

**DANGEROUS GOODS PANEL (DGP)**

**NINETEENTH MEETING**

**Montreal, 27 October to 7 November 2003**

**Agenda Item 2 Development of recommendations for amendments to the Technical  
: Instructions for incorporation in the 2005/2006 edition**

**PACKING INSTRUCTIONS - SUPPLEMENTARY CHANGES TO THE  
TECHNICAL INSTRUCTIONS**

(Presented by G. Leach)

**1. INTRODUCTION**

1.1 This document contains three appendices

- a) A revised draft of Part 4, Chapter 2. This is incomplete until the Panel agree a new structure for the dangerous goods list.
- b) A list of liquids and solids that are not addressed in the revised 13th edition of the model regulations.
- c) Proposed amendments to the Packing Instructions in the Supplement.

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## APPENDIX A

### CHAPTER 2

#### 2. GENERAL

2.1 Each of the succeeding Chapters of this Part is devoted to the specific packing instructions applicable to an individual class of dangerous goods. In some cases the Chapters start with general requirements which apply to all goods in that class.

2.2 The Dangerous Goods List (Table 3-1) shows for each article or substance, in columns 9 and 11, the number of the packing instruction that must be used. **[REVISE WHEN NEW TABLE AGREED]**

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*Secretarial Note.*— It should include: Explanation that Pis now cover passenger and cargo aircraft.

PPRs are specific conditions for substances using certain packagings. In addition the following text should be incorporated:

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Unless otherwise specified, each packaging shall conform to the applicable requirements of Part 6. Generally packing instructions do not provide guidance on compatibility and the user should not select a packaging without checking that the substance is compatible with the packaging material selected (e.g. most fluorides are unsuitable for glass receptacles). Where glass receptacles are permitted in the packing instructions porcelain, earthenware and stoneware packagings are also allowed.

2.3 The packing instruction numbers are prominently displayed on the outer edge of each page for easy reference. Each instruction shows, where applicable, the acceptable single and combination packagings. For combination packagings, tables show the acceptable outer packagings and associated inner packagings with the maximum net quantity permitted in each inner packaging. The maximum quantity per inner packaging may be further limited by the maximum quantity per package specified in Table 3?1. Where provisions for particular articles or substances apply, tables show the inner packagings with associated quantity limitations and single packagings which are acceptable for the individual commodities (identified by their UN Number). If a commodity is identified in the table applicable to inner packagings of combination packagings but not in the table applicable to single packagings, it means that the particular commodity is not permitted in single packagings. **Additional Requirements in Packing Instructions apply to any substance or article allocated to that instruction.** Where appropriate, particular packing requirements are also indicated for each commodity; these requirements are detailed at the end of that packing instruction. Particular packing requirements apply to both inner packagings of combination packagings and single packagings as appropriate.

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*Editorial Note.*— Add a new paragraph

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The following packagings shall not be used when the substances being transported are liable to become liquid during transport:

Packagings

|                       |  |
|-----------------------|--|
| Drums:                | 1D and 1G  |
| Boxes:                | 4C1, 4C2, 4D, 4F, 4G and 4H1   |
| Bags:                 | 5L1, 5L2, 5L3, 5H1, 5H2, 5H3, 5H4, 5M1 and 5M2                       |
| Composite packagings: | 6HC, 6HD2, 6HG1, 6HG2, 6HD1, 6PC, 6PD1, 6PD2,<br>6PG1, 6PG2 and 6PH1 |

2.4 ~~Where the packing instructions in this part authorize the use of a particular type of outer packaging in a combination packaging (e.g. 4G), packagings bearing the same packaging identification code followed by the letter “V” marked in accordance with the requirements of 6.4.1.7 h) (e.g. 4GV) may also be used under the same conditions and limitations applicable to the use of that type of outer packaging according to the relevant packing instruction. For example, a combination packaging marked with the packaging code “4GV” may be used whenever a combination packaging marked “4G” is authorized, provided the requirements in the relevant packing instruction regarding types of inner packagings and quantity limitations are respected.~~

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*Editorial Note.*— Replace 2.4 with revised UN text below

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2.4 Where the packing instructions in this chapter authorize the use of a particular type of packaging (e.g. 4G, 1A2), packagings bearing the same packaging identification code followed by the letters "V", "U" or "W" marked in accordance with the requirements of Part 6 (e.g. 4GV, 4GU or 4GW, 1A2V, 1A2U or 1A2W) may also be used under the same conditions and limitations applicable to the use of that type of packaging according to the relevant packing instructions. For example, a combination packaging marked with the packaging code "4GV" may be used whenever a combination packaging marked "4G" is authorized, provided the requirements in the relevant packing instruction regarding types of inner packagings and quantity limitations are respected.

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*Editorial Note.*— Add a new paragraph

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Cylinders conforming to the construction requirements of packing instruction P200 are authorized for the transport of any liquid or solid substance unless otherwise indicated in the packing instruction or by a special provision in the Dangerous Goods List.

2.5 The appropriate authority of the State of Origin may approve the use of a packaging alternative to those provided in a particular packing instruction indicated in Table 3-1 for listed dangerous goods provided:

- a) the alternative packaging complies with the general requirements of Part 4, Chapter 1;
- b) when the particular packaging instruction indicated in Table 3-1 specifies packagings which are listed in Table 6-2 and Table 6-3, the alternative packaging must meet the applicable requirements of Part 6;
- c) for the type of alternative packaging, the expressions “Not used in these Instructions” or “Specialized use only” do not appear in Table 6-2 under the “Paragraph” column heading;

- d) the appropriate authority of the State of Origin determines that the alternative packaging achieves at least the same level of safety as if the substance were packed in accordance with a method specified in the particular packing instruction indicated in Table 3-1;
- e) the maximum net quantity of dangerous goods in the packaging does not exceed the quantity specified in the appropriate column of Table 3-1; and
- f) a copy of the document of approval accompanies each consignment.

## 2.6 **Unpackaged Articles Other Than Class 1 Articles**

2.6.1 The appropriate authority of the State of Origin may approve the transport of large and robust articles which cannot be packaged in accordance with the requirements of Part 6, Chapters 1 to 4, where they have to be transported empty, uncleaned and unpackaged, providing they comply with the requirements in Part S-4, Chapter 3 of the Supplement.

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**APPENDIX B****LIQUID AND SOLID VARIANTS FORM UN IN THE TECHNICAL INSTRUCTIONS**

During the exercise to allocate Packing Instructions to UN numbers a number of discrepancies with the UN text concerning solids and liquids have been identified. They are listed below with recommended action. The substances are shown as being liquid and solid in the Technical Instructions but not in the UN.

1. UN 1638 - Mercury iodide is a solid with a melting point of about 259 degrees C. It is almost completely insoluble in water but is soluble in solutions of substances such as sodium thiosulfate or potassium iodide. Consequently, it is not clear what the entry for mercury iodide, solution in the Technical Instructions will actually cover.

**Proposal:** remove Mercury iodide, solution entry from the Technical Instructions.

2. UN 1733 - Antimony trichloride is a colourless, transparent, very hygroscopic, crystalline mass. Its melting point is about 73 degrees C. It is soluble in alcohol, acetone and acids; with water it forms antimony oxychloride. The entry for antimony trichloride, liquid in the Technical Instructions is therefore not clear.

**Proposal:** remove Antimony trichloride, liquid entry from the Technical Instructions.

3. UN 1740 - It is reasonable to have separate entries for the solid entry and (aqueous) solution entry here. UN 1811 and UN 3421 provide some justification, though it should be noted that a "SOLUTION" entry does not exist for UN 2439 in the 13th UN Orange Book.

The Panel to request that the Secretary inform the UN that they should add a solution entry.

4. UN 2823 - Crotonic acid exists in two isomeric forms, (cis- and trans-). The trans- isomer has a melting point of about 72 degrees C and is soluble in water. The is- isomer (otherwise known as isocrotonic acid) is a liquid at room temperature, melting point about 14 degrees C. Both isomers exhibit corrosivity.

The ICAO TI should maintain the two entries even though they have the same UN number until the UN creates a new entry. The Panel should request the Secretary to create separate crotonic acid liquid and solid entries.

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**APPENDIX C****SUPPLEMENT**

The following Tables include Particular Packing Requirements(PPR) Any PPR 100 or above is unique to the substance in the supplement, any other PPR shown below is already in the relevant Packing Instruction and is not repeated.

**Class 3**

|        |     |        |
|--------|-----|--------|
| UN1089 | 304 |        |
| UN1194 | 304 |        |
| UN1250 | 304 | PPR100 |
| UN1278 | 304 | PPR101 |
| UN1305 | 304 | PPR100 |
| UN2363 | 304 | PPR100 |
| UN2749 | 304 | PPR100 |

PPR100 For UN1250, 1305, 2363 and 2749 inner packaging quantities shall not exceed 0.5litres.

PPR101 For UN 1278 the inner packagings shall not exceed 1 litre for glass and 2.5litres for plastics and metal.

**Class 4**

|      |                  |                 |
|------|------------------|-----------------|
| 1331 | 407              | PPR102          |
| 1349 | 401              |                 |
| 1376 | 402              | PPR103          |
| 1378 | 402              | PPR105          |
| 1415 | 401              | PPR 13, 103     |
| 1420 | 401              | PPR 13, 58, 103 |
| 1428 | 401              | PPR 13, 58, 103 |
| 1868 | 403              | PPR103          |
| 1932 | 402              | PPR103          |
| 2002 | 402              | PPR103, 106     |
| 2006 | 402              | PPR103, 106     |
| 2254 | 407              | PPR102          |
| 2257 | 401              | PPR 13, 58, 103 |
| 2835 | 402              | PPR104          |
| 2881 | 402              | PPR103          |
| 2956 | 409(UN)(ICAO423) |                 |

PPR102 For UN1331 and 2254 [Insert text of 402 except last sentence]

PPR103 For UN1376, 1415, 1420, 1428, 1868, 1932, 2002, 2006 2257 and 2881 plastics packagings are not permitted [Note current 416 permits plastic as single but prohibits as inner!]

PPR104 For UN2835 the quantity per inner packaging must not exceed 1kg

PPR105 For UN 1378 and 2881 the quantity per inner packaging must not exceed 0.5kg

PPR106 For UN2002 and 2006 glass inner packagings are not permitted.

### Class 5

|      |     |             |
|------|-----|-------------|
| 1491 | 501 | PPR108      |
| 1504 | 501 | PPR108      |
| 1745 | 200 |             |
| 1746 | 200 |             |
| 2466 | 501 | PPR108      |
| 2547 | 501 | PPR108      |
| 2626 | 502 | PPR 58, 107 |
| 3356 | 524 |             |

PPR107 For UN 2626 the maximum quantity per inner packaging is 0.5l for passenger and 1l for cargo aircraft

PPR108 For UN1491, 1504, 2466 and 2547 the maximum quantity per inner packaging is 0.5kg

### Class 6

|      |     |                     |
|------|-----|---------------------|
| 1541 | 602 | PPR 109             |
| 1545 | 602 | PPR 58              |
| 1569 | 602 | PPR 33, 38          |
| 1603 | 602 | PPR 33, 38          |
| 1647 | 602 | PPR 33, 38, 58, 109 |
| 1649 | 602 | PPR 110, 112        |
| 1694 | 602 | PPR 110, 112        |
| 1701 | 602 | PPR 33, 38, 58      |
| 1752 | 602 | PPR33, 38, 58, 109  |
| 2474 | 602 | PPR 111             |
| 2485 | 602 | PPR 33, 38, 58, 111 |
| 3315 | 623 |                     |
| 3416 | 602 | PPR 38, 110         |

PPR109 For UN 1541, 1647, 1752 metal inner packagings shall not exceed 0.5l

PPR110 For UN 1649, 1694 and 3416 plastics packagings are not permitted

PPR111 For UN2474 and 2485 the inner packaging limits for glass or earthenware and plastics inner receptacles shall be 1 litre.

[NOTE UN2474 has a 2.5 litre limit for metal inners this would now be reduced to 1litre]

PPR112 For UN1649 and 1694 metal packagings must be cylinders in accordance with P200

### Class 8

|      |      |                     |
|------|------|---------------------|
| 1052 | P200 |                     |
| 1724 | 809  | PPR 58, 115         |
| 1728 | 809  | PPR 58, 115         |
| 1732 | 809  | PPR 33, 58, 59      |
| 1739 | 809  | PPR 112             |
| 1744 | 809  | PPR 33, 38          |
| 1747 | 809  | PPR 58, 115         |
| 1753 | 809  | PPR 58, 115         |
| 1762 | 809  | PPR 58, 115         |
| 1763 | 809  | PPR 58, 115         |
| 1766 | 809  | PPR 58, 115         |
| 1767 | 809  | PPR 58, 115         |
| 1769 | 809  | PPR 58, 115         |
| 1771 | 809  | PPR 58, 115         |
| 1781 | 809  | PPR 58, 115         |
| 1784 | 809  | PPR 58, 115         |
| 1786 | 809  | PPR 33, 58, 113     |
| 1792 | 809  | PPR 112             |
| 1798 | 809  | PPR 38, 114         |
| 1799 | 809  | PPR 58, 115         |
| 1800 | 809  | PPR 58, 115         |
| 1801 | 809  | PPR 58, 115         |
| 1802 | 809  | PPR 112             |
| 1804 | 809  | PPR 58, 115         |
| 1806 | 808  |                     |
| 1808 | 809  | PPR 115             |
| 1810 | 809  | PPR 58, 115         |
| 1816 | 809  | PPR 58, 116         |
| 1828 | 809  | PPR 58, 59          |
| 1829 | 808  |                     |
| 1831 | 809  | PPR 33, 38, 58, 115 |
| 1832 | 809  | PPR 58, 115         |
| 1836 | 809  | PPR 33, 38, 59      |
| 1837 | 809  | PPR 58, 115         |
| 1838 | 809  | PPR33, 38, 112      |



|      |     |                     |
|------|-----|---------------------|
| 1906 | 809 | PPR 58, 115         |
| 1939 | 808 | PPR 112             |
| 2435 | 809 | PPR 58, 115         |
| 2442 | 809 | PPR 33, 38, 58, 115 |
| 2443 | 809 | PPR 33, 38, 58, 115 |
| 2444 | 809 | PPR 58, 115         |
| 2691 | 808 | PPR 58              |
| 2692 | 809 | PPR 33, 38, 58, 115 |

PPR112 For UN 1739, 1744, 1802, 1808 and 1838 metal inner packagings must be cylinders in accordance with P200

PPR113 For UN1786 glass or earthenware inner packagings are not permitted

PPR114 For UN1798 metal and plastics inner packagings are not permitted

PPR115 For UN1724, 1728, 1831, 2444 and 2692 aluminium inner packagings are not permitted.

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