PART 7

Provisions Concerning Transport Operations

Introductory note

In UN15:

- *Chapter 7.1 contains operational provisions that are applicable to all modes of transport, covering:*

  (a) general provisions for transporting and offering for transport;

  (b) loading requirements;

  (c) segregation of dangerous goods;

  (d) special provisions applicable to some types of dangerous goods; and

  (e) reporting of accidents and incidents.

- *Chapter 7.2 is "generally reserved for additional provisions applicable to the individual modes of transport that may be added by national, modal or regional authorities." It includes special provisions for:*

  (f) transport of portable tanks on vehicles

  (g) transport of radioactive material

  (h) security of transport by road, rail or inland waterway

In this Code:

- *Chapter 7.1 includes only (a) and (d) of the above. The content of (b) has been relocated to Chapter 8.1 which, in this Code, covers all stowage provisions. (c) is included in Part 9 that includes all compatibility and segregation issues. (e) is not covered by this Code as it is addressed by the Regulations. Australian specific special provisions that are applicable to particular types of dangerous goods have also been included in Chapter 7.1 so that all such provisions are grouped together.*
- *Chapter 7.2 contains only special provisions for the transport of nominally empty containers. The content of (f) above has been covered in Chapter 8.2. Neither (g) nor (h) are included in this Code, being subject to other legislation.*
- *Chapter 7.3 incorporates Australian specific requirements for Retail Distribution Loads, in lieu of concessions for Consumer Commodity Loads in 1.2.1 of the previous edition.*

7.1.1 ...GENERAL PROVISIONS

7.1.1.1 <Reserved>

7.1.1.2 Dangerous goods must not be offered for transport unless:

(a) the goods have been properly classified, packed, marked, labelled and described ... on a dangerous goods transport document; and

(b) the goods are in a fit condition for transport as required by this Code, and no dangerous residue of the dangerous goods adheres to the outside of the package.

7.1.1.3 Dangerous goods must not be transported unless:

(a) transport units have been appropriately marked, labelled and placarded; and

(b) transport units are otherwise in a condition for transport as required by this Code.

7.1.1.4 — 7.1.1.9 <Reserved>†

7.1.1.10 If a transport unit, pressure drum, MEGC or IBC is marked with notations indicating how it should be handled in the transport of dangerous goods, it must be handled in accordance with those notations.

7.1.2 <Reserved>‡

7.1.3 <Reserved>§

7.1.4 SPECIAL PROVISIONS APPLICABLE TO THE TRANSPORT OF CLASS 2 SUBSTANCES AND ARTICLES**

7.1.4.1 Aerosols transported for the purposes of reprocessing or disposal under the provisions of Special Provision 327 must only be transported in well-ventilated transport units as described in 7.1.4.5.

7.1.4.2 Dangerous goods of Class 2 must not be stowed near a source of heat.

7.1.4.3 If liquefied gas is transported in a cylinder fitted with a pressure relief device and the venting of the liquid would create a risk greater than the venting of the gas, the cylinder must be stowed so that the pressure relief device communicates with the vapour space

7.1.4.4 When transporting gases in cylinders, the main cylinder valve must always be shut and any regulator removed prior to loading.

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* *Chapter 7.1 of UN15 is headed "Provisions Concerning Transport Operations by all Modes of Transport".*

† *7.1.1.4—7.1.1.9 of UN15 deal briefly with loading and restraining of packages of dangerous goods in transport units. These provisions have been incorporated into Chapter 8.1 of this Code.*

‡ *Section 7.1.2 of UN15 deals briefly with the principles of segregating incompatible dangerous goods. Part 9 of this Code provides detailed requirements for segregating and separating dangerous goods when transported by road or rail in Australia.*

§ *Section 7.1.3 of UN15 contains special provisions applicable to the transport of explosives. Refer to the Australian Explosives Code.*

** *Refer to Material Safety Data Sheets for detailed safety information about particular dangerous goods.*

7.1.4.5 Ventilation

The following dangerous goods must not be transported in a placard load unless the transport unit or compartment in which they are transported is ventilated to prevent the build up of vapours that are likely to increase risk:

(a) dangerous goods [other than aerosols (UN 1950) and gas cartridges (UN 2037)] of Division 2.1 or 2.3, or subsidiary risk of 2.1; or

(b) liquefied oxygen.

7.1.4.6 Transport of LP Gas on buses*

LP Gas in cylinders must not be transported on a bus unless:

(a) no LP Gas cylinder individually has a capacity of more than 2.5 litres; and

(b) the total quantity of LP Gas on the bus is less than 250 litres.

7.1.5 SPECIAL PROVISIONS APPLICABLE TO THE CARRIAGE OF SELF-REACTIVE SUBSTANCES OF DIVISION 4.1 AND ORGANIC PEROXIDES OF DIVISION 5.2†

7.1.5.1 Where a number of packages are assembled in a closed transport unit or unit load, the total quantity of substance, the type and number of packages and the stacking arrangement must not create an explosion hazard.

7.1.5.2 All self-reactive substances and organic peroxides must be protected from direct sunlight and all sources of heat, and placed in adequately ventilated areas.

7.1.5.3 Temperature control

Certain self-reactive substances when required by 2.4.2.3.4, and certain organic peroxides when required by 2.5.3.4.1, may only be transported under conditions where the temperature is controlled. In addition, if a self-reactive substance or organic peroxide which is not normally required to be transported under temperature control is transported under conditions where the temperature may exceed 55 °C, it may require temperature control. The requirements of 7.1.5.3.1 and 7.1.5.3.2 apply to the transport of such substances.

7.1.5.3.1 *Temperature control provisions*

7.1.5.3.1.1 The "control temperature" is the maximum temperature at which the substance can be safely transported. It is assumed that during transport the temperature of the immediate surroundings of the package does not exceed 55 °C and attains this value for a relatively short time only during each period of 24 hours. In the event of loss of temperature control, it may be necessary to implement emergency procedures. The "emergency temperature" is the temperature at which such procedures must be implemented.

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* *For transport of dangerous goods on passenger trains, see 9.2.3.8*

† *Refer to Safety Data Sheets for detailed safety information about particular dangerous goods.*

7.1.5.3.1.2 *Derivation of control and emergency temperatures*

Type of receptacle	SADT[a]	Control temperature	Emergency temperature
Single packagings and IBCs	20 °C or less	20 °C below SADT	10 °C below SADT
	over 20 °C to 35 °C	15 °C below SADT	10 °C below SADT
	over 35 °C	10 °C below SADT	5 °C below SADT
Portable tanks	< 50 °C	10 °C below SADT	5 °C below SADT

[a] *i.e. the SADT of the substance as packaged for transport.*

7.1.5.3.1.3 The control and emergency temperatures are derived using the table in 7.1.5.3.1.2 from the self-accelerating decomposition temperature (SADT) which is defined as the lowest temperature at which self-accelerating decomposition may occur with a substance in the packaging as used in transport. An SADT must be determined in order to decide if a substance must be subjected to temperature control during transport. Provisions for the determination of the SADT are given in 2.4.2.3.4 and 2.5.3.4.2 for self-reactive substances and organic peroxides, respectively.

7.1.5.3.1.4 Control and emergency temperatures, where appropriate, are provided for currently assigned self-reactive substances in 2.4.2.3.2.3 and for currently assigned organic peroxide formulations in 2.5.3.2.4. The actual transport temperature may be lower than the control temperature but must be selected so as to avoid dangerous separation of phases.

7.1.5.3.2 *Transport under temperature control*

NOTE: *Since the circumstances to be taken into account differ for the various modes of transport, only general guidance is provided. Some substances which must be transported under temperature control are unsuitable for transport by some modes taking into account the factors in 7.1.5.3.2.4.*

7.1.5.3.2.1 Maintenance of the prescribed temperature is an essential feature of the safe transport of many self-reactive substances and organic peroxides. In general, there must be:

(a) thorough inspection of the transport unit prior to loading; and
(b) instructions to the carrier about the operation of the refrigeration or other cooling system; and
(c) procedures to be followed in the event of loss of control; and
(d) regular monitoring of operating temperatures; and
(e) where there may be a need, taking into account the factors in 7.1.5.3.2.4, provision of a back-up refrigeration or other cooling system or spare parts.

7.1.5.3.2.2 Where a refrigeration system is used, any control and temperature sensing devices in the refrigeration system must be readily accessible and all electrical connections weather-proof. The temperature of air space within the transport unit must be measured by two independent sensors and the output must be recorded so that temperature changes are readily detectable. The temperature must be checked every four to six hours and logged. When substances having a control temperature of less than +25 °C are carried, the transport unit must be equipped with visible and audible alarms, powered independently of the refrigeration system, set to operate at or below the control temperature.

7.1.5.3.2.3 If during transport the control temperature is exceeded, an alert procedure must be initiated involving any necessary repairs to the refrigeration equipment or an increase in the cooling capacity (e.g. by adding liquid or solid refrigerants). The temperature must also be checked frequently and preparations made for implementation of the emergency procedures. If the emergency temperature is reached, the emergency procedures must be initiated.

7.1.5.3.2.4 The suitability of a particular means of temperature control for transport depends on a number of factors. Factors to be considered include:

(a) the control temperature(s) of the substance(s) to be transported; and
(b) the difference between the control temperature and the anticipated ambient temperature conditions; and
(c) the effectiveness of the thermal insulation; and
(d) the duration of transport; and
(e) allowance of a safety margin for delays.

7.1.5.3.2.5 Suitable methods for preventing the control temperature being exceeded are, in order of increasing control capability:

(a) Thermal insulation; provided that the initial temperature of the organic peroxide(s) is sufficiently below the control temperature;
(b) Thermal insulation with coolant system; provided that:
    (i) an adequate quantity of coolant (e.g. liquid nitrogen or solid carbon dioxide or, where suitable, ice), allowing a reasonable margin for delay, is carried; and
    (ii) liquid oxygen or air is not used as coolant; and
    (iii) there is a uniform cooling effect even when most of the coolant has been consumed; and
    (iv) except where ice is the coolant, the need to ventilate the unit before entering is clearly indicated by a warning on the door(s) of the unit;
(c) Single mechanical refrigeration; provided that for organic peroxides with a flash point lower than the sum of the emergency temperature plus 5 °C explosion-proof electrical fittings are used within the cooling compartment to prevent ignition of flammable vapours from the organic peroxides;
(d) Combined mechanical refrigeration system with coolant system; provided that:
    (i) the two systems are independent of one another; and
    (ii) the provisions in (b) and (c) are complied with;
(e) Dual mechanical refrigeration system; provided that:
    (i) apart from the integral power supply unit, the two systems are independent of one another; and
    (ii) each system alone is capable of maintaining adequate temperature control; and
    (iii) for organic peroxides with a flash point lower than the sum of the emergency temperature plus 5 °C explosion-proof electrical fittings are used within the cooling compartment to prevent ignition of flammable vapours from the organic peroxides.

7.1.6 SPECIAL PROVISIONS APPLICABLE TO THE TRANSPORT OF SUBSTANCES STABILIZED BY TEMPERATURE CONTROL (OTHER THAN SELF-REACTIVE SUBSTANCES AND ORGANIC PEROXIDES) *

7.1.6.1 These provisions apply to the transport of substances for which:

(a) the proper shipping name contains the word "STABILIZED"; and

(b) the SADT (see 7.1.5.3.1.3) as presented for transport in the package, IBC or tank is 50 °C or lower.

When chemical inhibition is not used to stabilize a reactive substance which may generate dangerous amounts of heat and gas, or vapour, under normal transport conditions, these substances need to be transported under temperature control. These provisions do not apply to substances which are stabilized by the addition of chemical inhibitors such that the SADT is greater than 50 °C.

NOTE: *Some substances which are transported under temperature control are prohibited from transport by certain modes.*

7.1.6.2 The provisions in 7.1.5.3.1.1 to 7.1.5.3.1.3 and 7.1.5.3.2 apply to substances meeting criteria (a) and (b) in 7.1.6.1.

7.1.6.3 The actual transport temperature may be lower than the control temperature (see 7.1.5.3.1.1) but must be selected so as to avoid dangerous separation of phases.

7.1.6.4 When these substances are transported in IBCs or portable tanks, the provisions for a SELF-REACTIVE LIQUID TYPE F, TEMPERATURE CONTROLLED must apply. For transport in IBCs, see the special provisions in 4.1.7.2 and the "Additional requirements" in packing instruction IBC520; for transport in portable tanks, see the additional provisions in 4.2.1.13.

7.1.6.5 If a substance the proper shipping name of which contains the word "STABILIZED" and which is not normally required to be transported under temperature control is transported under conditions where the temperature may exceed 55 °C, it may require temperature control.

7.1.7 SPECIAL PROVISIONS APPLICABLE TO THE TRANSPORT OF DIVISION 6.1 (TOXIC) AND DIVISION 6.2 (INFECTIOUS) SUBSTANCES*

7.1.7.1 Division 6.1 (toxic) substances

7.1.7.1.1 <Reserved>†

7.1.7.1.2 ***Decontamination of transport units***

A rail wagon, road vehicle, freight container or other transport unit which has been used to carry substances marked as or known to be toxic (packing groups I, II and III) must, after unloading and before removal of placards, be inspected for contamination. Until such contamination has been removed, a transport unit which has been contaminated must not be returned to service and placards and other markings indicating the presence of the dangerous goods must not be removed.

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* *Refer to Safety Data Sheets for detailed safety information about particular dangerous goods.*

† *Separation from foodstuffs is addressed in Part 9 of this Code.*

7.1.7.2 Division 6.2 (infectious) substances

7.1.7.2.1 <Reserved>*

7.1.7.2.2 ***Action to be taken in the event of damage or leakage***

Any person responsible for the carriage of packages containing infectious substances who becomes aware of damage to or leakage from such packages must:

(a) avoid handling the package or keep handling to a minimum; and

(b) ensure that adjacent packages are inspected in a safe manner for contamination and any that may have been contaminated are put aside; and

(c) inform emergency services, the appropriate public health authority or veterinary authority, and provide information on any other jurisdictions of transit where persons may have been exposed to danger; and

(d) notify the consignor and/or the consignee.

7.1.7.2.3 <Reserved>†

7.1.8 <Reserved>‡

7.1.9 <Reserved>§

7.1.10 SPECIAL PROVISIONS APPLICABLE TO THE TRANSPORT OF DIVISION 4.3**

Dangerous goods of Division 4.3, or with a Subsidiary Risk of 4.3 must be kept dry during transport.

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* *Carrier responsibilities are assigned by the Regulations.*

† *Decontamination of transport units is addressed by other legislation.*

‡ *Section 7.1.8 of UN15 contains special provisions applicable to the transport of radioactive material. Refer to the Code of Practice for the Safe Transport of Radioactive Substances.*

§ *Section 7.1.9 of UN15 contains reporting requirements for accidents and incidents These are dealt with in Part 14 of the Regulations.*

** *Refer to Safety Data Sheets for detailed safety information about particular dangerous goods.*

TRANSPORT OF EMPTY PACKAGINGS AND CONTAINERS*

7.2.1 APPLICATION

The provisions of this Chapter apply only to road and rail transport in Australia.

7.2.2 <Reserved>†

7.2.3 <Reserved>‡

7.2.4 <Reserved>§

7.2.5 TRANSPORT OF PRE-LABELLED PACKAGINGS, IBCs AND CYLINDERS

Empty, as yet unused dangerous goods prelabelled packagings, IBCs and cylinders should be clearly identified as such on transport documentation, any outer packaging or the exterior of the transport unit in order to avoid inappropriate emergency response.

7.2.6 TRANSPORT OF NOMINALLY EMPTY RECEPTACLES

7.2.6.1 Nominally empty packagings, IBCs, portable tanks, bulk containers, road tank vehicles and rail tank wagons (other than those that have contained only dangerous goods of Class 2) that are not free from dangerous goods must be identified as such on transport documentation in accordance with Section 11.1.3.1.

7.2.6.2 Unless free from dangerous goods, nominally empty portable tanks, bulk containers, road tank vehicles and rail tank vehicles are always placard loads and must comply with all relevant provisions of this Code.

7.2.6.3 Cylinders, pressure drums, MEGCs, portable tanks and other pressure vessels (other than aerosols) that have contained dangerous goods of Class 2 and are not free from dangerous goods must comply with all relevant provisions of this Code as though filled with the dangerous goods.

NOTE: *The aggregate quantity of dangerous goods of Class 2 is defined in 1.2.1.1 as the total capacity in litres of receptacles in the load containing dangerous goods of Class 2 (except aerosols). The aggregate quantity of Class 2 in a receptacle is therefore the same irrespective of the degree of filling.*

7.2.6.4 When determining the aggregate quantity of dangerous goods in a transport unit and for placarding purposes, the remaining quantity of dangerous goods (other than Class 2 –see 7.2.6.3) in a nominally empty packaging or IBC may be ignored provided it is less than 2 % of the normal filled quantity. However, labels and other package markings required by this Code must not be removed unless the packaging or IBC is free from dangerous goods.

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* *Chapter 7.2 of UN15 is headed "Modal Provisions".*

† *The content of Section 7.2.2 which, in UN15 is headed "Special Provisions applicable to the Transport of Portable Tanks on Vehicles", has been relocated to Section 8.2.2 in Chapter 8.2 of this Code, along with other transport unit restraint requirements.*

‡ *Section 7.2.3 of UN15 applies to the transport of radioactive material by road and rail. –See the Code of Practice for the Safe Transport of Radioactive Substances.*

§ *Section 7.2.4 of UN15 relates to security measures which are addressed in Australia by other legislation.*

7.2.7 TRANSPORT OF NOMINALLY EMPTY STORAGE VESSELS

***NOTE**: This section does not apply to packagings, cylinders, pressure drums, IBCs, demountable tanks, portable tanks, bulk containers or MEGCs that are transported in accordance with this Code.*

7.2.7.1 This Section applies to the transport of nominally empty tanks or hoppers that have been used in fixed underground or above ground installations for the storage of LP Gas, or any other dangerous goods except:

(a) Classes 1 and 7; and

(b) Division 2.1 (other than LP Gas), Divisions 2.3, 5.2, and 6.2; and

(c) Self-reactive substances or desensitized explosives of Division 4.1; and

(d) Desensitized explosives of Class 3; and

(e) Packing group I of any Class or Division; and

(f) Goods too dangerous to be transported.

***NOTE**: Storage tanks and hoppers that have been cleaned so as to be free from dangerous goods are not subject to this Code.*

7.2.7.2 Prior to transport, tanks and hoppers described in 7.2.7.1 must:

(a) be deemed structurally sound for that purpose; and

(b) have any holes repaired in such a way as will prevent any leakage of solid, liquid or vapour during transport; and

(c) be drained as far as is practicable to minimise residual dangerous goods; and

(d) except as required for pressure equalisation and safety valves on pressure vessels, have all pipework capped; and

(e) if gas tanks, be free from leaks.

7.2.7.3 Nominally empty storage vessels transported according to this Section must be secured to the vehicle in accordance with the Load Restraint Guide.

7.2.7.4 Vehicles transporting nominally empty storage vessels must be placarded as required by Chapter 5.3 of this Code for a vehicle transporting the particular dangerous goods in a portable tank.

7.2.7.5 Transport documentation complying with Chapter 11.1 and emergency information complying with Chapter 11.2 must be carried in the cabin of the vehicle transporting the nominally empty vessel.

7.2.7.6 Nominally empty storage vessels must be segregated from other dangerous goods in accordance with Chapter 9.2.

7.2.7.7 Vehicles transporting nominally empty storage vessels in accordance with this Section must carry safety equipment specified for the dangerous goods in Part 12.

7.2.7.8 An exemption or determination must be obtained from the Competent Authority before transporting, other than in accordance with this Section, tanks and other previously fixed receptacles or containers that have been used for the storage of dangerous goods and are not free from dangerous goods.

NOTE: *The concessions provided for retail distribution loads in this Chapter apply only to transport by road and rail while the total load in the transport unit meets all of the characteristics of Section 7.3.1. If such a load is transported in the same transport unit as other dangerous goods or if the load is broken up, in either instance such that the whole load in the transport unit does not meet all of the characteristics of 7.3.1, then the load ceases to be a retail distribution load and the concessions of this Chapter do not apply to the load.*

7.3.1 CHARACTERISTICS

7.3.1.1 A load* that includes dangerous goods is a retail distribution load if it has all of the following characteristics:

(a) all dangerous goods in the load are packed in accordance with either Chapter 3.4, or the Packing Instructions referenced from Column 8 of the Dangerous Goods List and any applicable Special Packing Provisions from Column 9 for the particular dangerous goods, and

(b) except where otherwise permitted by Clause 7.3.1.2, no dangerous goods inner packaging or article is larger than the limited quantity specified for the dangerous goods in Column 7 of the Dangerous Goods List; and

(c) the dangerous goods are packed and distributed in a form intended or suitable for sale through retail agencies for consumption by individuals for purposes of personal care or household use; and

(d) the aggregate quantity of dangerous goods in the load does not exceed 20% of the total quantity of goods in the load; and

(e) the aggregate quantity of dangerous goods in the transport unit does not exceed 2000kg(L); and

(f) the load does not include dangerous goods of Division 6.1 or Class 8 other than those that are packed and suitable for household use, such as:

(i) domestic pest control products; and

(ii) personal care products; and

(iii) domestic cleaning products; and

(g) all the goods in the transport unit are consigned to or from:

(i) a retail distribution centre; or

(ii) a retail outlet.

7.3.1.2 The following domestic consumer articles may be included in a retail distribution load, despite 7.3.1.1(a) and any entry in Column 7 of the Dangerous Goods List:

(a) Party poppers; sparklers and bon bons, described as UN 0337 –FIREWORKS, of Division 1.4S; and

(b) Domestic smoke detectors described as UN 2911 –RADIOACTIVE MATERIAL, EXCEPTED PACKAGE -INSTRUMENTS or ARTICLES, of Class 7; and

(c) LIGHTERS or LIGHTER REFILLS UN 1057, of Division 2.1; and

(d) FIRE EXTINGUISHERS with compressed or liquefied gas UN 1044, of Division 2.2.

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* *The load comprises all of the goods from all sources, whether or not they are dangerous goods, that are in or on the transport unit (see 1.2.1.1).*

7.3.2 DOCUMENTATION

Where dangerous goods are transported in a retail distribution load in accordance with this Chapter, transport documentation in the form or to the effect of Figure B 2 in Appendix B may be provided instead of the transport documentation specified in Chapter 11.1.

7.3.3 MARKING AND LABELLING

7.3.3.1 Where dangerous goods are packed at a retail distribution centre or retail outlet into outer packagings or overpacks that will be transported only as part of a retail distribution load, those outer packagings and overpacks may be labelled with a mixed class label (model No. 10 in 5.2.2.2.3) in lieu of:

(a) markings specified for limited quantities in 3.4.6 and 3.4.8; or

(b) markings and labelling specified for packages in Chapter 5.2; or

(c) markings and labelling specified for overpacks in 5.1.2.1.

7.3.3.2 Where a mixed class label is used in accordance with 7.3.3.1, it must have minimum overall dimensions of 100 mm by 100 mm and must be otherwise as shown in 5.2.2.2.3.

NOTE: *This marking and labelling concession is provided only to facilitate the packingof part or mixed cartons and overpacks at retail distribution centres and retail outlets for inclusion in a retail distribution load. This labelling will not be suitable for any other transport subject to this Code. This concession is not applicable to suppliers to the retail industry.*

7.3.4 PLACARDING

A retail distribution load, where the total load in the transport unit meets all of the characteristics detailed in 7.3.1, is not a placard load.