2.1.	See Para. 33.2	Breathing apparatus to accompany tank

CLASS 3 INFLAMMABLE LIQUIDS (continued)

1	2		3	4		5	6	7	8	9
Coal tar distillate containing benzene or homologues (Coal tar oil)	1136	II	-	2.65 (a) 1.5 (b)	2.65 (a) 1.5 (b)	Allowed	Copper and its alloys, incompatible plastics, rubbers	Normal		(a) F.P. below 0°C (b) F.P. 0°C-61°C
Coal tar light oil	1137	II	-	2.65 (a) 1.5 (b)	2.65 (a) 1.5 (b)	Allowed	Incompatible plastics and rubbers	Normal		(a) F.P. below 0°C (b) F.P.0°C-61°C
Coal tar naphtha	1138	II	-	2.65 (a) 1.5 (b)	2.65 (a) 1.5 (b)	Allowed	Incompatible rubbers and plastics	Normal		(a) F.P. below 0°C (b) F.P. 0°C-61°C
Crotonaldehyde, stabilized	1143	II	-	2.65	2.65	Not allowed	-	Normal		Breathing apparatus to accompany tank
Crotonylene	1144	I	-		See paras. 11.2 and 11.3	Allowed	-	Normal		See para. 17.2.1. for carriage by sea
Cyclohexane and its homologues	1145	II	-	2.65	2.65	Allowed	-	Normal		
Cyclohexanone	1915	III	-	1.5	1.5	Allowed	Polythene	Normal		
Cyclopentane and its homologues	1146	II	-		See paras. 11.2 and 11.3	Allowed	-	Normal		
p-Cymene (Cymol, Methylpropylbenzene, Isopropyltoluol, Isopropyltoluene)	2046	II	-	2.65	2.65	Allowed	Incompatible rubbers	Normal		
Decahydronaphthalene (Decalin)	1147	II	-	1.5	1.5	Allowed	-	Normal		
Diacetone alcohol	1148	II	-	1.5	1.5	Allowed	Incompatible plastics	Normal		
Dibutyl ethers (Butylethers)	1149	III	-	1.5	1.5	Allowed	-	Normal		
Dichloroethyl ether	1916	II	6.1	4	4	Not allowed	-	Special relief, see para. 19.2.1.	See para. 33.2.	
Dichloroethylene	1150	II	-	2.65	2.65	Allowed	Copper and its alloys	Normal		

CLASS 3 INFLAMMABLE LIQUIDS (continued)

1	2		3	4		5	6	7	8	9
Dichloropentanes	1152	II	-	1.5	1.5	Allowed	-	Normal		
Dichloropropene	2047	II		2.65	2.65	Allowed	Incompatible rubbers, aluminium (?)	Normal		
Dicyclopentadiene	2048	II	-	2.65	2.65	Allowed	Incompatible rubbers	Normal		
Diethyl ether (Ethyl ether, Anaesthetic ether, Sulphuric ether)	1155	I	-		See paras. 11.2. and 11.3.	Not allowed	-	Normal		Load under nitrogen blanket
Diethyl ketone	1156	II	-	1.5	1.5	Allowed	Incompatible plastics and rubber	Normal		
Diethylamine	1154	II	-	2.65	2.65	Allowed	Copper, magnesium, aluminium and their alloys	Normal		See para. 17.2.1. for carriage at sea
1,2-Diethoxyethane	1153	III	-	1.5	1.5	Allowed	Incompatible plastics and rubbers	Normal		
Diethylbenzene	2049	II	-	1.5	1.5	Allowed	Incompatible plastics and rubbers	Normal		
Diisobutyl ketone	1157	III	-	1.5	1.5	Allowed	Incompatible rubbers and plastics	Normal		
Diisobutylene, isomeric compounds	2050	II	-	1.5	1.5	Allowed	-	Normal		
Diisopropylamine	1158	II	-	2.65	2.65	Allowed	Zinc, copper, magnesium, aluminium and their alloys	Normal		See para. 17.2.1. for carriage by sea

CLASS 3 INFLAMMABLE LIQUIDS (continued)

1	2		3	4		5	6	7	8	9
Diisopropyl ether	1159	II	-	2.65	2.65	Allowed	-	Normal		
Dimethyl carbonate	1161	II	-	2.65	2.65	Allowed	-	Normal		
Dimethyl sulphide	1164	I	-		See paras. 11.2. and 11.3.	Allowed	-	Normal		
Dimethylamine 40% solution	1160	II	-	2.65	2.65	Not allowed	Zinc, copper, magensium, aluminium and their alloys	Normal		
Dimethyldichlorosilane	1162	I	8	10	4	Allowed	Aluminium, mild steel for (1) tank, if cargo is wet (2) fittings at all times	Normal	See para. 33.2.	See para. 17.2.1. for carriage by sea
Dimethylethanolamine (Deanol, 2-Dimethylamino-ethanol)	2051	II	-	1.5	1.5	Allowed	Copper and its alloys	Normal		
Dimethylhydrazine, unsymmetrical	1163	I	-	4	4	Not allowed	-	Special relief, see para. 19.2.1.		
Dioxane	1165	II	-	2.65	2.65	Allowed	Incompatible plastics	Normal		
Dioxolane	1166	II	-	2.65	2.65	Allowed	-	Normal		
Dipentene (Cajeputene, Cinene, dl-paramentha-1, 8 Diene, Limonene, inactive)	2052	II	-	1.5	1.5	Allowed	-	Normal		
Dipropylamine	2383	II	-	2.65	2.65	Allowed	Zinc, copper, magnesium, aluminium and their alloys	Normal		
Divinyl ether	1167	II	-	4	4	Allowed	Copper and its alloys	Normal		
Driers, paint or varnish in liquid form	1168	II	-	2.65 (a) 1.5 (b)	2.65 (a) 1.5 (b)	Allowed	-	Normal		(a) FP below 0°C (b) FP 0°C - 61°C

CLASS 3 INFLAMMABLE LIQUIDS (continued)

1	2		3	4		5	6	7	8	9
Ethanol (Ethyl alcohol)	1170	II	-	1.5	1.5	Allowed	-	Normal		
2-Ethoxyethanol (Ethyleneglycol monoethyl ether)	1171	III	-	1.5	1.5	Allowed	Incompatible rubbers and plastics	Normal		
2-Ethoxyethyl acetate (Ethyleneglycol monoethyl ether acetate	1172	II	-	1.5	1.5	Allowed	Zinc and alloys, incompatible plastics	Normal		
Ethyl acetate	1173	II	-	2.65	2.65	Allowed	Copper, incompatible rubbers	Normal		
Ethyl acrylate, inhibited	1917	II	-	2.65	2.65	Allowed	-	Normal		Breathing apparatus to accompany tank. See para. 17 2.1. for carriage by sea
Ethyl amyl ketone	2271	III	-	1.5	1.5	Allowed	Incompatible plastics and rubbers	Normal		
Ethyl borate	1176	II	-	2.65	2.65	Allowed	-	Normal		
Ethyl butyl acetate	1177	III	-	1.5	1.5	Allowed	-	Normal		
Ethyl butyl ether	1179	II	-	1.5	1.5	Allowed	-	Normal		
Ethyl butyrate	1180	II	-	1.5	1.5	Allowed	-	Normal		
Ethyl chloroacetate	1181	II	-	2.65	2.65	Allowed	-	Normal		
Ethyl chloroformate (Ethyl chlorocarbonate)	1182	I	6 and 8	To be carried as specified by the competent authorities concerned						
Ethyl crotonate	1862	II	-	1.5	1.5	Allowed	-	Normal	See para. 33.2.	
Ethyl formate	1190	II	-	2.65	2.65	Allowed	-	Normal		
Ethyl hexaldehyde	1191	III	-	1.5	1.5	Allowed	-	Normal		
Ethyl lactate	1192	III	-	1.5	1.5	Allowed	-	Normal		
Ethyl methyl ketone (Methyl ethyl ketone)	1193	II	-	2.65	2.65	Allowed	-	Normal		

1	2		3	4		5	6	7	8	9
Ethyl propionate	1195	II	-	1.5	1.5	Allowed	-	Normal		
Ethylbenzene	1175	II	-	1.5	1.5	Allowed	Incompatible plastics and rubbers	Normal		
Ethylbutyraldehyde	1178	II	-	1.5	1.5	Allowed	-	Normal		
Ethyldichlorosilane	1183	II	8	10	4	Not allowed	Aluminium, mild steel for 1. Tank if cargo is wet 2. Fittings at all times	Normal	See para. 33.2.	
Ethylene dichloride (1,2-Dichloroethane)	1184	II	-	2.65	2.65	Allowed	Aluminium if wet	Normal		
Ethylene glycol monobutyl ether	2369	III	-	1.5	1.5	Allowed	Incompatible rubbers and plastics	Normal		
Ethylene glycol monomethyl ether (Methyl glycol)	1188	III	-	1.5	1.5	Allowed	Incompatible rubbers and plastics	Normal		
Ethylene glycol monomethyl ether acetate	1189	III	-	1.5	1.5	Allowed	Zinc and alloys, incompatible plastics	Normal		
Ethyleneimine, inhibited, pure	1185	I	6.1	Not permitted for carriage in tank-containers						
Ethyltrichlorosilane	1196	II	8	10	4	Allowed	Aluminium, mild steel for 1. Tank if cargo is wet 2. Fittings at all times	Normal	See para. 33.2.	See para. 17.2.1. for carriage by sea
Extracts and flavourings, liquid	1169 1197	II) II)	-	2.65(a) 1.5 (b)	2.65(a) 1.5(b)	Allowed	-	Normal		(a) FP below 0°C (b) FP 0°C-61°C
Formaldehyde in solutions	1198	II	-	2.65	2.65	Allowed	Carbon steel	Normal		Breathing apparatus to accompany tank

CLASS 3 INFLAMMABLE LIQUIDS (continued)

1	2		3	4		5	6	7	8	9
Fuel, aviation, turbine engine	1863	II	-	2.65(a) 1.5 (b)	2.65(a) 1.5 (b)	Allowed	-	Normal		(a) FP below 0°C (b) FP 0°C-61°C
Furfural	1199	II	-	2.65	2.65	Allowed	-	Normal		
Fusel oil	1201	II	-	1.5	1.5	Allowed	-	Normal		
Gas drips, hydrocarbon	1864	II	-	2.65(a) 1.5 (b)	2.65(a) 1.5 (b)	Allowed	-	Normal		(a) FP below 0°C (b) FP 0°C-61°C
Gas oil	1202	II	-	2.65(a) 1.5 (b)	2.65(a)	Allowed	-	Normal		(a) FP below 0°C (b) FP 0°C-61°C
Gutta percha solution	1205	II	-	2.65(a) 1.5 (b)	2.65(a) 1.5 (b)	Allowed	-	Normal		(a) FP below 0°C (b) FP 0°C-61°C
Heptane and its isomers	1206	II	-	2.65	2.65	Allowed	Natural rubber	Normal		
Heptene	2278	II	-	2.65	2.65	Allowed	Natural rubber	Normal		
Hexaldehyde	1207	III	-	1.5	1.5	Allowed	-	Normal		
Hexane and its isomers	1208	II	-	2.65(a) 1.5 (b)	2.65(a) 1.5 (b)	Allowed	Incompatible rubbers and plastics	Normal		(a) FP below 0°C (b) FP 0°C-61°C
Hexene	2370	II	-	2.65	2.65	Allowed	Incompatible rubbers	Normal		
Ink, printers	1210	II	-	2.65(a) 1.5 (b)	2.65(a) 1.5 (b)	Allowed	-	Normal		(a) FP below 0°C (b) FP 0°C-61°C
Iron pentacarbonyl	1994	I	6.1	Not permitted for carriage in tank-containers						
Isobutanol (Isobutyl alcohol)	1212	II	-	1.5	1.5	Allowed	-	Normal		
Isobutyraldehyde (Isobutyl aldehyde)	2045	II	-	2.65	2.65	Allowed	-	Normal		
Isobutyl acetate	1213	II	-	1.5	1.5	Allowed	-	Normal		
Isobutylamine	1214	II	-	2.65	2.65	Allowed	Copper	Normal		
Isooctene	1216	II	-	2.65	2.65	Allowed	-	Normal		
Isopentenes	2371	I	-		See paras. 11.2. and 11.3.	Allowed	Copper and its alloys	Normal		
Isoprene, inhibited	1218	I	-		See paras. 11.2. and 11.3.	Allowed	-	Normal	90%	See para.17.2.1. for carriage by sea

CLASS 3 INFLAMMABLE LIQUIDS (continued)

1	2		3	4		5	6	7	8	9
Isopropanol (Isopropyl alcohol)	1219	II	-	1.5	1.5	Allowed	-	Normal		
Isopropyl acetate	1220	II	-	1.5	1.5	Allowed	-	Normal		
Isopropyl nitrate	1222	II	-	Not permitted for carriage in tank-containers						
Isopropylamine	1221	I	-		See paras. 11.2. ad and 11.3.	Allowed	Copper	Normal		
Isopropylbenzene (Cumene)	1918	II	-	1.5	1.5	Allowed	-	Normal		
Kerosene (Paraffin)	1223	II	-	1.5	1.5	Allowed	-	Normal		
Mesityl oxide	1229	II	-	2.65	2.65	Allowed	-	Normal		
Methanol (Methyl alcohol, wood alcohol, columbian spirits)	1230	II	6.1	4	4	Allowed	Incompatible plastics and rubbers	Normal	See para. 33.2.	
Methyl acetate	1231	II	-	2.65	2.65	Allowed	Incompatible plastics and rubbers	Normal		
Methyl acetone	1232	II	-	2.65	2.65	Allowed	Incompatible plastics and rubbers	Normal		
Methyl acrylate, inhibited	1919	II	-	2.65	2.65	Allowed		Normal		
Methyl amylacetate	1233	III	-	1.5	1.5	Allowed	Incompatible plastics and rubbers	Normal		
Methyl butyrate	1237	II	-	1.5	1.5	Allowed	-	Normal		
Methyl cyclohexane	2296	II	-	2.65	2.65	Allowed	Incompatible plastics and rubbers	Normal		
Methyl cyclohexanone	2297	II	-	1.5	1.5	Allowed	Incompatible plastics and rubbers	Normal		

CLASS 3 INFLAMMABLE LIQUIDS (continued)

1	2		3	4		5	6	7	8	9
Methyl cyclopentane	2298	II	-	2.65	2.65	Allowed	Incompatible plastics and rubbers	Normal		
Methyl formate	1243	I	-		See paras. 11.2 and 11.3	Allowed	-	Normal	90%	See para. 17.2.1. for carriage by sea
Methyl isobutyl carbinol (Methyl amyl alcohol, M.I.B.C.)	1245	II	-	1.5	1.5	Allowed	Incompatible rubbers and plastics	Normal		
Methyl isobutyl ketone	1245	II	-	1.5	1.5	Allowed	Incompatible rubbers and plastics	Normal		
Methyl isopropenyl ketone, inhibited	1246	II	-	1.5	1.5	Allowed	Incompatible rubbers and plastics	Normal		
Methyl methacrylate monomer, inhibited	1247	II	-	2.65	2.65	Allowed	Copper, incompatible rubbers	Normal		
Methyl propionate	1248	II	-	2.65	2.65	Allowed	-	Normal		
Methyl propyl ketone	1249	II	-	1.5	1.5	Allowed	Incompatible plastics and rubbers	Normal		
α - Methyl valeraldehyde	2367	II	-	1.5	1.5	Allowed	-	Normal		
Methyl vinyl ketone	1251	II	-	2.65	2.65	Allowed	Incompatible plastics and rubbers	Normal		
Methylal	1234	II	-	2.65	2.65	Allowed	Incompatible plastics and rubbers	Normal		
Methylamine, aqueous solution	1235	II	-	2.65	2.65	Allowed	-	Normal		
Methylchloromethyl ether	1239	II	-	2.65	2.65	Allowed	-	Normal		
Methyldichlorosilane	1242	I	8	10	4	Allowed	Aluminium, mild steel for 1. Tank, if cargo is wet. 2. Fittings at all times	Normal	See para.33.2.	See para.17.2.1. for carriage by sea

1	2		3	4		5	6	7	8	9
Methylhydrazine	1244	I	6	10	4	Not allowed	Aluminium, copper	Special relief, see para.19.2.1.	See para.33.2.	
Methytrichlorosilane	1250	II	8	10	4	Allowed	Aluminium, mild steel for 1. Tank, if cargo is wet. 2. Fittings at all times	Normal	See para.33.2.	See para.17.2.1. for carriage by sea
Morpholine (Tetrahydro - 1,4-Oxazine)	2054	II	-	2.65	2.65	Allowed	Copper and its alloys, incompatible rubbers	Normal		
Motor spirit (includes Casoline or Petrol) Naphtha, petroleum Natural gasoline (Casinghead gasoline) Petroleum spirit	1203 1255 1257 1271	II II II II		2.65	2.65	Allowed	Incompatible rubbers	Normal		
Naphtha, solvent	1256	II		1.5	1.5	Allowed	Incompatible rubbers and plastics	Normal		
Nickel carbonyl	1259	I	6.1	Not permitted for carriage in tank-containers						
Nitrocellulose solutions	2059 2060	II II	-	2.65	2.65	Not allowed	Incompatible rubbers and plastics	Normal		
Nitroglycerin, (Glycerin trinitrate) up to 1% solution in alcohol	1204	II	-	Not permitted for carriage in tank-containers						
Nitromethane	1261	II	-	Not permitted for carriage in tank-containers						
Nonane	1920	II	-	1.5	1.5	Allowed	-	Normal		
Octane and its isomers	1262	II	-	1.5	1.5	Allowed	Incompatible rubbers	Normal		
Paints, enamels, lacquers, stains, shellac, varnish, polishes, fillers (liquid), lacquer base and thinners, etc.	1263	II	-	2.65 (a) 1.5 (b)	2.65 (a) 1.5 (b)	Allowed	-	Normal		(a) FP below 0°C (b) FP 0°C -61°C
Paraldehyde	1264	III	-	1.5	1.5	Allowed	-	Normal		

CLASS 3 INFLAMMABLE LIQUIDS (continued)

1	2		3	4		5	6	7	8	9
n-Pentane and	1265	I	-		See paras. 11.2 and 11.3	Allowed	Incompatible rubbers	Normal		See para.17.2.1. for carriage by sea
Isopentane	1265	I	-		See paras. 11.2 and 11.3	Allowed	Incompatible rubbers	Normal	90%	
Perfumery products	1266	II	-	2.65 (a) 1.5 (b)	2.65 (a) 1.5 (b)	Allowed	-	Normal		(a) FP below 0°C (b) FP 0°C - 61°C
α - Picoline	2313	II	-	1.5	1.5	Allowed	-	Normal		
β - Picoline	2313	II	-	1.5	1.5	Allowed	-	Normal		
Pine oil	1272	III	-	1.5	1.5	Allowed	-	Normal		
Propanol (propyl alcohol)	1274	II	-	1.5	1.5	Allowed	-	Normal		
Propionaldehyde	1275	II	-	2.65	2.65	Allowed	-	Normal		
Propyl acetate, normal	1276	II	-	1.5	1.5	Allowed	Incompatible plastics	Normal		
Propyl chloride	1278	II	-	2.65	2.65	Allowed	-	Normal		
Propyl formates	1281	II	-	2.65	2.65	Allowed	-	Normal		
Propyl nitrate, normal	1865	II	-	Not permitted for carriage in tank-containers						
Propylamine (Monopropylamine)	1277	II	-	2.65	2.65	Not allowed	Copper, zinc, aluminium, magnesium and alloys	Special relief see para. 19.2.1.		Breathing apparatus to accompany tank
Propylene dichloride	1279	II	-	1.5	1.5	Allowed	Incompatible plastics and rubbers	Normal		
Propylene oxide	1280	I	-		See paras. 11.2 and 11.3	Allowed	-	Normal		
Propyleneimine, inhibited	1921	I	-	Not permitted for carriage in tank-containers						
Pyridine	1282	II	6.1	2.65	2.65	Not allowed	Copper and its alloys, incompatible rubbers	Special relief, see para. 19.2.1.	See para. 33.2	

1	2		3	4		5	6	7	8	9
Pyrrolidine	1922	II	-	1.5	1.5	Allowed	-	Normal		
Resin oil	1286	III	-	1.5	1.5	Allowed	-	Normal		
Resin solution in inflammable liquid	1866	II	-	2.65 (a) 1.5 (b)	2.65 (a) 1.5 (b)	Allowed	-	Normal		(a) FP below 0°C (b) FP 0°C - 61°C
Rubber solution	1287	II	-	2.65 (a) 1.5 (b)	2.65 (a) 1.5 (b)	Allowed	-	Normal		(a) FP below 0°C (b) FP 0°C - 61°C
Shale oil	1288	II	-	2.65 (a) 1.5 (b)	2.65 (a) 1.5 (b)	Allowed	-	Normal		(a) FP below 0°C (b) FP 0°C - 61°C
Sodium methylate solutions in alcohol	1289	II	-	2.65	2.65	Allowed	Tin, zinc, lead, aluminium	Normal		See para. 17.2.1. for carriage by sea
Styrene monomer, inhibited (Cinnamene, cinnamol, phenylethylene, vinylbenzene)	2055	II	-	1.5	1.5	Allowed	Copper and its alloys	Normal		
Tars, liquid, including road asphalt and oils, bitumen and cut backs	1999	II	-	1.5	1.5	Allowed	-	Normal		
Tetraethyl silicate (Ethyl silicate)	1292	II	-	1.5	1.5	Allowed	-	Normal		
Tetrahydrofuran	2056	II	-	2.65	2.65	Allowed	Incompatible rubbers	Normal		
Toluene (Toluol)	1294	II	-	1.5	1.5	Allowed	Incompatible rubbers and plastics	Normal		
Triethylamine	1296	II	-	2.65	2.65	Allowed	Copper, zinc, aluminium, magnesium, and their alloys	Normal		
Trimethylamine, aqueous solutions containing not more than 30% trimethylamine	1297	II	-		See paras. 11.2 and 11.3 (2.65 min.)	Allowed	Copper, zinc, magnesium and their alloys	Normal		
Trimethylchlorosilane	1298	I	8	10	4	Allowed	Copper, aluminium, mild steel when wet	Normal	See para. 33.2	See para. 17.2.1. for carriage by sea
Tripropylene (Propylene trimer)	2057	II	-	1.5	1.5	Allowed	Incompatible rubbers	Normal		

CLASS 3 INFLAMMABLE LIQUIDS (continued)

1	2		3	4		5	6	7	8	9
Turpentine	1299	III	-	1.5	1.5	Allowed	Incompatible rubbers and plastics	Normal		
Turpentine substitute (white spirit)	1300	II	-	1.5	1.5	Allowed	Incompatible rubbers and plastics	Normal		
Valeraldehyde (Amyl aldehyde, isovaleraldehyde, n. valeraldehyde, valeric aldehyde, penthanol)	2058	II	-	1.5	1.5	Allowed	-	Normal		
Vinyl acetate, inhibited	1301	II	-	2.65	2.65	Allowed	Copper and its alloys	Normal		
Vinyl ethyl ether, inhibited	1302	I	-	4	4	Allowed	Copper and its alloys	Normal		
Vinyl isobutyl ether, inhibited	1304	II	-	2.65	2.65	Allowed	Copper	Normal		
Vinylidene chloride, inhibited	1303	I	-		See para. 11.3	Allowed	Copper and its alloys	No vacuum relief valve		Air to be eliminated by nitrogen or other means
Vinyltrichlorosilane, inhibited	1305	I	8	10	4	Allowed	Aluminium, copper, mild steel when wet	Normal	See para. 33.2	See para. 17.2.1. for carriage by sea
Xylenes (Xylols)	1307	II	-	1.5	1.5	Allowed	Incompatible plastics and rubbers	Normal		

Annex 4

PARTICULAR REQUIREMENTS FOR ORGANIC PEROXIDES

(Recommendations, Annex 2, Appendix 2)

ADOPTED BY THE COMMITTEE

Annex 2 - Appendix 2 */

PARTICULAR REQUIREMENTS FOR ORGANIC PEROXIDES

I. GENERAL

1. Every outer packaging containing an organic peroxide should bear the organic peroxide label unless exempted therefrom by the competent national authority because the quantity or percentage is small or because the specific formulation is prepared in such a manner that the peroxide will not create a hazard during carriage.

2. The allocation of subsidiary risk symbols in column (2) of the list below means that, where "3" or "8" appears, a subsidiary risk label for the inflammable or corrosive class should be affixed to the packaging in addition to the usual organic peroxide label. Where the symbol "E" appears, it indicates that the material as tested exhibits explosive properties. This characteristic may be modified by the use of appropriate packaging. In such cases, the explosives label may be dispensed with by permission of the competent authority.

3. Contact of organic peroxides with the eyes should be avoided. Certain organic peroxides will cause serious injury to the cornea after even brief contact, and the attention of all those concerned with the carriage of such substances should be drawn to this special risk. Such substances are marked with the symbol "I".

4. During the course of transport, packaging containing organic peroxides should be protected from direct sunshine and stored in a cool and well ventilated place away from all sources of heat.

II. CONTROLLED TEMPERATURE REQUIREMENTS

1. The recommendations concerning the refrigeration of certain specified organic peroxides are based on the assumption that the temperature in the immediate surroundings of the package does not exceed 55°C during transport and that this temperature only prevails during a relatively short time per 24 hours.

2. Since the maximum ambient temperature will be experienced only for a brief period on any day, a self-acceleration decomposition temperature test at a lower temperature than the theoretical maximum, but for a prolonged period is appropriate. The test is carried out at 50°C for at least 168 hours.

3. If the organic peroxide does not show evidence of self-accelerating decomposition at this temperature, temperature control is not required.

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*/ A footnote should be added to title "GENERAL PACKING REQUIREMENTS APPLICABLE ...."

"/ In the case of organic peroxides of Division 5.2, special packaging requirements are detailed in Annex 2, Appendix 2."

4. If the organic peroxide shows signs of self-accelerating decomposition at 50°C, temperature control is required for

(a) those with a "E" mark

(b) those which react violently during the test.

5. Other organic peroxides are then tested at 45°C for at least 168 hours. Those which are stable at this temperature are exempt from temperature control. Those which are unstable at this temperature are subject to temperature control.

6. The SADT temperature for organic peroxides is to be determined by conducting the tests at 5°C intervals. The control temperature is derived as follows:

SADT	Control temperature
A 20°C or less	Deduct 20°C from SADT
B Over 20°C to 35°C	" 15°C " "
C Over 35°C	" 10°C " "

7. The self-accelerating decomposition temperature (SADT) is defined for the purpose of organic peroxides as the lowest temperature at which self-accelerating decomposition may occur in the package used in transport. This should be determined in any suitable manner such as to be representative of the commercial packaging used.

8. Organic peroxides, listed with an E mark, and reacting violently, in the tests for the determination of the thermal stability (different from SADT tests), should be stable at 50°C for a period of at least seven days to be acceptable for transportation without temperature control. Those organic peroxides listed without an E mark, and reacting only mildly in the tests for the determination of the thermal stability, should be stable at 45° for a period of at least seven days to be acceptable for transportation without temperature control.

9. The temperature of those organic peroxides for which no controlled temperature is indicated must not at any time reach a value at which the substance will come to a self-accelerating decomposition under the transport conditions.

10. The organic peroxides for which a controlled temperature is indicated should be carried under conditions of adequate refrigeration such that the temperature of the immediate surroundings of the package(s) as indicated is not exceeded. In some climatic regions the competent authority may indicate that during a specified season artificial refrigeration may be dispensed with.

11. When a journey is to take place in a country in which a higher temperature in the immediate surroundings of the package(s) is to be expected, the competent authority should indicate adequate measures to control the temperature in the immediate surroundings of the packages of those organic peroxides which will come to a self-accelerating decomposition at this higher temperature.

12. Liquid air or liquid oxygen must not be used as a refrigerant.

The refrigeration temperature must be selected so as to avoid any dangerous separation of phases.

IV. PACKAGING [1]

1. Appropriate types of packaging for organic peroxides are shown in the list (column 4) against the name of each substance. The quantities specified for each substance and type of packaging represent the maximum currently considered good practice. Smaller quantities for the inner and outer packagings can be used and, unless provided to the contrary, inner receptacles may be packed in the outer receptacle either singly or in groups.

2. Where reference is made only to the technical pure product, the recommended packagings should also apply to formulations containing less than 100 per cent of the product, subject to any exemptions which may be provided.

3. Packagings, including their closures, should be sufficiently rigid in all their parts to prevent any loosening during carriage and should be able to withstand normal conditions of carriage.

4. Cushioning materials should not be readily combustible; they should be suited to the nature of the contents and should not cause decomposition of the contents.

5. The requirements of paragraph 1.11 of Annex 2 (Volume IV) regarding vents should be complied with. In addition, any venting device should be situated above the level of the liquid. In all circumstances, including the expansion of the liquid caused by high temperatures during carriage, they should be able to prevent escape of the liquid and ingress of impurities. Vented packages should be clearly marked to indicate that they should be stored upright.

6. All packages of peroxides which are designated as having explosive properties should carry the explosive subsidiary risk label unless specifically exempted by the competent authority.

7. The packaging of organic peroxides presenting an explosive subsidiary risk should comply with the provisions of paragraphs 2.1.1, 2.2.1 and 2.2.3 of Annex 2 (Volume IV).

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[1] In the case of organic peroxides, the different levels of package testing may, at the discretion of the competent authority, be relaxed.

8. It is recommended that packagings for class 5.2 should comply with the general packaging requirements set out in volume IV and performance tests appropriate to group II. However the hydraulic pressure test where specified for the packaging type used should be omitted.

For organic peroxides meriting a higher degree of packaging it will be necessary to contain the material more effectively without increasing the confinement and thus the risk of explosion. Such packagings are not available at this time and further development is recommended.

In the case of packagings requiring leakage testing where these packages require to be vented in use, the leakage test should be carried out with a non-vented closure fitted.

In the case of the stacking test, the maximum height to be taken into consideration is 3 m in all cases.

LIST OF ORGANIC PEROXIDES

Organic peroxides	Subsidiary risk	Controlled temperature	Packaging types	Recommended packaging
(1)	(2)	(3)	(4)	(5)
5.2.0/2080 Acetyl acetone peroxide syn.3,5-dimethyl 3,5-dihydroxydioxolane-1,2. Max. 40% in solution			1(a), 18	Group II
5.2.0/2081 Acetyl benzoyl peroxide Max. 45% in solution			1, 18	Group II
Acetyl cyclohexane sulfonyl peroxide				
5.2.0/2082 Max. 82% wetted with min. 12% water	E	-10°C	10(e), 24	Group I 1/
5.2.0/2083 Max. 32% in solution		-10°C	1(b), 9(c), 18	Group II
5.2.0/2084 Acetyl peroxide Max. 27% in solution (dimethylphthalate or other approved phlegmatizer)	I		1(b), 18	Group II adequate 2/
Benzoyl peroxide				
5.2.0/2085 Technical pure or more than 52% with inert solid */	E		1(g), 10(g), 14, 24, 26	Group I 1/
5.2.0/2086 More than 72% as a paste	E		1(d), 10(d), 24, 31	Group I 1/
5.2.0/2087 More than 72% but less than 95% as a paste			1(a), 4, 9(b), 10(a), 13, 15(b), 30, 31, 31(a)**/, 32, 37, 40, 42	Group II
5.2.0/2088 More than 77% with water	E		1(c), 10(c), 24	Group I 1/
5.2.0/2089 35 to max. 52% with inert solid (Exempt if less than 35% with finely ground starch)			1(a), 6, 10(a), 13, 33, 37, 40, 31	Group II
5.2.0/2090 Not more than 77% with water Less than 30% with inert solid is exempt.			1(b), 10(b), 12, 22	Group II adequate
5.2.0/2091 t-Butyl cumyl peroxide Technical pure			1(a), 9(b), 18, 20, 35, 44	Group II

*/ Benzoyl peroxide more than 95% with inert solid or technical pure - inner packagings not to exceed 500 g net.

**/ Acceptable only for a max. 55% product.

(1)		(2)	(3)	(4)	(5)
	t-Butyl hydroperoxide				
5.2.0/2092	Max. 80% in di-t-butylperoxide and/or solvent ***/	3, I		1(a), 18, 20, 35, 42, 44	Group I 3/
5.2.0/2093	Max. 72% with water.	I		1(a), 18, 20, 35, 42 ****/, 43, 44, 45, 50 *****/	Group II adequate 2/
5.2.0/2094	Over 72% to max. 90% with water			1(a), 18, 20, 35, 44	Group I 3/
	t-Butyl peracetate				
5.2.0/2095	Max. 76% in solution	E		1(d), 18	Group II
5.2.0/2096	Max. 52% in solution			1(a), 1(b), 9(c), 18	Group II
	t-Butyl perbenzoate				
5.2.0/2097	Technical pure or more than 75% in solution	E		1(e), 2, 9(b), 18, 20, 35, 44, 51	Group II
5.2.0/2098	Max. 75% in solution			1(a), 9(b), 18, 20, 35, 44	Group II
	t-Butyl permaleate				
5.2.0/2099	Technical pure	E		11	Group II
5.2.0/2100	Max. 55% in solution			1(a), 18	Group II
5.2.0/2101	Max. 55% as a paste			1(a), 4, 9(b), 10(a), 13, 15(b), 18, 30, 32, 35, 37, 40, 44	Group II
5.2.0/2102	t-Butyl peroxide (syn. di-tert-butyl peroxide Technical pure	3		1(a), 9(b), 18, 35, 36(b), 39, 44, 50	Group II
5.2.0/2103	t-Butyl peroxy isopropyl carbonate Technical pure	E		2, 3(b), 16	Group II
5.2.0/2104	t-Butyl peroxy-3,5,5-trimethyl hexanoate (Syn.t-butyl perisononanoate) Technical pure			1(a), 1(b), 9(c), 18	Group II

***/ Inflammable label Fl not required if flashpoint of solvent is above 22.5°C (73°F) closed cup.

****/ Packaging type 42 should be used only where the substance is in a solvent.

*****/ Under conditions laid down by the competent authority and providing that steps have been taken to achieve the safety equivalency of 35% water and 65% TBHP.

(1)	(2)	(3)	(4)	(5)
5.2.0/2105 t-Butyl monoperphthalate Technical pure			6,10(f), 13, 33, 34, 37, 40, 41	Group II
5.2.0/2106 t-Butyl diperphthalate			1(a), 1(b), 9(c), 18	Group II
5.2.0/2107 Max. 55% in solution			1(a), 4, 9(b), 10(a), 13, 15(b), 18, 30, 32	Group II
5.2.0/2108 Max. 55% as a paste			35, 37, 40, 44	Group II
t-Butyl perpivalate				
5.2.0/2109 -				
5.2.0/2110 Max. 77% in solution		0°C	1(b), 9(c), 18	Group II
5.2.0/2111 2,2-Bis (t-Butyl peroxy) butane Max. 55% in solution			1(a), 1(b), 9(c), 18	Group II
5.2.0/2112 1,4-Bis (2, tert-Butyl peroxy isopropyl) benzene, 1,3-Bis (2-tert-butyl peroxy isopropyl) benzene and mixtures thereof. Technical pure or more than 40% with inert solid			1(a), 6, 10(a), 13, 33, 37, 40, 41, 42	Group II
p-Chlorobenzoyl peroxide				
5.2.0/2113 Max. 75% with water			1(b), 10(b), 12, 22	Group II adequate
5.2.0/2114 Max. 52% as a paste			1(a), 4, 9(b), 10(a), 13, 15(b), 30, 32, 37	Group II
5.2.0/2115 Max. 52% in solution (Exempt if containing more than 70% inert solid)			1(b), 1(f), 9(c), 18	Group II
5.2.0/2116 Cumene hydroperoxide Technical pure	I		1(a), 1(b), 9(b), 9(c), 18, 35, 36(a), 38, 39, 44, 46, 47, 50	Group I 3/

	(1)	(2)	(3)	(4)	(5)
	1-hydroxyl-1'-hydroperoxy dicyclohexyl peroxide technical pure and mixtures with bis (1-hydroxy cyclohexyl) peroxide [Cyclohexanone peroxide]				
5.2.0/2117	More than 90% with less than 10% water	E,I		1(c), 10(c), 23, 24	Special recommendations for use of 5 kg plastics inner, fibreboard outer 4/
5.2.0/2118	Max. 72% as a paste or in solution	I		1(a), 3(a), 4, 9(b), 10(a), 13, 15(b), 18, 30, 31, 32, 35, 3/ 37, 40, 44	Group I; Group II adequate for paste
5.2.0/2119	90% or less with at least 10% water (Exempt if containing more than 70% inert solid)	I		1(b), 9(b), 10(c), 18	Group I 1/
5.2.0/2120	Decanoyl peroxide Technical pure		+15°C	1(a), 6, 9(b), 10(a), 13, 15(b), 25, 31, 33(a), 37, 40, 41, 42, 45	Group II
5.2.0/2121	Dicumyl peroxide Technical pure or in a mixture with inert solid (Exempt if containing more than 60% inert solid)			1(a), 9(a), 10(a), 15(a), 42	Group II
	Di (2-ethylhexyl) peroxydicarbonate				
5.2.0/2122	Technical pure		-20°C	1(b)	Group II adequate
5.2.0/2123	Max. 47% in solution		- 5°C	1(b), 9(c), 18	Group II
5.2.0/2124	Lauroyl peroxide Technical pure			1(a), 6, 10(a), 13, 14, 26, 31, 33(a), 37, 40, 41	Group II
5.2.0/2125	p-Menthane hydroperoxide Technical pure			1(a), 9(b), 18, 35, 36(a), 38, 39, 44, 46, 47, 50	Group I 3/
5.2.0/2126	Methyl isobutyl ketone peroxide Max. 62% in solution			1(a), 1(b), 9(c), 18	Group I 5/

(1)		(2)	(3)	(4)	(5)
5.2.0/2127	Methyl ethyl ketone peroxide(s) Max. 60%, explosive label required for all concentrations and formulations unless test results by competent authority indicate differently	E,I		1(a), 1(b), 8, 9(c), 18	Special recommendations for use of non-metal packages to Group I standards
5.2.0/2550	Methyl ethyl ketone peroxide(s) Max. 50% with available oxygen	I		1(a), 3(b), 18	Special recommendations for use of non-metal packages Group II
5.2.0/2128	Isononanoyl peroxide Technical pure or in solution		0°C	1(b), 3(b), 9(c), 18, 42, 45, 51	Group II
5.2.0/2129	n-Octanoyl peroxide Technical pure		+10°C	1(a), 6, 9(b), 10(a), 13, 15(b), 37, 40, 41, 42, 45	Group II
5.2.0/2130	Pelargonyl peroxide Technical pure		0°C	1(a), 6, 9(b), 10(a), 13, 15(b), 37, 40, 41	Group II
5.2.0/2131	Peracetic acid Max. 43% in acetic acid or a mixture of acid and water, with not more than 6% hydrogen peroxide and not more than 1% sulphuric acid	8,I		1(c), 3(a), 5, 7, 21, 48, 49	Group I 3/
5.2.0/2132	Propionyl peroxide Max. 28% in solution		+15°C	1(b), 9(c), 18, 42, 45	Group II
5.2.0/2133	Isopropyl peroxydicarbonate Technical pure	E	-15°C	1(g), 9(e), 19, 24, 27, 29	Special recommendations for use of packagings no. 27, 28 and 29 6/
5.2.0/2134	Max. 52% in solution		-10°C	1(b), 9(c), 18	Group II
5.2.0/2135	Succinic acid peroxide Technical pure	E		1(c), 10(c), 11, 14, 24	Group I 1/
5.2.0/2136	Tetraline hydroperoxide Technical pure			1(a), 9(b), 10(a), 15(b), 35, 36(a), 44	Group I 3/

(1)	(2)	(3)	(4)	(5)
2,4-Dichlorobenzoyl peroxide				
5.2.0/2137 Max. 75% with water			1(b), 10(b), 12, 22	Group II adequate
5.2.0/2138 Max. 52% as a paste			1(a), 4, 9(b), 10(a), 13, 15(b), 30, 31, 32, 37, 40	Group II
5.2.0/2139 Max. 52% in solution			1(b), 1(f), 9(c), 18	Group II
n-Butyl-4,4-bis (t.-butylperoxy) valerate				
5.2.0/2140 Technical pure			1(e), 3(b), 18, 51	Group II
5.2.0/2141 Max. 52% with inert solid			1(b), 10(b)	Group II
5.2.0/2142 tert. Butyl perisobutyrate Max. 77% in solution	E	+15°C	1(e), 3(b), 51	Group II
5.2.0/2143 tert- Butylper-(2-ethyl) hexanoate Technical pure		+20°C	1(b), 3(b), 9(c), 18, 51	Group II
5.2.0/2144 tert, Butyl peroxy diethylacetate Technical pure	E		1(e)	Group II
1,1-Bis (tert. Butylperoxy)-3,3,5-trimethyl cyclohexane				
5.2.0/2145 Technical pure			1(e), 3(b), 51	Group II
5.2.0/2146 Max. 57% in solvent			1(a), 18	Group II
5.2.0/2147 Max. 58% with inert solid			1(a), 10(a)	Group II
5.2.0/2148 bis (1 hydroxy cyclohexyl) peroxide Technical pure			1(a), 4, 10(a), 13, 14, 32, 37, 40, 41	Group II
5.2.0/2149 Dibenzyl peroxydicarbonate Max. 87% with water	E	+25°C	10(e), 14, 32	Group I 1/
Di-(sec.butyl) peroxydicarbonate				
5.2.0/2150 Technical pure	E	-20°C	1(c), 3(a)	Group I 7/
5.2.0/2151 Max. 52% in solution		-10°C	1(b), 3(b)	Group II
Dicyclohexyl peroxydicarbonate				
5.2.0/2152 Technical pure	E	+ 5°C	1(c), 10(c), 14, 32	Group I 1/
5.2.0/2153 Max. 91% with water		+ 5°C	1(b), 10(b)	Group I 1/

(1)	(2)	(3)	(4)	(5)
5.2.0/2154 Bis-(4-tert.butyl cyclohexyl) peroxydicarbonate				
Technical pure		+30°C	1(a), 6, 10(a), 13, 33, 37, 40, 41	Group II
2,5-Dimethyl-2,5-bis(tert. butylperoxy) hexane				
5.2.0/2155 Technical pure			1(a), 18, 3(b), 51	Group II
5.2.0/2156 Max. 52% with inert solid			1(a), 10(a)	Group II
5.2.0/2157 2,5-Dimethyl-2,5-bis(2-ethyl hexanoyl-peroxy) hexane				
Technical pure		+20°C	1(b), 3(b), 51	Group II
2,5-Dimethyl-2,5-bis(tert. butylperoxy) hexyne-3				
5.2.0/2158 Technical pure	E		1(e), 3(b), 51	Group II
5.2.0/2159 Max. 52% with inert solid			1(a), 10(a)	Group II
5.2.0/2160 1,1,3,3-Tetramethyl butyl hydroperoxide				
Technical pure			1(e), 3(b), 51	Group II
5.2.0/2161 1,1,3,3-Tetramethyl butyl peroxy-3-ethyl hexanoate				
Technical pure		+20°C	1(e), 3(b), 51	Group I 3/
5.2.0/2162 Pinane hydroperoxide				
Technical pure			1(a), 9(b), 18, 35, 42, 44, 50	Group I 3/
5.2.0/2163 Diacetone alcohol peroxides Max. 57% in solution with max. 9% hydrogen peroxide, min. 26% diacetone alcohol, and min. 9% water; total active oxygen content max. 10%		+25°C	1(b)	Group I 3/
5.2.0/2164 Dicetyl peroxydicarbonate				
Technical pure		+10°C	1(a), 9(b), 10(a), 15(b)	Group II
3,3,6,6,9,9-hexamethyl-1,2,4,5-tetroxonane				
5.2.0/2165 Technical pure	E		1(c), 10(c)	Group I 1/
5.2.0/2166 Max. 52% with inert solid			1(a), 10(a)	Group II
5.2.0/2167 Max. 52% in solution			1(a), 18	Group II

(1)	(2)	(3)	(4)	(5)
5.2.0/2168 2,2-bis(4,4-ditert. butylperoxy cyclohexyl) propane Max. 42% with inert solid			1(a), 10(a)	Group II
n-Butyl Peroxydicarbonate				
5.2.0/2169 Max. 52% in solution		0°C	1(b)	Group II
5.2.0/2170 Max. 27% in solution		0°C	1(b), 18, 42, 45	Group II
5.2.0/2171 Diisopropylbenzene hydroperoxide Max. 72% in solution	E		1(a), 9(b), 18, 35, 38, 39, 44, 46, 50	Group I 8/
2.5-Dimethyl-2.5-di (benzoylperoxy) hexane				
5.2.0/2172 Technical pure	E		1(c), 6, 10(c), 13, 33, 34, 37, 40, 41	Non-metal packaging Group II adequate 9/
5.2.0/2173 Max. 82% with inert solid	E		1(a), 6, 10(a), 13, 33, 34, 37, 40, 41	Non-metal packaging Group II adequate 9/
5.2.0/2174 2.5-Dimethyl-2.5-dihydroperoxy hexane Max. 82% with water	E		1(c), 10(c), 23	Non-metal packaging Group I adequate 1/
5.2.0/2175 Diethyl peroxydicarbonate Max. 27% in solution		-10°C	1(b)	Group II
5.2.0/2176 Di-n-propyl peroxydicarbonate Technical pure	E	-25°C	28	Group I 1/
5.2.0/2177 t-Butyl perneodecanoate Max. 77% in solution		+ 5°C	1(e)	Group II

(1)		(2)	(3)	(4)	(5)
5.2.0/2178	2,2 Dihydroperoxy propane Max. 25% with inert organic solid			32	Group II
	1,1-Bis-(tert. butylperoxy) - cychlohexane				
5.2.0/2199	Technical pure	E		1(e)	Group II
5.2.0/2180	Max. 77% in solution			1(e)	Group II
5.2.0/2181	1,2-Bis-(tert. butylperoxy) - cychlohexane Max. 77% in solution			1(a), 18	Group II
5.2.0/2182	Diisobutyryl pedoxide Max. 52% in solution			1(f), 3(a)	Group II
5.2.0/2183	Tert. Butylpercrotonate Max. 76% in solution			9(c), 18, 19	Group II
	Ethyl-3,3 bis- (ter. butylperoxy)-butyrate				
5.2.0/2184	Technical pure	E		1(e), 18	Group II
5.2.0/2185	Max. 77% in solution			1(e), 18	Group II
5.2.0/2551	tert - Butylperoxy diethylacetate 33% with tert-Butyl perbenzeate 33% and solvent			1(b), 9(c), 18	Group II
5.2.0/2255	Samples, organic peroxides 10/				10/

Footnotes

1/ This substance is either explosive or would become so if allowed to dry. It is considered that leakage, with consequent increase in sensitivity beoause of drying and hence increased risk of initiation, presents a greater hazard than any possible increase in the risk of explosion due to extra confinement which may result from the employment of packagings to Group I standards.

2/ The attention of all those concerned with the carriage of this substance should be drawn to the special risk of damage to the eyes even after brief contact. It is considered that this action provides a sufficient safeguard and no special packaging requirements are necessary.

3/ Any extra confinement which may result from the employment of packagings to Group I standards would not be sufficient to cause a significant risk of explosion for this substance.

4/ Bonfire trials have shown this substance to behave in a non-explosive manner in this type of packaging. It is especially recommended, therefore, that this type of packaging be used.

5/ There are no data available on this substance. The recommendation has been made by analogy with methyl ethyl ketone peroxide.

6/ It is recommended that this substance be transported inside a thermally insulated box which is the refrigerated package which minimizes risks arising from leakage.

7/ There are insufficient data available on this substance. The recommendation has been made by analogy with the properties of similar substances.

8/ This substance does not possess explosive properties.

9/ The explosive properties of this substance are such that it would be expected to display non-explosive behaviour when contained in non-metallic packagings but, as far as is known, this has not yet been experimentally verified. (Bonfire tests recommended).

10/ Samples of new or existing organic peroxides may be transported and shipped as directed by the competent authorities.

LIST OF PACKAGINGS

Packaging number	Description of packaging	Maximum contents of inner receptacle	Maximum contents of whole package
1 (a)	Plastics bottles or jars packed in a fibreboard box, fibreboard drum, plywood drum or wooden box	50 kg	50 kg
1 (b)	do	25 kg	50 kg
1 (c)	do	5 kg	50 kg
1 (d)	do	10 kg	40 kg
1 (e)	do	25 kg	25 kg
1 (f)	do	5 kg	25 kg
1 (g)	do	1 kg	10 kg
2	Plastics bottles in a stout compartmented wooden box (egg box style)	500 g	14 kg
3 (a)	Plastics bottle individually packed in a fibreboard box	-	5 kg
3 (b)	Plastics bottle individually packed in a fibreboard drum or fitted fibreboard box	-	25 kg
4	Plastics bottle individually packed in a metal crate	-	30 kg
5	Plastics drum individually packed in a metal or plywood drum or in a metal crate	-	60 kg
6	Plastics bottle individually packed in a metal crate or fitted fibreboard box	-	30 kg
7	Plastics bottle individually packed in a vented steel or aluminium receptacle, or in a fibreboard drum, or in a fitted fibreboard box, or in a metal crate	-	30 kg
8	Plastics receptacle in a metal or fibreboard drum or fitted fibreboard box	-	25 kg

Packaging number	Description of packaging	Maximum contents of inner receptacle	Maximum contents of whole package
9 (a)	Plastics bottles or jars packed in a metal drum or metal box	100 kg	100 kg
9 (b)	do	50 kg	50 kg
9 (c)	do	25 kg	50 kg
9 (d)	do	10 kg	40 kg
9 (e)	do	1 kg	10 kg
10 (a)	Plastics bags or boxes packed in a fibreboard box, fibreboard drum, plywood drum or wooden box	50 kg	50 kg
10 (b)	do	25 kg	50 kg
10 (c)	do	5 kg	50 kg
10 (d)	do	10 kg	40 kg
10 (e)	do	6 kg	24 kg
10 (f)	do	5 kg	25 kg
10 (g)	do	5 kg	5 kg
11	Paper bag with an inner ply of plastics, securely closed, packed with incombustible cushioning material in a fibreboard box	-	500 g
12	Plastics bags or receptacles packed together in a wooden box or metal drum	10 kg	50 kg
13	Plastics bags or receptacles in metal cans, packed together in a wooden box	10 kg	90 kg
14	Paper bags with an inner ply of plastics securely closed, packed in a fibreboard box with a fire-retardant liner and nest cell partitions of fire-retardant corrugated fibreboard	500 g	25 kg
15 (a)	Plastic bags packed in a metal drum or metal box	50 kg	100 kg
15 (b)	do	50 kg	50 kg

Packaging number	Description of packaging	Maximum contents of inner receptacle	Maximum contents of whole package
16	Plastics receptacle individually packed in a metal drum	25 kg	25 kg
17	Plastics bottle individually packed in a metal drum	45 kg	45 kg
18	Glass bottles packed with cushioning material in a fibreboard box, fibreboard drum, plywood drum or wooden box	2 l	50 kg
19	Glass, metal or earthenware receptacles packed in a fibreboard box, fibreboard drum, plywood drum or wooden box	7½ l	7½ l
20	Glass bottles packed with cushioning material in a metal box or metal drum	0.5 l	50 kg
21	Thick-walled glass bottle with a screw cap and a venting device, individually packed with cushioning material in a protective outer drum of aluminium or stainless steel. Design and construction to be certified by the competent authority.	-	25 kg
22	Metal cans, or glass bottles in metal cans, packed together in a wooden box	10 kg	50 kg
23	Waxed fibreboard boxes packed in a fibreboard box, fibreboard drum, plywood drum or wooden box	1 kg	50 kg
24	Fibreboard or plastics boxes in a stout compartmented wooden box (egg box style)	500 g	14 kg
25	Fibre receptacle with cap closure, tape-sealed in a wooden box with fire resistant cushioning material	-	500 g
26	Fibre receptacles securely closed by taping, packed in a fibreboard box with a fire-retardant liner and nest cell partitions of fire-retardant corrugated fibreboard	500 g	25 kg
27	Plastics or aluminium boxes in a thermally insulated outer box	2 kg	125 kg 1/

1/ For substance 5.2.0/2133 the maximum contents of the whole package is 545 kg.

Packaging number	Description of packaging	Maximum contents of inner receptacle	Maximum contents of whole package
28	Plastics bottles or jars in a thermally insulated outer box (Include also stainless steel trays with loose fitting stainless steel or plastics lid)	5 kg	400 kg
29	Receptacles made of aluminium of at least 99.5% purity, closed with a plastics lid, packed in a fibreboard, wooden or metal box or a fibreboard, plywood or metal drum	3 kg	12 kg
30	Metal or plastics flexible tubes in a compartmented fibreboard or plywood box	250 g	50 kg
31	Fibreboard drum with a plastics liner	-	100 kg
31 (a)	Fibreboard drum, coated or with plastics liner	-	200 kg
32	Fibreboard drum coated internally with polythene or fitted with a plastics liner	-	30 kg
33	Fibreboard drum coated internally with polythene or fitted with a plastics liner	-	50 kg
33 (a)	Fibreboard drum with moisture barrier (i.e. one of the layers of the wall material must act as a moisture)	-	50 kg
34	Plywood drum with a plastics liner	-	50 kg
35	Steel drum. Compatability of material to be certified by the competent authority */	-	50 kg

*/ Steel of the following composition has been found to be satisfactory:

Designation	Per cent
C	≤ 0.10
Si	1.0
Mn	2.0
Cr	16.5-18.5
Mo	2.0-2.5
Ni	10.5-13.5
Ti	$\geq 5 \times \%C$

Packaging number	Description of packaging	Maximum contents of inner receptacles	Maximum contents of whole package
36	Steel drum:		
	(a) hot-dipped galvanized	-	50 kg
	(b) non-removable head	-	60 l
37	Metal drum	-	50 kg
38	Welded steel drum fitted with separate rolling hoops. Wall thickness not less than 1.75 mm, thickness of head not less than 2 mm	-	220 l
39	Welded corrugated steel drum, with ribs. Design and construction to be certified by the competent authority	-	220 l
40	Double-walled plastics bag individually packed in a metal drum	30 kg	30 kg
41	Metal drum coated internally with polythene or fitted with a plastics liner	-	50 kg
42	Steel drum with a plastics inner receptacle or liner	-	220 l
43	Steel drum with a plastics liner. Compatibility of the materials and design and construction to be certified by the competent authority	-	220 l
44	Drums made of aluminium of at least 99.5% purity	-	50 kg
45	Aluminium drum	-	200 kg
46	Welded drum made of aluminium of at least 99.5% purity, fitted with separate rolling hoops	-	220 l
47	Welded corrugated drum (with ribs) made of aluminium of at least 99.5% purity. Design and construction to be certified by the competent authority	-	220 l

Packaging number	Description of packaging	Maximum contents of inner receptacles	Maximum contents of whole package
48	Plastics receptacle with a screw cap and a venting device, packed in a tightly fitting drum made of aluminium of at least 99.5% purity. Design and construction to be certified by the competent authority	-	100 kg 1/
49	Plastics receptacle with a screw cap and a venting device, packed in a tightly fitting drum made of aluminium of at least 99.5% purity or stainless steel. Design and construction to be certified by the competent authority	-	25 kg
Tank-wagons, tank-lorries			
50	The tanks should be made of aluminium of at least 99.5% purity or of steel, the compatibility of the latter to be certified by the competent authority. The tanks should be provided with pressure relief valves		
51	Plastics bottle with a non-vented closure, wrapped with incombustible cushioning material and individually packed in a fibreboard box	-	500 ml

1/ For substance 5.2.0/2131 the maximum contents of the whole package is 220 kg.

Annex 5

OTHER AMENDMENTS TO THE RECOMMENDATIONS
OR TO THE NOTES PRECEDING
CLASSES
ADOPTED BY THE COMMITTEE

Annex 1 - General notes, symbols and abbreviations

Insert in "General notes, symbols and abbreviations", after the first sentence of paragraph 7:

"A "not otherwise specified" entry may be used to permit the transport of substances or articles which do not appear specifically by name in the list of dangerous goods. Such a substance or article may be transported only after its dangerous properties have been determined. The substance or article shall then be classified according to the class definitions and test criteria included in Annex 2. The classification shall be made by the appropriate competent authority if so required or, may otherwise be made by the shipper. Once the class of the substance or article has been so established all conditions for shipping and transportation, as stated in the recommendations, must be met. Any substance or article having or suspected of having explosive characteristics shall first be considered for inclusion in class 1."

Annex 1 - Part II - Alphabetical list by class and, where applicable, by division and subdivision

Division 6.1 - Percentages of active substance for each group of pesticides.

Add the following sentence to that given below the title of the table:

"Pesticides in a concentration which is given as a dividing line between groups should be regarded as being in the higher-numbered group."

Class 8 - Corrosive substances

Insert between title and list of the class:

"Allocation of substances to the groups in Class 8 has been on the basis of experience taking into account such additional factors as inhalation risk and reactivity with water (including the formation of hazardous decomposition products). Novel substances, including mixtures, can be judged by the length of time of contact necessary to produce visible necrosis in human skin as indicated by the test used. Such times may be determined by a suitable test based on the use of a potentially corrosive substance being applied directly to animal intact skin. The test criteria for the three groups in this class are:

Group I (very dangerous substances)

(a) Substances that cause visible necrosis of the skin tissue at the site of contact when tested on the intact skin of an animal for a period of up to 3 minutes.

(b) Substances that cause visible necrosis of the skin tissue at the site of contact when tested on the intact skin of an animal for a period of more than 3 and up to 60 minutes, and in addition have an inhalation toxicity in the vapour phase corresponding to an LC_{50} greater than 50 but not more than 200 ml/m^3 as set out in the recommendations described under division 6.1.

Note: Substances with an inhalation toxicity in the vapour phase corresponding to an LC_{50} of equal to or less than 50 ml/m^3 should be considered primarily as a toxic hazard.

Group II (substances presenting medium danger)

Substances that cause visible necrosis of the skin tissue at the site of contact when tested on the intact skin of an animal for a period of more than 3 and up to 60 minutes.

Group III (substances presenting minor danger)

(a) Substances that cause visible necrosis of the skin tissue at the site of contact when tested on the intact skin of an animal for a period of up to 4 hours.

(b) Substances with a corrosion rate on steel or aluminium surfaces exceeding 6.25 mm a year at a test temperature of 55°C. For the purposes of testing steel, type P3 (ISO/DIS 2607) or a similar type should be used."

Annex 2 - Recommendations in respect of the packing of dangerous goods

In paragraph 1.6, add after first sentence: "Unless specific requirements are prescribed in national or international rules, agreements or recommendations, liquids 2/ must not completely fill a receptacle at a temperature of 55°C.

2/ For organic peroxides, see page ...".

Annex 3 - Particulars of labels identifying risks

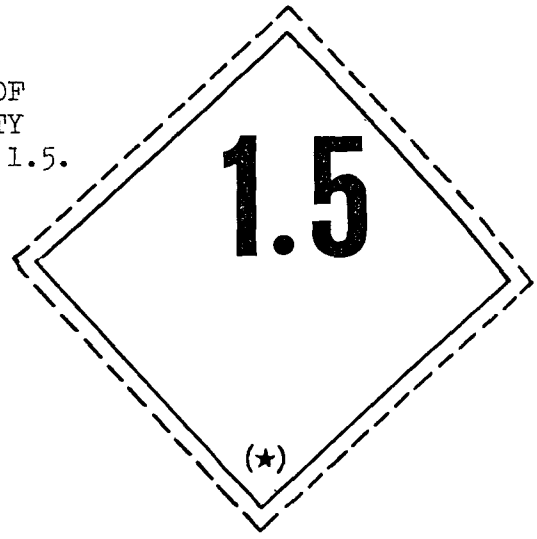
Add an additional paragraph 5 to annex 3 which should read:

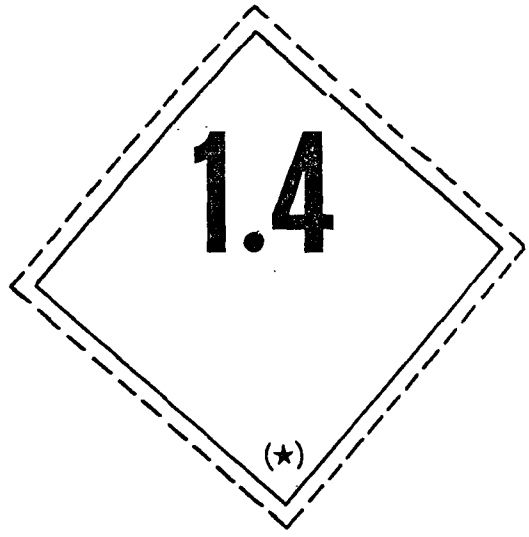
"5. Labels should be placed on a background of contrasting colour."

Annex 3 - Appendix - Models of labels

Add following labels:

LABELLING FOR EXPLOSIVES OF DIVISION 1.4 (EXCEPT SAFETY EXPLOSIVES) AND OF DIVISION 1.5.





Background = orange

Figures = black

Numerals must be about 30 mm in height and be about 5 mm wide (for a label measuring 10 cm x 10 cm).