

## Chapter 7.1

### General provisions

- 7.1.1** The carriage of dangerous goods is subject to the mandatory use of a particular type of transport equipment in accordance with the provisions of this Chapter and Chapter 7.2 for carriage in packages and Chapter 7.3 for carriage in bulk. In addition, the provisions of Chapter 7.5 concerning loading, unloading and handling shall be observed.
- Columns (16), (17) and (18) of Table A of Chapter 3.2 show the particular provisions of this Part that apply to specific dangerous goods.
- 7.1.2** Road vehicles handed over for carriage by piggyback transport, as well as their contents, shall comply with the provisions of the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)<sup>1</sup>.
- 7.1.3** Large containers, portable tanks and tank-containers which meet the definition of "container" given in the CSC (1972), as amended, or in UIC leaflets 591 (status at 01.01.1998, 2<sup>nd</sup> edition), 592-2 (status at 01.10.2004, 6<sup>th</sup> edition), 592-3 (status at 01.01.1998, 2<sup>nd</sup> edition) and 592-4 (status at 01.09.2004, 2<sup>nd</sup> edition) may not be used to carry dangerous goods unless the large container or the frame of the portable tank or tank-container satisfies the provisions of the CSC or of UIC leaflets 591 and 592-2 to 592-4.
- 7.1.4** A large container may be presented for carriage only if it is structurally serviceable.
- "Structurally serviceable" means that the container is free from major defects in its structural components, e.g. top and bottom side rails, doorsill and header, floor cross members, corner posts, and corner fittings. "Major defects" are dents or bends in structural members greater than 19 mm in depth, regardless of length; cracks or breaks in structural members; more than one splice or an improper splice (e.g. a lapped splice) in top or bottom end rails or door headers or more than two splices in any one top or bottom side rail or any splice in a door sill or corner post; door hinges and hardware that are seized, twisted, broken, missing or otherwise inoperative; non-closing gaskets and seals; any distortion of the overall configuration sufficient to prevent proper alignment of handling equipment, mounting and securing on a chassis or wagon.
- In addition, deterioration in any component of the container, such as rusted metal in side walls or disintegrated fibreglass is unacceptable, regardless of the material of construction. Normal wear, including oxidation (rust), slight dents and scratches and other damage that do not affect serviceability or weather-tightness are, however, acceptable.
- Prior to loading the container shall also be checked to ensure that it is free from any residue of a previous load and that the interior floor and walls are free from protrusions.
- 7.1.5** (Reserved)
- 7.1.6** (Reserved)
- 7.1.7** Substances and articles of RID, except those which are handed over for carriage as colis express, may only be forwarded in freight trains.

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<sup>1</sup> This Agreement also includes the special agreements which have been signed by all the countries involved in the transport operation.

## Chapter 7.2

### Provisions concerning carriage in packages

- 7.2.1** Unless otherwise provided in 7.2.2 to 7.2.4, packages may be loaded:
- (a) into closed wagons or into closed containers; or
  - (b) into sheeted wagons or into sheeted containers; or
  - (c) into open wagons (unsheeted) or into open containers (unsheeted).
- 7.2.2** Packages comprising packagings made of materials sensitive to moisture shall be loaded into closed or sheeted wagons or into closed or sheeted containers.
- 7.2.3** (Reserved)
- 7.2.4** When an alphanumeric code beginning with the letter "W" is shown in column (16) of Table A of Chapter 3.2, the following special provisions apply:
- W 1** Packages shall be loaded into closed or sheeted wagons or into closed or sheeted containers.
  - W 2** Substances and articles of Class 1 shall be loaded into closed wagons or closed containers. Articles which, because of their dimensions or their mass, cannot be loaded into closed wagons or closed containers may equally be carried in open wagons or open containers. They shall be covered by sheets. Only wagons fitted with regulation sheet steel spark-guards shall be used for the carriage of substances and articles of divisions 1.1, 1.2, 1.3, 1.5 and 1.6, even when these substances and articles are loaded into large containers. For wagons fitted with a combustible floor, the sheet steel spark-guards shall not be fixed directly to the floor of the wagon.  
  
Military consignments of substances and articles of Class 1 which form part of military equipment and of the structure of military material, may also be loaded into open wagons under the following conditions:
    - consignments shall be accompanied by the competent military authority or, by order of this authority,
    - means of initiation not having at least two effective protective devices shall be removed, unless the substances and articles are placed in locked military vehicles.
  - W 3** For free-flowing powdery substances and for fireworks the floor of a wagon or container shall have a non-metallic surface or covering.
  - W 4** (Reserved)
  - W 5** Packages may not be carried in small containers.
  - W 6** (Reserved)
  - W 7** Packages shall be carried in a closed wagon or in a closed container provided with adequate ventilation.
  - W 8** For the carriage of packages bearing an additional label in accordance with Model No. 1, only wagons fitted with regulation sheet steel spark-guards shall be used, even when these substances are loaded in large containers. For wagons fitted with a combustible floor, the sheet steel spark-guards shall not be fixed directly to the floor of the wagon.
  - W 9** Packages shall be carried in closed wagons or in movable-roof wagons or in closed containers.
  - W 10** IBCs shall be carried in closed or sheeted wagons or closed or sheeted containers.
  - W 11** IBCs other than metal or rigid plastics IBCs shall be carried in closed or sheeted wagons or closed or sheeted containers.
  - W 12** IBCs of type 31HZ2 shall be carried in closed wagons or containers.
  - W 13** When packed in 5H1, 5L1 or 5 M1 bags, shall be carried in closed wagons or containers.
  - W 14** Aerosols carried for the purposes of reprocessing or disposal under special provision 327 in Chapter 3.3 shall only be carried in ventilated or open wagons or containers.

## 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 wagons unless:

- (a) either a special provision, identified by the code "BK", 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 "VW", 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 RID.

Unless otherwise provided in the special provisions in 7.3.3, the receptacle requirements for packages shall apply to small containers intended for the carriage of substances in bulk.

**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 wagons 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 shall be loaded and evenly distributed in a manner that minimises movement that could result in damage to the bulk container, container or wagon 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 shall not react dangerously with the material of the bulk container, container, wagon, 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 wagons 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 wagon that may be affected by the materials or residues thereof.

7.3.1.7 Before being filled and handed over for carriage, each bulk container, container or wagon 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 wagon that could:

- cause a dangerous reaction with the substance intended for carriage;
- detrimentally affect the structural integrity of the bulk container, container or wagon; or
- affect the dangerous goods retention capabilities of the bulk container, container or wagon.

7.3.1.8 During carriage, no dangerous residues shall adhere to the outer surfaces of bulk containers, containers or of the bodies of wagons.

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 wagons which have carried a dangerous solid substance in bulk shall be treated in the same manner as is required by RID for a filled bulk container, container or wagon, unless adequate measures have been taken to nullify any hazard.

7.3.1.11 If bulk containers, containers or wagons 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 RID, which are liable to react dangerously with one another shall not be mixed together in the same bulk container, container or wagon. 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 wagon 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, where relevant to the means of transport concerned, means the bulk container, container or wagon 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 of a bulk container or container. Major defects, where relevant to the means of transport concerned, 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 wagon;
  - (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 wagon or vehicle, or insertion into ships' cells;
  - (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 of Class 6.2**

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 Special provisions for carriage in bulk when the provisions of 7.3.1.1 (b) are applied

When an alphanumeric code beginning with "VW" is shown under an entry in column (17) of Table A of Chapter 3.2, the following special provisions apply:

- VW 1** Carriage in bulk in closed wagons, movable-roof wagons, sheeted wagons, closed containers or in sheeted large containers is permitted.
- VW 2** Carriage in bulk is permitted in movable-roof wagons with a metal body, closed large metal containers and in wagons or large containers with a metal body covered with a non-combustible sheet.
- VW 3** Carriage in bulk is permitted in sheeted wagons or sheeted large containers with adequate ventilation or in movable-roof wagons. Suitable measures shall be taken to ensure that none of the contents, particularly any liquid components, can escape.
- VW 4** Carriage in bulk is permitted in sheeted metal wagons, movable-roof metal wagons, 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.
- VW 5** Carriage in bulk is permitted in specially equipped wagons and containers. The receptacles of specially equipped wagons and containers and their closures shall conform to the general packing conditions of 4.1.1.1, 4.1.1.2 and 4.1.1.8. Openings designed for loading and unloading shall be capable of being hermetically closed.
- VW 6** Carriage in bulk is permitted in movable-roof wagons or in closed large containers.

- VW 7** Carriage in bulk in closed wagons, sheeted wagons, movable-roof wagons, closed containers or in sheeted large containers is permitted only if the substance is in pieces.
- VW 8** Carriage in bulk is permitted in open wagons or containers covered with an impermeable and non-combustible sheet, or in movable-roof wagons or in closed containers.
- Wagons 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.
- VW 9** Carriage in bulk is permitted in sheeted wagons or in sheeted large containers, movable-roof wagons or in closed containers.
- For substances of Class 8, wagons and containers shall be equipped with a suitable and sufficiently stout inner lining.
- VW 10** Carriage in bulk is permitted in sheeted wagons, sheeted large containers, movable-roof wagons or in closed containers. Wagons and containers shall be leakproof or rendered leakproof, for example by means of a suitable, sufficiently stout inner lining.
- VW 11** Carriage in bulk is permitted in specially equipped wagons and containers. The receptacles of specially equipped wagons and containers shall be so constructed that the openings designed for loading and unloading can be closed hermetically. Substances shall be filled in the receptacles in a manner which avoids risks to humans, animals and the environment.
- VW 12** Substances for which carriage in tank-wagons, in portable tanks or in tank-containers is unsuitable because of the high temperature and density of the substance may be carried in special wagons or containers in accordance with standards specified by the competent authority of the country of origin. If the country of origin is not a COTIF Member State, the conditions laid down shall be recognized by the competent authority of the first COTIF Member State reached by the consignment.
- VW 13** Carriage in bulk is permitted in specially equipped wagons or large containers in accordance with standards specified by the competent authority of the country of origin. If the country of origin is not a COTIF Member State, the conditions laid down shall be recognized by the competent authority of the first COTIF Member State reached by the consignment.
- VW 14** (1) Used batteries may be carried in bulk in specially equipped wagons 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  $-18^{\circ}\text{C}$ , without breakage.
- (2) The load compartments of wagons 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 wagons 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 wagons 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 wagons or containers, including their equipment, shall be inspected for damage. Wagons or containers with damaged load compartments shall not be loaded. The load compartments of wagons 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 wagons 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 wagons or containers.
- VW 15** Carriage in bulk is permitted in closed wagons, movable-roof wagons, sheeted wagons, closed containers or sheeted large containers for substances or mixtures (such as preparations or wastes) containing not more than 1000 mg/kg of substance to which this UN No is assigned.
- The bodies of wagons or containers shall be leakproof or rendered leakproof, for example by means of a suitable and sufficiently stout inner lining.
- VW 16** Carriage in bulk is permitted in accordance with the provisions of 4.1.9.2.3.
- VW 17** Carriage in bulk of SCO-I is permitted in accordance with the provisions of 4.1.9.2.3.

## **Chapter 7.4**

### **Provisions concerning carriage in tanks**

Dangerous goods may only be carried in tanks when a code is shown in column (10) or (12) of Table A of Chapter 3.2, or when a competent authority has issued an authorisation in accordance with the conditions specified in 6.7.1.3. The requirements of Chapter 4.2 or 4.3 shall be observed during carriage.

## Chapter 7.5

### Provisions concerning loading, unloading and handling

**NOTE:** Within the meaning of this section, placing a container, bulk-container, tank-container, portable tank or road vehicle onto a wagon is considered as loading, and removing it is considered as unloading.

#### 7.5.1 General provisions

7.5.1.1 The requirements in force at the forwarding station shall be complied with for the loading of goods, provided they do not conflict with the requirements of this Chapter.

7.5.1.2 The loading shall not be carried out if:

– an examination of the documents or

– a visual inspection of the wagon or of the large container(s), bulk container(s), tank-container(s), portable tank(s) or road vehicle(s), if any, as well as of their equipment used in loading and unloading,

shows that the wagon, a large container, a bulk-container, a tank-container, a portable tank, a road vehicle or their equipment do not comply with the regulatory provisions.

7.5.1.3 The unloading shall not be carried out if the above-mentioned inspections reveal deficiencies that might affect the safety or the security of the unloading.

The interior and exterior of a wagon or container shall be inspected prior to loading to ensure that there is no damage that could affect its integrity or that of the packages to be loaded in it.

7.5.1.4 In accordance with the provisions of 7.5.11 and in conformity with column (18) of Table A of Chapter 3.2, certain dangerous goods shall only be forwarded as a wagon load or full load.

7.5.1.5 When orientation arrows are required packages shall be oriented in accordance with such markings.

**NOTE:** Liquid dangerous goods shall be loaded below dry dangerous goods whenever practicable.

#### 7.5.2 Mixed loading prohibition

7.5.2.1 Packages bearing different danger labels shall not be loaded together in the same wagon or container unless mixed loading is permitted according to the following Table based on the danger labels they bear.

The mixed loading prohibitions for packages shall also apply to the mixed loading of packages and small containers and the mixed loading of small containers in a wagon or large container in which small containers are carried.

**NOTE:** In accordance with 5.4.1.4.2, separate transport documents shall be drawn up for consignments that cannot be loaded together in the same wagon or container.

Labels Nos.	1	1.4	1.5	1.6	2.1, 2.2, 2.3	3	4.1	4.1 + 1	4.2	4.3	5.1	5.2	5.2 + 1	6.1	6.2	7A, 7B, 7C	8	9			
1	See 7.5.2.2										(d)							(b)			
1.4					(a)			X	X	X		X	X	X	X		X	X	X	X	(a),(b), (c)
1.5																					(b)
1.6																					
2.1, 2.2, 2.3		(a)			X	X	X		X	X	X	X		X	X	X	X	X			
3		(a)			X	X	X		X	X	X	X		X	X	X	X	X			
4.1		(a)			X	X	X		X	X	X	X		X	X	X	X	X			
4.1 + 1								X													
4.2		(a)			X	X	X		X	X	X	X		X	X	X	X	X			
4.3		(a)			X	X	X		X	X	X	X		X	X	X	X	X			
5.1	(d)	(a)			X	X	X		X	X	X	X		X	X	X	X	X			
5.2		(a)			X	X	X		X	X	X	X	x	X	X	X	X	X			
5.2 + 1												x	X								
6.1		(a)			X	X	X		X	X	X	X		X	X	X	X	X			
6.2		(a)			X	X	X		X	X	X	X		X	X	X	X	X			
7A, 7B, 7C		(a)			X	X	X		X	X	X	X		X	X	X	X	X			
8		(a)			X	X	X		X	X	X	X		X	X	X	X	X			
9	(b)	(a),(b), (c)	(b)	(b)	X	X	X		X	X	X	X		X	X	X	X	X			

x Mixed loading permitted.



- (a) Mixed loading permitted with 1.4S substances and articles.
- (b) Mixed loading permitted between goods of Class 1 and life-saving appliances of Class 9 (UN Nos. 2990, 3072 and 3268).
- (c) Mixed loading permitted between air bag inflators, or air bag modules, or seat-belt pretensioners of Division 1.4, compatibility group G, (UN No. 0503) and air bag inflators or air bag modules or seat-belt pretensioners of Class 9 (UN No. 3268).
- (d) Mixed loading permitted between blasting explosives (except UN No. 0083 explosive, blasting, type C) and ammonium nitrate (UN Nos. 1942 and 2067) and alkali metal nitrates (e.g. UN No. 1486) and alkaline earth metal nitrates (e.g. UN No. 1454) provided the aggregate is treated as blasting explosives under Class 1 for the purposes of placarding, segregation, stowage and maximum permissible load.

### 7.5.2.2

Packages containing substances or articles of Class 1, bearing a label conforming to models Nos. 1, 1.4, 1.5 or 1.6 which are assigned to different compatibility groups shall not be loaded together in the same wagon or container, unless mixed loading is permitted in accordance with the following Table for the corresponding compatibility groups.

Compatibility Group	B	C	D	E	F	G	H	J	L	N	S
<b>B</b>	X		(a)								X
<b>C</b>		X	X	X		X				(b), (c)	X
<b>D</b>	(a)	X	X	X		X				(b), (c)	X
<b>E</b>		X	X	X		X				(b), (c)	X
<b>F</b>					X						X
<b>G</b>		X	X	X		X					X
<b>H</b>							X				X
<b>J</b>								X			X
<b>L</b>									(d)		
<b>N</b>		(b), (c)	(b), (c)	(b), (c)						(b)	X
<b>S</b>	X	X	X	X	X	X	X	X		X	X

x Mixed loading permitted.

- (a) Packages containing articles of compatibility group B and those containing substances or articles of compatibility group D may be loaded together in one wagon or in one container provided they are effectively segregated such that there is no danger of transmission of detonation from the articles of compatibility group B to the substances or articles of compatibility group D. Segregation shall be achieved by the use of separate compartments or by placing one of the two types of explosive in a special containment system. Either method of segregation shall be approved by the competent authority.
- (b) Different types of articles of division 1.6, compatibility group N, may be carried together as articles of division 1.6, compatibility group N, only when it is proven by testing or analogy that there is no additional risk of sympathetic detonation between the articles. Otherwise they should be treated as hazard division 1.1.
- (c) When articles of compatibility group N are carried with substances or articles of compatibility groups C, D or E, the articles of compatibility group N should be considered as having the characteristics of compatibility group D.
- (d) Packages containing substances and articles of compatibility group L may be loaded together in one wagon or in one container with packages containing the same type of substances and articles of that compatibility group.

### 7.5.2.3

(Reserved)

### 7.5.3

#### Protective distance

Every wagon or large container containing substances or articles of Class 1 and bearing a label conforming to models Nos. 1, 1.5 or 1.6, shall be separated on the same train from wagons or large containers bearing a label conforming to models Nos. 2.1, 3, 4.1, 4.2, 4.3, 5.1 or 5.2 by a protective distance.

The requirement for this protective distance is met if the space between the buffer head of a wagon or the end wall of a large container and the buffer head of another wagon or the end wall of another large container is:

- (a) at least 18 m, or
- (b) occupied by two 2-axle wagons or a wagon with 4 or more axles.

#### 7.5.4 Precautions with respect to foodstuffs, other articles of consumption and animal feeds

If special provision CW28 is indicated for a substance or article in column (18) of Table A of Chapter 3.2, precautions with respect to foodstuffs, other articles of consumption and animal feeds shall be taken as follows:

Packages as well as uncleaned empty packagings, including large packagings and intermediate bulk containers (IBCs), bearing labels conforming to models Nos. 6.1 or 6.2 and those bearing labels conforming to model No. 9 containing goods of UN Nos. 2212, 2315, 2590, 3151, 3152 or 3245, shall not be stacked on or loaded in immediate proximity to packages known to contain foodstuffs, other articles of consumption or animal feeds in wagons, in containers and at places of loading, unloading or transshipment.

When these packages, bearing the said labels, are loaded in immediate proximity of packages known to contain foodstuffs, other articles of consumption or animal feeds, they shall be kept apart from the latter:

- (a) by complete partitions which should be as high as the packages bearing the said labels;
- (b) by packages not bearing labels conforming to models Nos. 6.1, 6.2 or 9 or packages bearing labels conforming to model No.9 but not containing goods of UN Nos. 2212, 2315, 2590, 3151, 3152 or 3245;  
or
- (c) by a space of at least 0.8 m;

unless the packages bearing the said labels are provided with an additional packaging or are completely covered (e.g. by a sheeting, a fibreboard cover or other measures).

7.5.5 (Reserved)

7.5.6 (Reserved)

#### 7.5.7 Handling and stowage

7.5.7.1 Where appropriate the wagon or container shall be fitted with devices to facilitate securing and handling of the dangerous goods. Packages containing dangerous substances and unpackaged dangerous articles shall be secured by suitable means capable of restraining the goods (such as fastening straps, sliding slat-boards, adjustable brackets) in the wagon or container in a manner that will prevent any movement during carriage which would change the orientation of the packages or cause them to be damaged. When dangerous goods are carried with other goods (e.g. heavy machinery or crates), all goods shall be securely fixed or packed in the wagons or containers so as to prevent the release of dangerous goods. Movement of packages may also be prevented by filling any voids by the use of dunnage or by blocking and bracing. Where restraints such as banding or straps are used, these shall not be over-tightened to cause damage or deformation of the package.

7.5.7.2 Packages shall not be stacked unless designed for that purpose. Where different design types of packages that have been designed for stacking are to be loaded together, consideration shall be given to their compatibility for stacking with each other. Where necessary, stacked packages shall be prevented from damaging the package below by the use of load-bearing devices.

7.5.7.3 During loading and unloading, packages containing dangerous goods shall be protected from being damaged.

**NOTE:** Particular attention shall be paid to the handling of packages during their preparation for carriage, the type of wagon or container on which they are to be carried and to the method of loading or unloading, so that accidental damage is not caused through dragging or mishandling the packages.

#### 7.5.8 Cleaning after unloading

7.5.8.1 If, when a wagon or container which has contained packaged dangerous goods is unloaded, some of the contents are found to have escaped, the wagon or container shall be cleaned as soon as possible and in any case before reloading.

If it is not possible to do the cleaning locally, the wagon or container shall be carried, with due regard to adequate safety, to the nearest suitable place where cleaning can be carried out.

Carriage is adequately safe if suitable measures have been taken to prevent the uncontrolled release of the dangerous goods that have escaped.

7.5.8.2 Wagons or containers which have been loaded with dangerous goods in bulk shall be properly cleaned before reloading unless the new load consists of the same dangerous goods as the preceding load.

7.5.9 (Reserved)

7.5.10 (Reserved)

## 7.5.11 Additional provisions applicable to certain classes or specific goods

In addition to the provisions of 7.5.1 to 7.5.4 and 7.5.8, the following special provisions shall apply when an alphanumeric code beginning with "CW" is shown in column (18) of Table A of Chapter 3.2.

- CW 1** Before loading, the floor of the wagon or container shall be carefully cleaned by the consignor.
- No metal objects in the interior of the wagon or container other than those forming part of the construction of the wagon or container shall be allowed to protrude.
- The doors and ventilator shutters of the wagons or containers shall be closed.
- Packages shall be so loaded and stowed in the wagon or container that they cannot move or shift. They shall be protected against any chafing or bumping.
- CW 2** (Reserved)
- CW 3** (Reserved)
- CW 4** Substances and articles of compatibility group L shall only be carried as a full load or as a wagon load.
- CW 5** (Reserved)
- CW 6** (Reserved)
- CW 7** (Reserved)
- CW 8** (Reserved)
- CW 9** Packages shall not be thrown or subjected to impact.
- CW 10** Cylinders as defined in 1.2.1, shall be laid parallel to or at right angles to the longitudinal axis of the wagon or container; however, those situated near the forward transverse wall shall be laid at right angles to the said axis.
- Short cylinders of large diameter (about 30 cm and over) may be stowed longitudinally with their valve-protecting devices directed towards the middle of the wagon or container.
- Cylinders which are sufficiently stable or are carried in suitable devices effectively preventing them from overturning may be placed upright.
- Cylinders which are laid flat shall be securely and appropriately wedged, attached or secured so that they cannot shift.
- Receptacles designed to be rolled shall be laid with their longitudinal axis parallel to that of the wagon or container and shall be secured against any lateral movement.
- CW 11** Receptacles shall always be placed in the position for which they were designed and be protected against any possibility of being damaged by other packages.
- CW 12** When pallets loaded with articles are stacked, each tier of pallets shall be evenly distributed over the lower tier, if necessary by the interposition of a material of adequate strength.
- CW 13** If any substances have leaked and been spilled in a wagon or container, it may not be re-used until after it has been thoroughly cleaned and, if necessary, disinfected or decontaminated. Any other goods and articles carried in the same wagon or container shall be examined for possible contamination.
- CW 14** (Reserved)
- CW 15** (Reserved)
- CW 16** Consignments of UN No. 1749 chlorine trifluoride with a gross mass of more than 500 kg shall only be carried as a wagon load or as a full load and in quantities not exceeding 5000 kg per wagon or large container.
- CW 17** Packages containing substances of this Class which are to be carried at a specific ambient temperature shall only be carried as a wagon load or as a full load. The conditions of carriage shall be agreed between the consignor and the carrier.
- CW 18** Packages shall be so stowed that they are readily accessible.
- CW 19** (Reserved)
- CW 20** (Reserved)

**CW 21** (Reserved)

**CW 22** Wagons and large containers shall be thoroughly cleaned before loading.

Packages shall be loaded so that a free circulation of air within the loading space provides a uniform temperature of the load. If the contents of one wagon or large container exceed 5000 kg of these substances, the load shall be divided into stacks of not more than 5000 kg separated by air spaces of at least 0.05 m. Packages shall be protected from being damaged by other packages.

**CW 23** When handling packages, special measures shall be taken to ensure that they do not come into contact with water.

**CW 24** Before loading, wagons and containers shall be thoroughly cleaned and in particular be free of any combustible debris (straw, hay, paper, etc.).

The use of readily flammable materials for stowing packages is prohibited.

**CW 25** (Reserved)

**CW 26** The wooden parts of a wagon or container which have come into contact with these substances shall be removed and burnt.

**CW 27** (Reserved)

**CW 28** See 7.5.4.

**CW 29** Packages shall be stored upright.

**CW 30** The consignor and the carrier shall come to an agreement on the conditions of carriage before consignments are handed over for the carriage of refrigerated liquefied gases in tank-wagons, portable tanks or tank-containers fitted with safety valves.

**CW 31** Wagons or large containers which have contained substances of this Class as wagon loads or as full loads shall be checked, after unloading, for any residues of the load.

**CW 32** (Reserved)

**CW 33 NOTE 1:** "Critical group" means a group of members of the public which is reasonably homogeneous with respect to its exposure for a given radiation source and given exposure pathway and is typical of individual receiving the highest effective dose by the given exposure pathway from the given source.

**2:** "Members of the public" means in a general sense, any individuals in the population except when subject to occupational or medical exposure.

**3:** "Workers" are any persons who work, whether full time, part-time or temporarily, for an employer and who have recognised rights and duties in relation to occupational radiation protection.

#### (1) Segregation

(1.1) Packages, overpacks, containers and tanks containing radioactive material and unpackaged radioactive material shall be segregated during carriage:

(a) from workers in regularly occupied working areas:

(i) in accordance with Table A below; or

(ii) by distances calculated using a dose criterion of 5 mSv in a year and conservative model parameters;

**NOTE:** Workers subject to individual monitoring for the purposes of radiation protection shall not be considered for the purposes of segregation.

(b) from members of the critical group of the public, in areas where the public has regular access:

(i) in accordance with Table A below; or

(ii) by distances calculated using a dose criterion of 1 mSv in a year and conservative model parameters;

(c) from undeveloped photographic film and mailbags:

(i) in accordance with Table B below; or

(ii) by distances calculated using a radiation exposure criterion for undeveloped photographic film due to the transport of radioactive material for 0.1 mSv per consignment of such film; and

**NOTE:** Mailbags shall be assumed to contain undeveloped film and plates and therefore be separated from radioactive material in the same way.

(d) from other dangerous goods in accordance with 7.5.2.

**Table A: Minimum distances between packages of category II-YELLOW or of category III-YELLOW and persons**

Sum of transport indexes not more than	Exposure time per year (hours)			
	Areas where members of the public have regular access		Regularly occupied working areas	
	50	250	50	250
	Segregation distance in metres, no shielding material intervening, from:			
2	1	3	0.5	1
4	1.5	4	0.5	1.5
8	2.5	6	1.0	2.5
12	3	7.5	1.0	3
20	4	9.5	1.5	4
30	5	12	2	5
40	5.5	13.5	2.5	5.5
50	6.5	15.5	3	6.5

**Table B: Minimum distances between packages of category II-YELLOW or of category III-YELLOW and packages bearing the word "FOTO", or mailbags**

Total number of packages not more than		Sum of transport indexes not more than	Journey or storage duration, in hours							
			1	2	4	10	24	48	120	240
Category			Minimum distances in metres							
III-YELLOW	II-YELLOW		0.2	0.5	0.5	0.5	0.5	1	1	2
		0.2	0.5	0.5	0.5	0.5	1	1	2	3
		0.5	0.5	0.5	0.5	1	1	2	3	5
	1	1	0.5	0.5	1	1	2	3	5	7
	2	2	0.5	1	1	1.5	3	4	7	9
	4	4	1	1	1.5	3	4	6	9	13
	8	8	1	1.5	2	4	6	8	13	18
1	10	10	1	2	3	4	7	9	14	20
2	20	20	1.5	3	4	6	9	13	20	30
3	30	30	2	3	5	7	11	16	25	35
4	40	40	3	4	5	8	13	18	30	40
5	50	50	3	4	6	9	14	20	32	45

(1.2) Category II-YELLOW or III-YELLOW packages or overpacks shall not be carried in compartments occupied by passengers, except those exclusively reserved for couriers specially authorized to accompany such packages or overpacks.

(1.3) (Reserved)

**(2) Activity limits**

The total activity in a wagon, for carriage of LSA material or SCO in Industrial Packages Type 1 (Type IP-1), Type 2 (Type IP-2), Type 3 (Type IP-3) or unpackaged, shall not exceed the limits shown in Table C below.

**Table C: Wagon activity limits for LSA material and SCO in industrial packages or unpackaged**

Nature of material or object	Activity limit for wagon
LSA-I	No limit
LSA-II and LSA-III non-combustible solids	No limit
LSA-II and LSA-III combustible solids, and all liquids and gases	100 A <sub>2</sub>
SCO	100 A <sub>2</sub>

**(3) Stowage during carriage and storage in transit**

- (3.1) Consignments shall be securely stowed.
- (3.2) Provided that its average surface heat flux does not exceed 15 W/m<sup>2</sup> and that the immediately surrounding cargo is not in bags, a package or overpack may be carried or stored among packaged general cargo without any special stowage provisions except as may be specifically required by the competent authority in an applicable approval certificate.
- (3.3) Loading of containers and accumulation of packages, overpacks and containers shall be controlled as follows:
  - (a) Except under the condition of exclusive use, and for consignments of LSA-I material, the total number of packages, overpacks and containers in a single wagon shall be so limited that the total sum of the transport indexes in the wagon does not exceed the values shown in Table D below.
  - (b) The radiation level under routine conditions of carriage shall not exceed 2 mSv/h at any point on, and 0.1 mSv/h at 2 m from, the external surface of the wagon, except for consignments carried under exclusive use, for which the radiation limits around the wagon are set forth in (3.5) (b) and (c);
  - (c) The total sum of the criticality safety indexes in a container and or wagon shall not exceed the values shown in Table E below.

**Table D: Transport Index limits for containers and wagons not under exclusive use**

Type of container or wagon	Limit on total sum of transport indexes in a container or wagon
Small container	50
Large container	50
Wagon	50

**Table E: Criticality Safety Index for containers and vehicles containing fissile material**

Type of container or wagon	Limit on total sum of criticality safety indexes in a container or wagon	
	Not under exclusive use	Under exclusive use
Small container	50	n.a.
Large container	50	100
Wagon	50	100

- (3.4) Any package or overpack having either a transport index greater than 10, or any consignment having a criticality safety index greater than 50, shall be carried only under exclusive use.
- (3.5) For consignments under exclusive use, the radiation level shall not exceed:
  - (a) 10 mSv/h at any point on the external surface of any package or overpack, and may only exceed 2 mSv/h provided that:
    - (i) the wagon is equipped with an enclosure which, during routine conditions of carriage, prevents the access of unauthorized persons to the interior of the enclosure;
    - (ii) provisions are made to secure the package or overpack so that its position within the wagon enclosure remains fixed during routine conditions of carriage, and
    - (iii) there is no loading or unloading during the shipment;
  - (b) 2 mSv/h at any point on the outer surfaces of the wagon, including the upper and lower surfaces, or, in the case of an open wagon, at any point on the vertical planes projected from the outer edges of the wagon, on the upper surface of the load, and on the lower external surface of the wagon; and
  - (c) 0.1 mSv/h at any point 2 m from the vertical planes represented by the outer lateral surfaces of the wagon, or, if the load is carried in an open wagon, at any point 2 m from the vertical planes projected from the outer edges of the wagon.

**(4) Segregation of packages containing fissile material during carriage and storage in transit**

- (4.1) Any group of packages, overpacks, and containers containing fissile material stored in transit in any one storage area shall be so limited that the total sum of the CSIs in the group does not exceed 50. Each group shall be stored so as to maintain a spacing of at least 6 m from other such groups.
- (4.2) Where the total sum of the criticality safety indexes in a wagon or container exceeds 50, as permitted in Table E above, storage shall be such as to maintain a spacing of at least 6 m from other groups of packages, overpacks or containers containing fissile material or other wagons carrying radioactive material.

**(5) Damaged or leaking packages, contaminated packagings**

- (5.1) If it is evident that a package is damaged or leaking, or if it is suspected that the package may have leaked or been damaged, access to the package shall be restricted and a qualified person shall, as soon as possible, assess the extent of contamination and the resultant radiation level of the package. The scope of the assessment shall include the package, the wagon, the adjacent loading and unloading areas, and, if necessary, all other material which has been carried in the wagon. When necessary, additional steps for the protection of persons property and the environment, in accordance with provisions established by the competent authority, shall be taken to overcome and minimize the consequences of such leakage or damage.
- (5.2) Packages damaged or leaking radioactive contents in excess of allowable limits for normal conditions of carriage may be removed to an acceptable interim location under supervision, but shall not be forwarded until repaired or reconditioned and decontaminated.
- (5.3) A wagon and equipment used regularly for the carriage of radioactive material shall be periodically checked to determine the level of contamination. The frequency of such checks shall be related to the likelihood of contamination and the extent to which radioactive material is carried.
- (5.4) Except as provided in paragraph (5.5), any wagon, or equipment or part thereof which has become contaminated above the limits specified in 4.1.9.1.2 in the course of carriage of radioactive material, or which shows a radiation level in excess of 5  $\mu\text{Sv/h}$  at the surface, shall be decontaminated as soon as possible by a qualified person and shall not be re-used unless the non-fixed contamination does not exceed the limits specified in 4.1.9.1.2, and the radiation level resulting from the fixed contamination on surfaces after decontamination is less than 5  $\mu\text{Sv/h}$  at the surface.
- (5.5) A container, tank, intermediate bulk container or wagon dedicated to the carriage of unpackaged radioactive material under exclusive use shall be excepted from the requirements of the previous paragraph (5.4) and in 4.1.9.1.2 solely with regard to its internal surfaces and only for as long as it remains under that specific exclusive use.

**(6) Other provisions**

Where a consignment is undeliverable, the consignment shall be placed in a safe location and the competent authority shall be informed as soon as possible and a request made for instructions on further action.

- CW 34** Prior to carriage of pressure receptacles it shall be ensured that the pressure has not risen due to potential hydrogen generation.
- CW 35** If bags are used as single packagings, they shall be adequately separated to allow for the dissipation of heat.
- CW 36** Packages shall preferably be loaded in open or ventilated wagons or open or ventilated containers. If this is not feasible and packages are carried in other closed wagons or containers, the cargo doors of the wagons or 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.

## Chapter 7.6

### Provisions for carriage as colis express (express goods)

In accordance with Article 5 § 1 of Appendix C to COTIF, goods are only permitted for carriage as express goods when a special provision with an alphanumeric code beginning with the letters "CE" is shown in column (19) of Table A of Chapter 3.2 specifically authorizing this form of transport, and the conditions of this special provision are complied with.

The following special provisions apply when they are shown under an entry in column (19) of Table A of Chapter 3.2.

- CE 1** An express parcels package shall not weigh more than 40 kg. Express parcels consignments may be loaded in railway wagons which can simultaneously serve for the carriage of persons, but only up to a limit of 100 kg per wagon.
- CE 2** An express parcels package shall not weigh more than 40 kg.
- CE 3** An express parcels package shall not weigh more than 50 kg.
- CE 4** An express parcels package shall not contain more than 45 litres of this substance and shall not weigh more than 50 kg.
- CE 5** An express parcels package shall not contain more than 2 litres of this substance.
- CE 6** An express parcels package shall not contain more than 4 litres of this substance.
- CE 7** An express parcels package shall not contain more than 6 litres of this substance.
- CE 8** An express parcels package shall not contain more than 12 litres of this substance.
- CE 9** An express parcels package shall not contain more than 4 kg of this substance.
- CE 10** An express parcels package shall not contain more than 12 kg of this substance.
- CE 11** An express parcels package shall not contain more than 24 kg of this substance.
- CE 12** When sent as an express parcel, the substance shall be contained in unbreakable receptacles. An express parcels package shall not weigh more than 25 kg.
- CE 13** Only inorganic cyanides containing precious metals, and mixtures of these may be sent as express parcels. In this case, combination packagings with inner packagings of glass, plastics or metal in accordance with 6.1.4.21 shall be used. An express parcels package shall not contain more than 2 kg of the substance.
- Carriage in luggage vans or luggage compartments accessible to passengers shall be authorized if, by means of appropriate measures, packages are placed out of reach of non-authorized persons.
- CE 14** Only substances which are not to be carried at a specific ambient temperature may be forwarded as express parcels. In this case, the following quantity limits shall apply:
- for substances other than those assigned to UN No. 3373 up to 50 ml per package for liquids and up to 50 g per package for solids.
  - for substances assigned to UN No. 3373 in quantities as specified in packing instruction P650 in 4.1.4.1.
  - for body parts or organs, a package shall not weigh more than 50 kg.
- CE 15** For express parcels packages, the sum of the transport indexes on the danger labels in a luggage van or luggage compartment shall not be more than 10. For packages of category III-YELLOW, the carrier may determine the time of delivery of the consignment. An express parcels package shall not weigh more than 50 kg.



## Chapter 7.7

### Carriage of dangerous goods as hand luggage or registered luggage or in or on board motor vehicles (car on train)

- NOTE 1:** In accordance with Article 12 § 4 of the Uniform Rules concerning the Contract of International Carriage of Passengers by Rail (CIV – Appendix A of COTIF) and Article 5 of Appendix C (RID) of COTIF, dangerous goods are only permitted as hand luggage, registered luggage or in or on board motor vehicles (car on train) in accordance with the requirements of RID.
- 2:** Further restrictions in the railway undertakings' conditions of carriage under private law are not affected.

Dangerous goods may only be carried as hand luggage or registered luggage or in or on board motor vehicles (car on train) if the exemption requirements of 1.1.3.1 (a) or (b), 1.1.3.2 (b), (d) or (f), 1.1.3.3 or 1.1.3.7 are applicable for the carriage.