

## Economic Commission for Europe

### Inland Transport Committee

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

7 March 2012

#### Joint Meeting of the RID Committee of Experts and the Working Party on the Transport of Dangerous Goods

Bern, 19–23 March 2012

Item 6 of the provisional agenda

#### Reports of informal working groups

### Report of the informal working group on carriage in bulk 6-7th February 2012

#### Transmitted by the Government of the United Kingdom on behalf of the working group

#### *Summary*

**Explanatory summary:** This document presents the report of the informal working group on carriage in bulk. Conclusions of the working group on the future of each VV/VW code are also presented. The codes have been reduced to three VV/VW codes, plus additional provisions.

A revised Chapter 7.3 of ADR based on the conclusions of the working group is presented at the Annex to this paper.

**Action to be taken:** Consideration of the proposed amendments to Chapter 7.3.

**Related documents:** ECE/TRANS/WP.15/AC.1/122 Report of the Joint Meeting March 2011.

## Introduction

1. The second meeting of the informal working group on carriage in bulk met in London on 6th and 7th February 2012 chaired by Jeff Hart of the UK. Taking part were representatives of France, Germany, Poland, Romania, Spain, Sweden, United Kingdom and the International Union of Railways (UIC). The terms of reference agreed at the March 2011 Joint Meeting were as follows;

(a) The working group shall conduct a comprehensive review of the existing special provisions for the transport of dangerous goods in bulk contained within section 7.3.3 of RID/ADR/ADN. The general provisions for all carriage in bulk contained in 7.3.1 shall be considered alongside these special provisions when undertaking this review.

The review will aim to streamline, update and improve the clarity of these special provisions to ensure they are fit for purpose and necessary for the safe transport in bulk of the UN entries they are allocated to.

(b) The working group shall also conduct a review of where carriage in bulk is already permitted in RID/ADR/ADN using the United Nations BK system contained in 7.3.2 of RID/ADR/ADN.

This review will consider if any contradiction occurs between the allocation of BK codes and the requirements of 7.3.3.

2. The working group proceeded to examine VV/VW codes in turn using as the base document the UK's discussion paper for the meeting which included comments received from the Government of Belgium. In addition the working group had before it a table showing the current text of the corresponding VV and VW codes and another table listing the substances which attracted the various VV and VW codes together with BK codes where these have been allocated.

## Discussion

3. Before examining each individual code in the UK's discussion paper the meeting turned its attention to the two general aspects which the discussion document asked it to consider.

a) Should sheeted small containers continue to be excluded for the carriage of certain substances?

b) Why in several of the special provisions are closed containers permitted but not closed vehicles?

4. For a) in RID and ADR, reference is generally made to sheeted large containers rather than sheeted containers. The question discussed was should sheeted small containers for the carriage of certain substances under the VV/VW provisions still be excluded? The Belgian comment on this explained the origins were from certain marginals which dated prior to 1978 in the old pre restructured RID/ADR. It was discussed that the issue may have had its origins in the development of IBCs which might have replaced small containers. It was also noted that the definition of a small container in 1.2.1 related solely to size and not construction requirements. Some substances were forbidden in IBCs but allowed in large containers. The working group also looked at where bulk provisions were not assigned to UN entries and concluded that the lack of assignment did not seem to be because of the hazardous properties of the substance but more to do with their physical form. The working group concluded that there was no specific logical reason to continue preventing the use of sheeted small containers in bulk transport in general.

The working group recommends to plenary that the restriction on the use of sheeted small containers be removed.

5. For b) Belgium had commented that the testing requirements for closed containers used in bulk transport that are given in CSC Annex II have no direct equivalents for closed vehicles. The group felt that this should not necessarily matter as not all containers are CSC and also the general provisions in 7.3.1 identify what measures need to be met by bulk containers, containers or vehicles during bulk transport. The definition of a closed vehicle was discussed and compared to the definition of closed container which was felt to be more specific on what was required. It was suggested that the last sentence of the definition of 'closed bulk container' in 6.11.1 which provides for openings to allow for exchange of vapours could be added to the definition of 'closed vehicle' in 1.2.1. This would add detail to the definition which was currently missing. However on examining the VV/VW code assignments in detail, the group felt that this would not be appropriate in all cases.

The working group decided that closed vehicles and closed containers should be permitted for carriage in bulk although in some circumstances it would be necessary to provide openings to allow for the exchange of vapours when they are present.

## **Allocation of VV1/VW1**

6. These were all 4.1, packing group III substances apart from Ferrosilicon (UN 1408 Class 4.3 packing group III). The group could not identify why UN1408 is allocated to these special provisions when the majority of Class 4.3 packing group III substances are allocated to VV5/VW5. The working group agreed to move this substance out of VV1/VW1 and to consider it with the other Class 4.3 packing group III substances (see paragraph 8.1 below). The working group decided that it was not necessary to state 'movable-roof wagon' in VW1 since the definition of 'closed wagon' in RID includes a wagon with a movable roof.

7. It was agreed to retain VV1/VW1 with amendments to the wording to include sheeted containers (reflecting the decision made in paragraph 2.2 above) together with the removal of 'movable-roof wagon' in VW1.

8. As VV1/VW1 permits the use of all methods of carriage in bulk its use was considered as an alternative for all other current VV/VW code allocations. If it was felt that an additional restriction or provision was required for the carriage in bulk of specific substances, classes or packing group, then these would be provided by means of Additional Provisions (APs – see Annex).

## **Allocation of VV2/VW2**

9. This is assigned to one substance, UN 1334 Naphthalene (Class 4.1, packing group III) which the IMDG code mentions as emitting flammable vapours. Therefore the group felt that there is some justification in maintaining the requirement to have a metal body for the container/vehicle and for sheeted containers/vehicles the sheet should be non-combustible.

10. The meeting agreed to remove the current VV2/VW2 and assign the amended VV1/VW1 and add an additional provision (AP1) requiring a metal body and where fitted, a non-combustible sheet.

## **Allocation of VV1/VW1 and VV5/VW5**

11. This is assigned to one Class 4.3 packing group III substance, UN 3170, which is also currently assigned BK1 and BK2. The group questioned how it is possible to meet both of these two differing provisions currently and are both necessary? VV5/VW5 requires specially equipped vehicles/containers capable of being closed hermetically whereas VV1/VW1 has no such requirement. Using sheeted containers would allow hydrogen to escape whereas closed containers risked a build up of gas unless adequate ventilation is made a requirement. It was noted that for the packing group II variant of this substance BK1 and BK2 is again assigned but they had completely different VV/VW codes (VW6 and VV3). The meeting touched upon the IMDG code which did not allow BK1 but there was nothing to prevent its use for land transport.

12. The meeting agreed that UN 3170 (packing group II and III) should be allocated to the amended VV1/VW1. The group could not conclude however on whether carriage in sheeted containers/vehicles would need to attract an additional provision (AP3) to specify that the substance should be in pieces. (The whole text of AP3 is presented in [ ] in the annex to reflect this). For carriage in closed vehicles/containers it was agreed to add two

additional provisions (AP4 and AP5) to specify hermetic closures and a warning regarding the absence of ventilation.

### **Allocation of VV3/VW3**

13. These codes are allocated to three substances which give off flammable vapours. It was suggested that closed vehicles/containers could be used for this carriage provided that an additional provision is assigned to require adequate ventilation.

14. VW3 includes text stating that suitable measures should be taken to prevent the escape of the contents but VV3 makes no such specification. The group decided that this requirement was already covered in the general provisions of 7.3.1.3 and therefore does not need to be stated.

15. The meeting agreed to assign the amended VV1/VW1 in place of these codes with an additional provision for adequate ventilation (AP2) assigned to the three UN numbers.

### **Allocation of VV4/VW4**

16. These codes are allocated to Class 4.2 packing group III substances. The group questioned why certain substances were only allowed in bulk carriage when in solid waste form; there seemed to be no safety reason to justify this restriction as it was felt that the form of the substance doesn't change the intrinsic properties of the substance.

17. VV4/VW4 also requires carriage in metal containers/vehicles/wagons. The group felt that this requirement was justified due to the hazardous properties of this Class.

18. The meeting agreed to the deletion of VV4 and the assignment of the amended VV1/VW1 with an additional provision relating to the vehicle/wagon/container requiring a metal body or sheeting (AP1).

### **Assignment of VV5/VW5**

19. These codes are assigned to Class 4.3 packing group III substances and two Class 4.3 packing group II substances (carbides). As mentioned in paragraph 3.1 above it was agreed to add UN 1478 Ferrosilicon to the substances under consideration for this provision. In considering whether it is appropriate to permit carriage in sheeted containers/vehicles, consideration was given to their definitions. As both specify 'protection of the load' the group felt that this was sufficient to permit carriage in sheeted vehicles/containers.

20. Most of these substances are in small pieces or shavings (as specified in their proper shipping name) but some are in powder or ashes form. Some felt that if carriage in sheeted vehicles or containers was to be permitted then its application should be restricted to when the substance is being carried in pieces. Agreement could not be reached on this point however and the group decided that this issue should be discussed further during plenary.

21. VV5/VW5 also requires 'special equipment' and openings which are capable of being closed hermetically. It was suggested that nitrogen was used to fill the ullage space during the carriage of these substances which is why the containers/vehicles had to be hermetically closed. The group felt that if the requirement to have hermetic closures is to be maintained then the reason for its specification should be given.

22. It was also felt that if closed vehicles/containers are permitted for carriage in bulk then a warning highlighting the fact that the vehicle/container has no ventilation should be

required. The basis for this suggestion came from CV36 for the transport of packages in closed vehicles/containers.

23. It was agreed that transport in sheeted and closed vehicles/containers should be permitted and therefore the amended VV1/VW1 should be assigned with additional provisions ([AP3], AP4 and AP5) assigned depending on the form of the substance carried and if carriage is in a closed vehicle/container.

### **Assignment of VV5/VW5 and VV7/VW7**

24. These codes are allocated to two entries both Class 4.3 packing group III. It was unclear as to why these two substances couldn't be carried in the same manner as other Class 4.3 packing group III substances.

25. Without any justification for retaining the VV7/VW7 provisions being evident, it was agreed to allocate the same bulk carriage provisions as are proposed to the other Class 4.3 substances. See paragraph 8.5 above.

### **Assignment of VV3/VW6**

26. These codes are only allocated to UN 3170, Class 4.3 packing group II. As this substance at the packing group III level had already been allocated to the amended VV1/VW1, the meeting decided to allocate the same provisions to the packing group II entry and therefore dispense with the current provisions.

### **Assignment of VV7/VW7**

27. These codes are only assigned to one entry UN1405 which is also a Class 4.3 packing group II. It was decided to treat this entry the same as other Class 4.3 substances (see paragraph 8.5 above) and delete the VV7/VW7 provisions.

### **Assignment of VV8/VW8**

28. These codes have been assigned to Class 5.1 packing group II and III entries. The term 'full load' was required for road but was not for rail carriage. It was suggested, and the UIC agreed to research on this, that this is because carriage in bulk by rail was always as a full load and did not need to be stated. It was agreed that the 'full load' specification should be maintained for road transport to prevent undesirable mixing of incompatible bulk loads even though some argued that the text in 7.3.1.7 and 7.3.1.12 achieved the same objective. The text relating to 'full loads' would be presented in [ ] for the Joint meeting to decide on whether this provision is really necessary to maintain (see AP7 in the Annex to this paper).

29. It was noted that some of the text in these provisions (notably the second paragraph) was already covered by 7.3.1.6. However it was felt that some aspects of VV8/VW8 would need to be retained but redrafted as an additional provision.

30. It was agreed to assign the amended VV1/VW1 with additional provisions relating to carriage as a full load (AP7) and resistance to combustion (AP6). This is not a requirement for rail carriage.

### **Assignment of VV9/VW9**

31. These are assigned to Class 6.1, packing group III, Class 8 packing group III and one Class 8 packing group II. For all of these assignments carriage is required as a full load with 'complete walls' additionally specified for road carriage only. For Class 8 entries there is also a requirement for a 'sufficiently stout inner lining'. The meeting considered that existing text in 7.3.1.6 sufficiently covered the intent of the text specified for the Class 8 entries and could therefore be deleted. It was also felt that the requirement for 'complete walls' was unjustified.

32. It was agreed that the amended VV1/VW1 could cover the substances allocated to these provisions when considered alongside the general provisions in 7.3.1 and the additional provision AP7 being assigned for road carriage only. VV9/VW9 should therefore be deleted.

### **Assignment of VV3/VW9**

33. These are assigned to three Class 9 substances of packing groups II and III. The second sentence of VW9 can not be applicable to these entries. The group discussed why transport in closed vehicles/containers wasn't currently permitted. It was noted that UN 1931 was liable to heat on contact with moisture while the dust from UN 2969 could cause severe irritation. It made no sense to exclude transport in closed vehicles/containers if sheeted is already permitted. For this reason, it was also agreed that there was no need to specify 'adequate ventilation'.

34. It was agreed that amended VV1/VW1 would be used for the substances currently covered by VV3/VW9.

### **Assignment of VV10/VW10**

35. These are assigned to two n.o.s entries UN 3243 and UN 3244. Their carriage is required to be as a 'full load' by road and in leakproof vehicles/containers. As with the previous specifications for a full load, the group considered that this should remain a requirement as this applied to an n.o.s. entry and would prevent mixed loading. It was also considered appropriate to maintain the requirement for leakproofness however the group agreed that the existing requirement of 7.3.1.3 already covered the situation.

36. It was noted that the solids covered in this entry contain some liquid residue and as such there was an amendment to 7.3.1.6 needed for the text to cover this possibility. 7.3.1.6 currently only refers to 'solids' not reacting dangerously and the suggestion was to amend this to read 'substances'. This same amendment was also suggested for paragraph 7.3.1.4.

37. The group agreed that VV10/VW10 was no longer required and would be replaced with the amended VV1/VW1 with an additional provision relating to carriage as a full load (AP7). The consequential amendments to 7.3.1.6 and 7.3.1.4 were also agreed (see Annex).

### **Assignment to VV11/VW11**

38. There was considerable discussion on this provision which illustrated the differing experiences of RID/ADR/ADN countries present in transporting UN 3291, the only entry to which these special provisions are applied. There was agreement however that the current wording of VV11/VW11 is too vague which would make enforcement of the provision very difficult.

39. In the absence of an agreement on what ‘specially equipped’ means in these special provisions, a suggested interim alternative was considered to be the application of VV13/VW13 to this UN entry instead of VV11/VW11. This would require the carriage to meet the standards specified by the competent authority of the country of origin. It was felt that this compromise would permit the continued national practice of bulk carriage for UN 3291 without specifying new provisions which were unacceptable to some.

40. The Joint Meeting is however invited to consider a longer term solution for the transport of this substance in bulk as the working group acknowledged that clinical waste sometimes crosses national borders.

### **Assignment to VV12/VW12 and VV13/VW13**

41. VV12/VW12 is assigned to UN 3257 elevated temperature liquid, n.o.s and VV13/VW13 is assigned to UN 3258 elevated temperature solid n.o.s which is not considered to be typical bulk carriage. The text for both provisions was considered to be so similar that the group felt that both entries could be dealt with under the same provision.

42. It was agreed that VV13/VW13 would be assigned to both UN entries and that VV12/VW12 could be deleted.

### **Assignment to VV14/VW14**

43. These provisions are allocated to Class 8 entries for batteries. The text was specifically developed more recently to provide for their carriage in bulk. However it was felt that the text could be amended to remove the text ‘specially equipped’ as it was not clear what was meant by this. The provision could also be refined by removing requirements for carriage which were already covered by existing paragraphs in 7.3.1. It was felt that paragraph (3) is already covered by 7.3.1.3 and 7.3.1.6, paragraph (4) is already covered by 7.3.1.13, paragraph (5) is already covered by 7.3.1.7 and 7.3.1.12 and the final unnumbered paragraph in provision VV14/VW14 is already covered by 7.3.1.8.

44. With those provisions removed it was agreed that the amended VV1/VW1 could be assigned together with an additional provision which was constructed from the remaining elements of VV14/VW14 (AP8).

### **Assignment to VV15/VW15**

45. These are assigned to four Class 9 packing group II substances. The text for this provision has only recently been reviewed by the Joint Meeting. It was agreed that the text could be simplified by assigning VV1/VW1 together with an additional provision containing the majority of the first paragraph of VV15/VW15 (AP9). However the text relating to ‘leakproof’ is already covered by text in 7.3.1.3

### **Assignment to VV16/VW16 and VV17/VW17**

46. These provisions are assigned to two radioactive material entries the text of which simply refers the user to 4.1.9.2.3. All agreed that these two bulk provisions could be replaced by a reference in columns 10 and 17 to section 4.1.9.2.3. As a consequence, the group agreed that it would be necessary to amend paragraphs 7.3.1.1 a) and b) to allow carriage in bulk additionally by a reference to a specific paragraph in columns 10 and 17 and not just a BK or VV/VW code (see Annex). The special provisions of VV16/VW16 and VV17/VW17 could then be deleted.

## **Review of where carriage in bulk uses the BK system**

47. Having conducted the comprehensive review of the existing special provisions for the transport of dangerous goods in bulk contained within section 7.3.3 the group then moved on to consider the second part of the mandate of the working group which was to review where carriage in bulk is already permitted in RID/ADR/ADN using the BK system contained in 7.3.2.

48. It was at this point that the group agreed to 'split' the newly amended VV1/VW1 into VV1/VW1 covering carriage in sheeted vehicles/containers and create a new VV2/VW2 which covers carriage in closed vehicles/containers. The intention of this is to mirror the BK system already in place to allow comparison between the two systems to be easier.

49. The group also considered whether it should be possible to include carriage in sheeted bulk containers for substances allocated to VV1/VW and likewise, to permit carriage in closed bulk containers for substances allocated to VV2/VW2. This was agreed by the working group but it was noted that to enable this addition a consequential amendment is required to the definition of 'carriage in bulk' in 1.2.1 (see Annex).

50. All current BK allocations were reviewed by the working group and were considered to be appropriate with the provision of some amendments as follows:

- UN 1408 Ferrosilicon should also be allowed in BK1 but with an additional provision added to 7.3.2.4 to specify that sheeted vehicles/containers shall only be used when the substance is in pieces (the equivalent provision of AP3).

- UN 3170 is already allocated to BK1 and BK2 but the group felt that BK1 should only be permitted if the substance is in pieces and that carriage in BK2 should attract additional provisions to 7.3.2.4 which match the content of AP4 and AP5 (see Annex).

51. Noting that this text originates from the UN Model Regulations the working group recommends that if agreement is reached on the text for the Additional Provisions then the amendments referred to in paragraph 21.4 should be referred to the UN Sub Committee of Experts on the Transport of Dangerous Goods for their consideration.

## **Conclusion**

52. The Joint Meeting is invited to consider the changes to Chapter 7.3 proposed by the working group which is provided in the Annex to this paper. The Annex also contains proposals for consequential amendments to other areas of text.



Annex

**Proposed Text for Chapter 7.3 of ADR**

(Similar text will need to be developed for RID. When the text for RID differs from the text presented below for ADR, this will be highlighted at the appropriate place.)

**Explanation**

When text is presented within [ ] in 7.3.3 this is to indicate that the Joint Meeting needs to make a decision on whether the specific UN numbers should be referenced in the text of 7.3.3 or if the relevant Additional Provision (AP) should be assigned to the specific UN numbers in column 17 of Table A instead.

New text is underlined, deleted text ~~struckthrough~~

**CHAPTER 7.3**

**PROVISIONS CONCERNING CARRIAGE IN BULK**

**7.3.1 General provisions**

7.3.1.1 Goods may not be carried in bulk in bulk containers, containers or vehicles unless:

- (a) either a special provision, identified by the code BK or a reference to a specific paragraph, explicitly authorizing this mode of carriage is indicated in column (10) of Table A of Chapter 3.2 and the relevant conditions of 7.3.2 are satisfied in addition to those of this section; or
- (b) a special provision, identified by the code VV or a reference to a specific paragraph, explicitly authorizing this mode of carriage is indicated in column (17) of Table A of Chapter 3.2 and the conditions of this special provision, as laid down in 7.3.3 are satisfied in addition to those of this section.

Nevertheless, empty packagings, uncleaned, may be carried in bulk if this mode of carriage is not explicitly prohibited by other provisions of ADR.

*NOTE: For carriage in tanks, see Chapters 4.2 and 4.3.*

7.3.1.2 Substances which may become liquid at temperatures likely to be encountered during carriage, are not permitted for carriage in bulk.

7.3.1.3 Bulk containers, containers or bodies of vehicles shall be siftproof and shall be so closed that none of the contents can escape under normal conditions of carriage including the effect of vibration, or by changes of temperature, humidity or pressure.

7.3.1.4 ~~Bulk solids~~ Substances shall be loaded and evenly distributed in a manner that minimises movement that could result in damage to the bulk container, container or vehicle or leakage of the dangerous goods.

7.3.1.5 Where venting devices are fitted they shall be kept clear and operable.

7.3.1.6 ~~Bulk solids~~ Substances shall not react dangerously with the material of the bulk container, container, vehicle, gaskets, equipment including lids and tarpaulins and with protective coatings which are in contact with the contents or significantly weaken them. Bulk containers, containers or vehicles shall be so constructed or adapted that the goods cannot penetrate between wooden floor coverings or come into contact with those parts of the bulk container, container or vehicle that may be affected by the materials or residues thereof.

## INF.17

---

- 7.3.1.7 Before being filled and handed over for carriage, each bulk container, container or vehicle shall be inspected and cleaned to ensure that it does not contain any residue on the interior or exterior of the bulk container, container or vehicle that could:
- cause a dangerous reaction with the substance intended for carriage;
  - detrimentally affect the structural integrity of the bulk container, container or vehicle; or
  - affect the dangerous goods retention capabilities of the bulk container, container or vehicle.
- 7.3.1.8 During carriage, no dangerous residues shall adhere to the outer surfaces of bulk containers, containers or of the bodies of vehicles.
- 7.3.1.9 If several closure systems are fitted in series, the system which is located nearest to the substance to be carried shall be closed first before filling.
- 7.3.1.10 Empty bulk containers, containers or vehicles which have carried a dangerous solid substance in bulk shall be treated in the same manner as is required by ADR for a filled bulk container, container or vehicle, unless adequate measures have been taken to nullify any hazard.
- 7.3.1.11 If bulk containers, containers or vehicles are used for the carriage in bulk of goods liable to cause a dust explosion, or evolve flammable vapours (e. g. for certain wastes) measures shall be taken to exclude sources of ignition and prevent dangerous electrostatic discharge during carriage, filling or discharge of the substance.
- 7.3.1.12 Substances, for example wastes, which may react dangerously with one another and substances of different classes and goods not subject to ADR, which are liable to react dangerously with one another shall not be mixed together in the same bulk container, container or vehicle. Dangerous reactions are:
- (a) Combustion and/or evolution of considerable heat;
  - (b) Emission of flammable and/or toxic gases;
  - (c) Formation of corrosive liquids; or
  - (d) Formation of unstable substances.
- 7.3.1.13 Before a bulk container, container or vehicle is filled it shall be visually examined to ensure it is structurally serviceable, its interior walls, ceiling and floors are free from protrusions or damage and that any inner liners or substance retaining equipment are free from rips, tears or any damage that would compromise its cargo retention capabilities. Structurally serviceable means the bulk container, container or vehicle does not have major defects in its structural components, such as top and bottom side rails, top and bottom end rails, door sill and header, floor cross members, corner posts, and corner fittings in a bulk container or container. Major defects include:
- (a) Bends, cracks or breaks in the structural or supporting members that affect the integrity of the bulk container, container or of the body of the vehicle;
  - (b) More than one splice or an improper splice (such as a lapped splice) in top or bottom end rails or door headers;
  - (c) More than two splices in any one top or bottom side rail;
  - (d) Any splice in a door sill or corner post;
  - (e) Door hinges and hardware that are seized, twisted, broken, missing, or otherwise inoperative;
  - (f) Gaskets and seals that do not seal;

- (g) Any distortion of the overall configuration of a bulk container or container great enough to prevent proper alignment of handling equipment, mounting and securing on a chassis or vehicle;
- (h) Any damage to lifting attachments or handling equipment interface features; or
- (i) Any damage to service or operational equipment.

**7.3.2 Additional provisions for the carriage in bulk when the provisions of 7.3.1.1 (a) are applied**

7.3.2.1 The codes BK1 and BK2 in column (10) of Table A of Chapter 3.2 have the following meanings:

- BK1: Carriage in bulk in sheeted bulk containers is permitted;  
BK2: Carriage in bulk in closed bulk containers is permitted.

7.3.2.2 The bulk container used shall conform to the requirements of Chapter 6.11.

**7.3.2.3 Goods of Class 4.2**

The total mass carried in a bulk container shall be such that its spontaneous ignition temperature is greater than 55 °C.

**7.3.2.4 Goods of Class 4.3**

These goods shall be carried in bulk containers which are watertight.

**7.3.2.5 Goods of Class 5.1**

Bulk containers shall be so constructed or adapted that the goods cannot come into contact with wood or any other incompatible material.

**7.3.2.6 Goods of Class 6.2**

7.3.2.6.1 Animal material containing infectious substances (UN Nos. 2814, 2900 and 3373) is authorized for carriage in bulk containers provided the following conditions are met:

- (a) Sheeted bulk containers BK1 are permitted provided that they are not filled to maximum capacity to avoid substances coming into contact with the sheeting. Closed bulk containers BK2 are also permitted;
- (b) Closed and sheeted bulk containers, and their openings, shall be leak-proof by design or by the fitting of a suitable liner;
- (c) The animal material shall be thoroughly treated with an appropriate disinfectant before loading prior to carriage;
- (d) Sheeted bulk containers shall be covered by an additional top liner weighted down by absorbent material treated with an appropriate disinfectant;
- (e) Closed or sheeted bulk containers shall not be re-used until after they have been thoroughly cleaned and disinfected.

**NOTE:** Additional provisions may be required by appropriate national health authorities.

7.3.2.6.2 Wastes of Class 6.2 (UN 3291)

- (a) (Reserved);
- (b) Closed bulk containers and their openings shall be leakproof by design. These bulk containers shall have non porous interior surfaces and shall be free from cracks or other features which could damage packagings inside, impede disinfection or permit inadvertent release;
- (c) Wastes of UN No. 3291 shall be contained within the closed bulk container in UN type tested and approved sealed leakproof plastics bags tested for solids of packing group II and

marked in accordance with 6.1.3.1. Such plastics bags shall be capable of passing the tests for tear and impact resistance according to ISO 7765-1:1988 "Plastics film and sheeting - Determination of impact resistance by the free-falling dart method - Part 1: Staircase methods" and ISO 6383-2:1983 "Plastics - Film and sheeting - Determination of tear resistance. Part 2: Elmendorf method". Each bag shall have an impact resistance of at least 165 g and a tear resistance of at least 480 g in both parallel and perpendicular planes with respect to the length of the bag. The maximum net mass of each plastics bag shall be 30 kg;

- (d) Single articles exceeding 30 kg such as soiled mattresses may be carried without the need for a plastics bag when authorized by the competent authority;
- (e) Wastes of UN No. 3291 which contain liquids shall only be carried in plastics bags containing sufficient absorbent material to absorb the entire amount of liquid without it spilling in the bulk container;
- (f) Wastes of UN No. 3291 containing sharp objects shall only be carried in UN type tested and approved rigid packagings meeting the provisions of packing instructions P621, IBC620 or LP621;
- (g) Rigid packagings specified in packing instructions P621, IBC620 or LP621 may also be used. They shall be properly secured to prevent damage during normal conditions of carriage. Wastes carried in rigid packagings and plastics bags together in the same closed bulk container shall be adequately segregated from each other, e.g. by suitable rigid barriers or dividers, mesh nets or otherwise securing, such that they prevent damage to the packagings during normal conditions of carriage;
- (h) Wastes of UN No. 3291 in plastics bags shall not be compressed in a closed bulk container in such a way that bags may be rendered no longer leakproof;
- (i) The closed bulk container shall be inspected for leakage or spillage after each journey. If any wastes of UN No. 3291 have leaked or been spilled in the closed bulk container, it shall not be re-used until after it has been thoroughly cleaned and, if necessary, disinfected or decontaminated with an appropriate agent. No other goods shall be carried together with UN No. 3291 other than medical or veterinary wastes. Any such other wastes carried in the same closed bulk container shall be inspected for possible contamination.

**7.3.2.7** *Material of Class 7*

For the carriage of unpackaged radioactive material, see 4.1.9.2.3.

**7.3.2.8** *Goods of Class 8*

These goods shall be carried in bulk containers which are watertight.

**7.3.3** **Additional Provisions ~~Special provisions~~ for the carriage in bulk when the provisions of 7.3.1.1 (b) are applied**

7.3.3.1 The codes VV1, VV2 and VV13 in column (17) of Table A of Chapter 3.2 have the following meanings:

~~When they are shown under an entry in Column (17) of Table A of Chapter 3.2, the following special provisions apply:~~

- VV1 Carriage in bulk in ~~closed or sheeted vehicles, sheeted in closed containers or in large-sheeted bulk containers~~ is permitted;
- VV2 Carriage in bulk ~~is permitted in closed vehicles, with a metal body, closed metal containers or closed bulk containers; and in sheeted vehicles and sheeted large containers~~

~~covered with a non-combustible sheet and having a metal body or having floor and walls protected from the load.~~

VV13 ~~Carriage in bulk is permitted in sheeted vehicles and sheeted large containers with adequate ventilation.~~ Carriage in bulk is permitted in specially equipped vehicles or containers in accordance with standards specified by the competent authority of the country of origin. If the country of origin is not a contracting party to ADR, the conditions laid down shall be recognized by the competent authority of the first country contracting party to ADR reached by the consignment.

7.3.3.2 When the VV bulk codes are used the following additional provisions shall apply:

**7.3.3.2.1** **Goods of Class 4.1**

AP1 [For UN1334] vehicles and containers shall have a metal body and where fitted the sheet shall be non-combustible.

AP2 [For UN3175] closed vehicles and closed containers shall have adequate ventilation.

**7.3.3.2.2** **Goods of Class 4.2**

AP1 Vehicles and containers shall have a metal body and where fitted the sheet shall be non-combustible.

**7.3.3.2.3** **Goods of Class 4.3**

AP3 [For UN 1405 and UN 2844 sheeted vehicles and sheeted containers shall be used only when the substance is in pieces (not in powder, granular, dust or ashes form).]

(**Comment from the working group** - We are not certain it is necessary to introduce this as a general requirement for all substances in Class 4.3.)

AP4 Closed vehicles and closed containers shall be equipped with hermetically closed openings used for loading and unloading to prevent the exit of gas and exclude the ingress of moisture.

AP5 The cargo doors of the closed vehicles or closed containers shall be marked with the following in letters not less than 25 mm high:

“WARNING  
NO VENTILATION  
OPEN WITH CAUTION”

This shall be in a language considered appropriate by the consignor.

**7.3.3.2.4** **Goods of Class 5.1**

AP6 If the vehicle or container is made of wood or other combustible material an impermeable surfacing resistant to combustion or a coating of sodium silicate or similar substance shall be provided. Sheeting shall also be impermeable and non-combustible.

[AP7 Carriage shall only be as a full load.]\*

(\* Not a requirement for rail transport)

**7.3.3.2.5** **Goods of Class 6.1**

[AP7 Carriage shall only be as a full load.]\*

(\* Not a requirement for rail transport)

**7.3.3.2.6** **Goods of Class 8**

[AP7 [Except for UN 2794, UN 2795, UN 2800, UN 3028] carriage shall only be as a full load.]\*

## INF.17

---

(\* Not a requirement for rail transport)

AP8 [For UN 2794, UN 2795, UN 2800, UN 3028] the design of the load compartment of vehicles or containers shall take account of any residual currents and impacts from the batteries.

The load compartments of vehicles of containers shall be of steel resistant to the corrosive substances contained in the batteries. Less resistant steels may be used when there is a sufficiently great wall thickness or a plastics lining/layer resistant to the corrosive substances. The load compartments of vehicles or containers shall not be loaded above the top of their walls.

Carriage is also permitted in small plastics containers which shall be capable of withstanding, when fully loaded, a drop from a height of 0.8m on to a hard surface at -18°C, without breakage.

### 7.3.3.2.7

#### Goods of Class 9

AP2 [For UN 2211 and UN 3314] closed vehicles and closed containers shall have adequate ventilation.

AP9 [For UN 2315, UN 3151, UN 3152, UN 3432] carriage is permitted for solids (substances or mixtures, such as preparations or wastes) containing on average not more than 1000 mg/kg of substance to which this UN number is assigned. At no point of the load shall the concentration of this substance or these substances be higher than 10000 mg/kg.

~~VV4~~ — Carriage in bulk is permitted in closed or sheeted vehicles with a metal body, and in closed metal containers or in sheeted large metal containers.

~~For UN Nos. 2008, 2009, 2210, 2545, 2546, 2881, 3189 and 3190, only carriage in bulk of solid waste is permitted.~~

~~VV5~~ — Carriage in bulk is permitted in specially equipped vehicles and containers.

~~—————~~ The openings used for loading and unloading shall be capable of being closed hermetically.

~~VV6~~ — *(Reserved)*

~~VV7~~ — Carriage in bulk in closed or sheeted vehicles, in closed containers or in large sheeted containers is permitted only if the substance is in pieces.

~~VV8~~ — Carriage in bulk is permitted, as a full load, in closed vehicles, closed containers or sheeted vehicles or large containers covered with an impermeable, non-combustible sheet.

~~—————~~ Vehicles and containers shall be so constructed either that the substances contained cannot come into contact with wood or any other combustible material, or that the entire surface of the floor and walls, if made of wood or another combustible material has been provided with an impermeable surfacing resistant to combustion or has been coated with sodium silicate or a similar substance.

~~VV9~~ — Carriage in bulk is permitted, as a full load, in sheeted vehicles, closed containers or in sheeted large containers with complete walls.

~~—————~~ For substances of Class 8, the body of the vehicle or container shall be equipped with a suitable and sufficiently stout inner lining.

~~VV10~~ — Carriage in bulk is permitted, as a full load, in sheeted vehicles, closed containers or sheeted large containers with complete walls.

~~—————~~ The body of vehicles or containers shall be leakproof or rendered leakproof, for example by means of a suitable and sufficiently stout inner lining.

- ~~VV11~~ — Carriage in bulk is permitted in specially equipped vehicles and containers in a manner which avoids risks to humans, animals and the environment, e.g. by loading the wastes in bags or by airtight connections.
- ~~VV12~~ — Substances for which carriage in tank vehicles, in portable tanks or in tank containers is unsuitable because of the high temperature and density of the substance may be carried in special vehicles or containers in accordance with standards specified by the competent authority of the country of origin. If the country of origin is not a contracting party to ADR, the conditions laid down shall be recognized by the competent authority of the first country contracting party to ADR reached by the consignment.
- ~~VV13~~ — Carriage in bulk is permitted in specially equipped vehicles or containers in accordance with standards specified by the competent authority of the country of origin. If the country of origin is not a contracting party to ADR, the conditions laid down shall be recognized by the competent authority of the first country contracting party to ADR reached by the consignment.
- ~~VV14~~ — (1) — Used batteries may be carried in bulk in specially equipped vehicles or containers. Large plastics containers shall not be permitted. Small plastics containers shall be capable of withstanding, when fully loaded, a drop from a height of 0.8 m onto a hard surface at -18 °C, without breakage.
- (2) — The load compartments of vehicles or containers shall be of steel resistant to the corrosive substances contained in the batteries. Less resistant steels may be used when there is a sufficiently great wall thickness or a plastics lining/layer resistant to the corrosive substances.
- The design of the load compartments of vehicles or containers shall take account of any residual currents and impact from the batteries.
- *NOTE: Steel exhibiting a maximum rate of progressive reduction of 0.1 mm per year under the effects of the corrosive substances may be considered as resistant.*
- (3) — It shall be ensured by means of constructional measures that there will be no leakage of corrosive substances from the load compartments of vehicles or containers during carriage. Open load compartments shall be covered. The cover shall be resistant to the corrosive substances.
- (4) — Before loading, the load compartments of vehicles or containers, including their equipment, shall be inspected for damage. Vehicles or containers with damaged load compartments shall not be loaded.
- The load compartments of vehicles or containers shall not be loaded above the top of their walls.
- (5) — No batteries containing different substances and no other goods liable to react dangerously with each other shall be present in the load compartments of vehicles or containers (see "Dangerous reaction" in 1.2.1).
- During carriage no dangerous residue of the corrosive substances contained in the batteries shall adhere to the outer surface of the load compartments of vehicles or containers.
- ~~VV15~~ — Carriage in bulk is permitted in closed or sheeted vehicles, closed containers or sheeted large containers with complete walls for substances or mixtures (such as preparations

## INF.17

---

~~or wastes) containing not more than 1000 mg/kg of substance to which this UN No is assigned.~~

~~The bodies of vehicles or containers shall be leakproof or rendered leakproof, for example by means of a suitable and sufficiently stout inner lining.~~

~~VV16—Carriage in bulk is permitted in accordance with the provisions of 4.1.9.2.3.~~

~~VV17—Carriage in bulk of SCO-I is permitted in accordance with the provisions of 4.1.9.2.3.~~

### Consequential Amendments

#### Chapter 1.2

1.2.1 Amend definition of ‘Carriage in bulk’ to read as follows:

“ *“Carriage in bulk”* means the carriage of unpackaged solids or articles in vehicles, containers or bulk containers. The term does not apply to packaged goods nor to substances carried in tanks;”

#### Chapter 3.2

Amend the explanation for column 17, Table A, as follows:

“Contains the alphanumeric code(s), starting with letters “VV” [or “AP”], of the applicable special provisions for carriage in bulk. These are listed in 7.3.3. If no code or a reference to a specific paragraph is given, carriage in bulk is not permitted. General and additional provisions concerning the carriage in bulk are to be found in Chapters 7.1 and 7.3.”

For UN 2912:

Delete ‘VV16’ in column 17 and add ‘see 4.1.9.2.3’ to columns 10 and 17.

For UN 2913:

Delete ‘VV17’ in column 17 and add ‘see 4.1.9.2.3’ to columns 10 and 17.

For all UN numbers having an existing VV code:

Amend the references to VV codes in column 17, Table A, in accordance with this Annex.

---