

Australian/New Zealand Standard™

**The storage and handling of Class 9
(miscellaneous) dangerous goods and
articles**



S t a n d a r d s Australia



AS/NZS 4681:2000

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee CH-009, Safe Handling of Chemicals. It was approved on behalf of the Council of Standards Australia on 15 September 2000 and on behalf of the Council of Standards New Zealand on 24 November 2000. It was published on 6 December 2000.

The following interests are represented on Committee CH-009:

Agsafe Australia
Air Conditioning and Refrigeration Wholesalers Association
Australasian Fire Authorities Council
Australian Chemical Specialties Manufacturers Association
Australian Institute of Petroleum
Australian Paint Manufacturers Federation
Department for Administrative and Information Services, S.A.
Department of Industries and Business, N.T.
Department of Infrastructure, Energy and Resources, Tasmania
Department of Minerals and Energy, W.A.
Environment Protection Authority of N.S.W.
Institution of Engineers Australia
National Occupational Health and Safety Commission, Australia
New Zealand Chemical Industry Council
New Zealand Fire Service
Plastics and Chemicals Industries Association, Australia
Tranz Rail New Zealand
Victorian WorkCover Authority
WorkCover New South Wales

Additional interests participating in the preparation of this Standard:

Manufacturers, distributors and industrial users of Class 9 dangerous goods
Consultants to the chemicals industry
Consultants to the agricultural industry

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Australian/New Zealand Standard™

The storage and handling of Class 9 (miscellaneous) dangerous goods and articles

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PREFACE

This Standard was prepared by the Joint Australian/New Zealand Standards Committee CH-009, *Safe Handling of Chemicals*. Preparation of this Standard was commenced following a request from the chemicals industry that a series of generic Standards be prepared in the storage and handling of each Class of dangerous goods.

This Standard incorporates Amendment No. 1 (March 2001). The changes arising from the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure, or part thereof affected.

The purpose of this Standard is to promote the safety of persons and property wherever dangerous goods and articles of Class 9 (as specified in the UN *Recommendations for the Transport of Dangerous Goods — Model Regulations*) are stored and handled, by providing requirements and recommendations that are based on industry best practices.

In New Zealand, this Standard covers dangerous goods and articles of Class 9, which may differ from Class 9 as defined by HSNO legislation.

The series of Standards covering the storage and handling of dangerous goods presently comprises the following:

AS

1894	The storage and handling of non-flammable cryogenic and refrigerated liquids
1940	The storage and handling of flammable and combustible liquids
2022	Anhydrous ammonia—Storage and handling
2507	The storage and handling of agricultural and veterinary chemicals
2714	The storage and handling of hazardous chemical materials—Class 5.2 substances (organic peroxides)
2927	The storage and handling of liquefied chlorine gas
3780	The storage and handling of corrosive substances
3846	The handling and transport of dangerous cargoes in port areas
3961	Liquefied natural gas—Storage and handling
4081	The storage, handling and transport of liquid and liquefied polyfunctional isocyanates
4326	The storage and handling of oxidizing agents
4332	The storage and handling of gases in cylinders

AS/NZS

1596	Storage and handling of LP Gas
3833	The storage and handling of mixed classes of dangerous goods in packages and intermediate bulk containers
4452	The storage and handling of toxic substances

NZS

8409	Code of practice for the management of agrichemicals
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Attention has been paid to aligning the requirements given in this Standard with those of regulatory authorities, emergency services, environmental authorities and the various publications of the National Occupational Health and Safety Commission.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of the Standard, whereas an ‘informative appendix is only for information and guidance.

Statements expressed in mandatory terms in notes to tables are deemed to be requirements of this Standard.

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STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard**The storage and handling of Class 9 (miscellaneous) dangerous goods and articles**

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out requirements and recommendations for the safe storage and handling of dangerous goods and articles of Class 9 (i.e. miscellaneous dangerous goods and articles), as classified by the UN *Recommendations on the Transport of Dangerous Goods—Model Regulations*, and listed in the *Australian Dangerous Goods Code* (ADG Code)/NZS 5433. It covers these goods in packages, intermediate bulk containers (IBCs) and bulk.

NOTE: A current list of Class 9 dangerous goods, taken from the 11th revised edition of the UN *Recommendations on the Transport of Dangerous Goods—Model Regulations*, is given in Appendix A of this Standard.

In New Zealand, this Standard covers dangerous goods and articles of Class 9, which may differ from Class 9 as defined by HSNO legislation.

1.2 APPLICATION**1.2.1 Where this Standard applies**

This Standard applies in all situations except for the following:

- (a) The transport of Class 9 dangerous goods and articles, which is covered by other regulations, rules and codes, e.g. the ADG Code/NZS 5433.
- (b) The storage and handling of bitumen (UN 3256 and UN 3257), which is covered by AS 1940.
- (c) The storage and handling of dangerous goods and articles of Class 9 which are regulated only for air transport, e.g. Aviation regulated liquids, N.O.S. (UN 3334), Aviation regulated solids, N.O.S. (UN 3335).
- (d) Genetically modified micro-organisms (UN 3245).
- (e) The handling of Class 9 dangerous goods and articles in port areas, which, in Australia, is addressed in AS 3846.
- (f) The storage and handling of Class 9 dangerous goods on farms, where such goods are not intended for resale, and which are addressed in AS 2507/NZS 8409.

Where the Class 9 dangerous goods are also combustible liquids (i.e. C1 or C2 as defined in Clause 1.4.10), and the quantity stored is greater than that allowed as minor storage, AS 1940 shall apply.

1.2.2 Relationship with regulations

The requirements of this Standard apply in conjunction with, but do not take precedence over, any government regulations that apply in any area.

NOTES:

- 1 An installation may come under the regulatory control of several authorities having different areas of responsibility, and an approval from one authority does not necessarily constitute an approval from others.

- 2 Knowledge of the relevant requirements of the *Building Code of Australia* (BCA)/*New Zealand Building Code* (NZBC) is necessary for all matters relating to building works and fire protection.
- 3 In Australia, some Class 9 dangerous goods may also be classified as workplace hazardous substances by NOHSC: 1008 and listed in NOHSC: 10005, and legislative requirements for workplace hazardous substances will apply to them. If the goods are listed in the *Standard for the Uniform Scheduling of Drugs and Poisons* (SUSDP), the requirements of that Standard will also apply.
- 4 In Australia, the *National Standard for the Control of Major Hazard Facilities* (NOHSC: 1014) may also apply, depending on the size of the storage.

1.3 REFERENCED DOCUMENTS

A list of documents referred to in this Standard is given in Appendix B.

1.4 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

1.4.1 Access

A means by which a person or vehicle can approach or leave a specific location. The term includes walkways, platforms, stairways, ladders, roads and all provisions for safe entry and exit.

1.4.2 ADG Code

The *Australian Dangerous Goods Code*, which comprises—

- (a) the *Australian Code for the Transport of Dangerous Goods by Road and Rail*;
- (b) the *Rail (Dangerous Goods) Rules*;
- (c) the *Road Transport Reform (Dangerous Goods) Regulations*; and
- (d) technical appendices.

1.4.3 Agricultural chemical

A substance or mixture of substances that is a means of directly or indirectly —

- (a) destroying, stupefying, repelling, inhibiting the feeding of, or preventing infestation or attacks of, any pest in relation to a plant, a place or thing;
- (b) destroying a plant;
- (c) modifying the physiology of a plant or pest so as to alter its natural development, productivity, quality or reproductive capacity;
- (d) modifying the effect of another agricultural chemical; or
- (e) attracting a pest for the purpose of destroying it.

An agricultural chemical includes any substance or mixture of substances declared by regulation to be an agricultural chemical product.

1.4.4 Asbestos

Asbestos of UN 2212, being blue asbestos (crocidolite) or brown asbestos (amosite or mysorite), or UN 2590, being white asbestos (chrysolite, actinolite, anthophyllite, tremolite).

1.4.5 Authority

The authority having statutory (legal) control of a particular matter.

1.4.6 Boundary

The perimeter of the whole of the site under the same occupancy as the storage area.

1.4.7 Bulk

(Australia) Dangerous goods which are not in packagings (see Clause 1.4.26).

(New Zealand)

- (a) Dangerous goods in the form of a gas, in a container in an undivided quantity exceeding 250 L;
- (b) Dangerous goods in the form of a liquid, in a container in an undivided quantity exceeding 450 L; or
- (c) Dangerous goods in the form of solids, in a container in an undivided quantity exceeding 400 kg.

1.4.8 Bund

An embankment or wall which may form part or all of the perimeter of a compound.

1.4.9 Class

(Australia) The number assigned to dangerous goods which exhibit a common single or most significant risk, as determined from the criteria given in the UN *Manual of Tests and Criteria*, and listed in the ADG Code.

(New Zealand) The groupings, numbered from 1 to 9, into which dangerous goods are assigned on the basis of a common single or most significant hazard, as specified in the following documents and described briefly in Table A of NZS 5433:

- (a) *New Zealand Standard 5433:1999, Transport of dangerous goods on land*;
- (b) *United Nations Recommendations on the Transport of Dangerous Goods*;
- (c) *International Maritime Dangerous Goods Code*;
- (d) *Technical Instructions for Safe Transport of Dangerous Goods by Air* of the International Civil Aviation Organisation; or
- (e) *Dangerous Goods Regulations* of the International Air Transport Association; and

Reference to a class includes all divisions of that class.

1.4.10 Combustible liquid

Any liquid, other than a flammable liquid, that has a flash point, and has a fire point less than its boiling point.

1.4.11 Combustible materials

Materials deemed to be combustible when tested in accordance with AS 1530.1 (NZS/AS 1530.1).

1.4.12 Compound

An area bounded by natural ground contours, or by a bund, and intended to retain spillage or leakage.

NOTE: A containment vessel, pit or tank may be used for this purpose.

1.4.13 Confined space

A space of any volume as defined by AS 2865.

1.4.14 Container

Anything in which dangerous goods are wholly or partly encased, covered, enclosed, contained or packed, whether such a thing is empty or partially or completely full, but does not include a vehicle or freight container.

1.4.15 Dangerous goods

(Australia) Substances and articles that—

- (a) satisfy the UN tests and criteria for determining whether they are dangerous goods;
- (b) are listed in the ADG Code; or
- (c) are determined to be dangerous goods by the competent authority under Regulation 2.5 of the *Road Transport Reform (Dangerous Goods) Regulations*.

(New Zealand) Substances having properties described in Table A of NZS 5433:1999, and includes packaging and empty containers that have not been cleaned after containing dangerous goods.

NOTE: UN tests and criteria are specified in the UN *Manual of Tests and Criteria* and the UN *Recommendations on the Transport of Dangerous Goods—Model Regulations*.

1.4.16 Decant

To pour from one container to another.

1.4.17 Dwelling

A place of residence or abode.

1.4.18 Fire resistance level (FRL)/fire resistance rating (FRR)

The grading period, in minutes, determined in accordance with AS 1530.4 (NZS/AS 1530.4) for—

- (a) structural adequacy;
- (b) integrity; and
- (c) insulation;

and expressed in that order (e.g. 60/60/30).

NOTE: Where an FRR/FRL is required, reference should be made to the *Building Code of Australia* (BCA) or the *New Zealand Building Code* (NZBC) for guidance.

In New Zealand the term ‘fire resistance rating (FRR)’ is used, and has the same meaning as ‘fire resistance level (FRL).’

1.4.19 Ignition source

A source of energy sufficient to ignite a flammable atmosphere. Ignition sources can include naked flames, hot surface, exposed incandescent material, electrical welding arcs, mechanical or static sparks, hot particles, electrical discharge, and electrical or mechanical equipment not approved for use in hazardous locations.

1.4.20 Incompatible

Having the ability to react or combine with one another in a manner that could increase the hazard of an individual substance, or that could cause the deterioration of the container or substance and increase the hazards presented by them, or that could increase the hazards in a fire. The term ‘incompatible’ can be applied to the substances being stored and to their containers.

1.4.21 Intermediate bulk container (IBC)

A rigid or flexible portable container for the transport of dangerous goods that —

- (a) has a capacity of not more than—
 - (i) for solids or liquids or Packing Groups II and III, 3 m³ or 3 000 L;
 - (ii) for solids of Packing Group I in a composite, fibreboard, plastics or wooden container, 1.5 m³; and
 - (iii) for solids of Packing Group I in a metal container, 3 m³;
- (b) is designed for mechanical handling;
- (c) is resistant to the stresses produced in usual handling and transport; and
- (d) complies with the UN *Recommendations on the Transport of Dangerous Goods—Model Regulations*.

NOTE: *Specifications for Intermediate Bulk Containers for the Transport of Dangerous Goods* is published as a supplement to the ADG Code.

For the purposes of this Standard, the capacity of an IBC is limited to 1.5 m³.

1.4.22 Material safety data sheet (MSDS)

A document which provides information on the identification, health hazards, precautions for use and safe handling of a specific chemical product, and which complies with, in Australia, NOHSC:2011 or, in New Zealand, OSH *Guidelines for the preparation of material safety data sheets*.

1.4.23 May

Use of the term ‘may’ indicates the existence of an option.

1.4.24 Non-combustible

Material that does not support combustion or is deemed to be non-combustible when tested in accordance with AS 1530.1 (NZS/AS 1530.1).

NOTE: For the purposes of this Standard, hardwood is deemed to be non-combustible.

1.4.25 Package

(Australia) The complete product of the packing of the goods, consisting of the packaging and its contents prepared for transport.

(New Zealand) A substance and the packaging in which it is contained.

1.4.26 Packaging

(Australia) A receptacle and any other components or materials necessary for the receptacle to perform its containment function, and—

- (a) in relation to dangerous goods of Class 2, a container having a capacity not exceeding 500 L; and
- (b) in relation to dangerous goods of any other class, a container having a capacity not exceeding 450 L and having a net mass of not more than 400 kg.

(New Zealand) Any receptacle, container or other material in which a substance may be encased, covered, enclosed, contained or packed, which performs part of the containment function; but does not include a freight container, a skip, a vehicle, a pallet or other article of transport equipment.

1.4.27 Packing Group

(Australia) One of three hazard groups to which dangerous goods (of Classes other than 1, 2, 6.2 and 7) are assigned in the ADG Code, in decreasing order of hazard, by the Roman numerals 'I' (high danger), 'II' (medium danger) and 'III' (low danger).

(New Zealand) One of three hazard groups into which dangerous goods of Class or Division 3, 4, 5.1, 6.1, 8 and 9 are divided for packaging purposes, and that are ranked in a decreasing order of hazard; Packing Group 'I' (high danger), Packing Group 'II' (medium danger) and Packing Group 'III' (low danger).

NOTE: The UN *Manual of Tests and Criteria* provides criteria for the assignment of Packing Groups. A list of those already assigned is given in the ADG Code/NZS 5433. Criteria for assigning Packing Groups is given in the ADG Code.

1.4.28 Pipework

An assembly of pipes, hoses, valves, fittings and associated appliances.

1.4.29 Port area

The land and sea area established by legislation.

NOTE: Some port areas may overlap and legal requirements should take account of this possibility.

1.4.30 Practicable

Practical with regard to—

- (a) the severity of the hazard or risk in question;
- (b) the state of knowledge about that hazard or risk and any ways of removing or mitigating that risk;
- (c) the availability and suitability of ways to remove or mitigate that risk; and
- (d) the cost of removing or mitigating that hazard or risk.

1.4.31 Premises

The area under the control of the occupier.

1.4.32 Protected place

The term includes—

- (a) a dwelling, place of worship, public building, school or college, child-care facility, hospital, theatre, or any building or open area in which people are accustomed to assemble, whether within or outside the property boundary of the premises;
- (b) a factory, workshop, office, store, warehouse, shop, or building where people are employed that is outside the property boundary of the installation;
- (c) a ship lying at permanent berthing facilities; or
- (d) any storage facility for dangerous goods that is outside the property boundary of the installation.

1.4.33 Screen wall

A structurally sound wall that—

- (a) is impervious to liquid or vapour;
- (b) is constructed of materials that are substantially resistant to attack by the dangerous goods being stored; and
- (c) may act as a shield or deflection barrier.

1.4.34 Segregated

Isolated from each other within the store.

1.4.35 Separated

Isolated by a given minimum distance.

1.4.36 Shall

Use of the term 'shall' indicates that a statement is mandatory.

1.4.37 Should

Use of the term 'should' indicates a recommendation.

1.4.38 Supplier

An importer, manufacturer, wholesaler or distributor, but not a retail distribution centre or retail outlet.

1.4.39 Tank

A container, other than an IBC, having a capacity greater than 450 L.

1.4.40 UN Number

(Australia) The four digit substance identification serial number assigned to dangerous goods by the United Nations Committee of Experts on the Transport of Dangerous Goods and listed for each substance in the ADG Code.

(New Zealand) The identification number assigned to dangerous goods by the United Nations Committee of Experts on the Transport of Dangerous Goods and as published in the latest edition of—

- (a) *New Zealand Standard 5433:1999, Transport of dangerous goods on land*; or
- (b) *United Nations Recommendations on the Transport of Dangerous Goods*; or
- (c) *International Maritime Dangerous Goods Code*; or
- (d) *Technical Instructions for the Safe Transport of Dangerous Goods by Air* of the International Civil Aviation Organisation; or
- (e) *Dangerous Goods Regulations* of the International Air Transport Association.

1.4.41 Work permit

A written document that specifies the conditions under which work in a restricted area may be carried out.

1.5 PACKAGING

Where packaged dangerous goods or articles are to be transported, their packaging shall comply with the ADG Code/NZS 5433.

Where the packaging is only for use at the premises at which it is filled, it shall be constructed—

- (a) with sufficient strength and durability for its proposed service; and
- (b) such that all components of the packaging that may come into direct contact with the contents are compatible with the contents.

1.6 MARKING OF PACKAGES

Packages containing dangerous goods or articles shall be marked in accordance with the appropriate Australian State or Territory or New Zealand legislation.

NOTE: In Australia, labelling in compliance with the ADG Code, NOHSC: 2012 and the SUSDP may be required under such legislation.

1.7 SECURITY OF STORAGE AREAS

All storage areas shall be appropriately secured against access by unauthorized persons at all times.

SECTION 2 MINOR STORAGE

(Australia only)

2.1 SCOPE OF SECTION

This Section specifies the criteria for 'minor storage' of Class 9 dangerous goods and articles, and the requirements for such storage.

NOTES:

- 1 The underlying concept of this Section is that, if quantities below a certain level are so small, or are so scattered and separated, then they may present a lower hazard, add little to a building's fire load, and are generally unlikely to play a significant part in spreading a fire. The firefighting facilities required under normal building regulations are expected to cope adequately.
- 2 Workplace safety regulations and guidelines may apply even to quantities defined as 'minor storage.'

2.2 CRITERIA FOR CLASSIFICATION AS MINOR STORAGE

The storage of Class 9 dangerous goods and articles, in quantities less than or equal to those given in Table 2.1, is classified as minor storage. The requirements below apply:

NOTE: For the purposes of this Section, dangerous goods and articles of Class 9 have been assigned to one of five storage groups in Table 2.1.

- (a) The quantity of Class 9 dangerous goods and articles stored shall not exceed one minor storage per 500 m² floor or ground area. Where the area exceeds 500 m², minor storages shall be at least 10 m apart.
- (b) A minor storage of Group 3 (see Table 2.1) shall be separated by at least 20 m from any other storage of elevated temperature dangerous goods.
- (c) Class 9 dangerous goods of Groups 1, 2 and 5 (see Table 2.1) may be kept together in the one minor storage. In such cases, the aggregate quantity shall not exceed 1000 kg or L, including not more than 100 kg or L of Class 9 PG I dangerous goods.
- (d) Up to 10% of the quantities in Table 2.1 may be kept at residential premises, with a maximum aggregate quantity of 250 kg or L.

2.3 GENERAL STORAGE CONDITIONS FOR MINOR STORAGE

The following requirements apply to minor storage of Class 9 dangerous goods and articles:

- (a) The appropriate special storage conditions set out in Clauses 2.4 to 2.9 apply in addition to these requirements.
- (b) Stores (other than those containing elevated temperature substances) shall be away from heat sources or naked flames.
- (c) Adequate natural or mechanical ventilation shall be provided, appropriate to the type of goods and the nature of the operation.
- (d) Containers shall be kept closed when not in use.
- (e) Packages shall only be opened in a well-ventilated area.
- (f) The method of storage and types of containers used shall be such as to avoid leakage or spillage.

- (g) Appropriate spillage retention measures shall be provided where packages are opened or goods are transferred.
- (h) Equipment containing dangerous goods listed in Group 3 of Table 2.1 shall not be modified or the dangerous goods tampered with or removed from the equipment. Batteries may be charged or replaced in accordance with the manufacturer's instructions.
- (i) The dangerous goods shall be transferred to their point of use in a safe manner.
- (j) Any leaks or spills shall be cleaned up as soon as practicable and disposed of safely. Clean-up materials and personal protective equipment shall be provided for such tasks.
- (k) Persons handling the dangerous goods shall be fully informed of the hazards involved. Appropriate training in the handling of the dangerous goods shall be provided.
- (l) Stores shall be kept clear of combustible matter and refuse.
- (m) Appropriate personal protective equipment shall be provided.
- (n) Personnel involved in transfer and clean-up operations shall wear appropriate personal protective equipment.
- (o) Where appropriate, a supply of water shall be available at a nearby location, for personal hygiene.
- (p) Except at domestic premises, a suitable fire extinguisher shall be provided in the vicinity of each minor storage and shall be accessible under all reasonable circumstances.
- (q) Unauthorized persons shall be prevented from approaching within 5 m of stores of elevated temperature substances.

2.4 SPECIAL STORAGE CONDITIONS FOR EQUIPMENT CONTAINING EXPLOSIVE AND PYROTECHNIC DEVICES (UN 2990, UN 3072 AND UN 3268)

The following storage conditions apply to the minor storage of equipment containing explosive devices:

- (a) Equipment containing explosive devices, e.g. distress flares, shall be kept locked in a secure store.
- (b) Explosive and pyrotechnic devices shall not be removed from equipment and stored separately.

2.5 SPECIAL STORAGE CONDITIONS FOR ELEVATED TEMPERATURE LIQUIDS (UN 3257) AND ELEVATED TEMPERATURE SOLIDS (UN 3258)

The effects of heat radiation on the surrounding area need to be considered, as follows:

- (a) Heat protection shall be provided to persons, other dangerous goods, combustible materials, gas cylinders, pressure equipment or other goods or equipment that might be affected by heat exposure.
- (b) Unless effective heat shielding is used, a separation distance of at least 3 m shall be provided. Greater distances (of up to 15 m) should be considered.

Provision shall be made to safely contain any spillages of elevated temperature liquids, e.g. by kerbing or bunding.

2.6 SPECIAL STORAGE CONDITIONS FOR POLYCHLORINATED BIPHENYLS (PCBs) (UN 2315) AND ASBESTOS (UN 2212 OR UN 2590)

In most countries, States and Territories, special legislative and regulatory requirements apply to the storage and handling of these substances.

NOTES:

- 1 If they do not show signs of leakage, small items containing PCBs (e.g. capacitors from fluorescent lights) may be removed from equipment and kept in appropriately marked and secured containers.
- 2 Inhalation of asbestos fibres or skin contact or ingestion of PCBs can cause serious illness.

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TABLE 2.1
MAXIMUM QUANTITIES OF CLASS 9 DANGEROUS GOODS AND
ARTICLES PERMISSIBLE AS MINOR STORAGE

Type of Class 9 dangerous goods	Maximum quantity kg or L	Maximum quantity PG I kg or L	Special storage condition
<i>Group 1: Environmentally hazardous substances</i>			
UN 3077 (solids) and/or			
UN 3082 (liquids)	1 000	100	N/A
Agricultural chemicals only (see Notes)	10 000	1 000	N/A
<i>Group 2: Equipment containing small quantities of dangerous goods</i>			Clause 2.4
UN 2990 and UN 3072, Life saving appliances			
UN 3091, Lithium batteries or equipment			
UN 3268, Air bag inflators			
UN 3316, Chemical or first aid kit	No limit	No limit	
<i>Group 3: Elevated temperature substances</i>			Clause 2.5
UN 3257 (liquids)	100	N/A	
UN 3258 (solids)	1 000	N/A	
<i>Group 4: Specially controlled substances</i>			
UN 2212 or 2590 Asbestos	Not permitted	N/A	Clause 2.6
UN 2315, Polychlorinated biphenyls	Small items only (capacitors, etc)	N/A	Clause 2.6
<i>Group 5: Other Class 9 dangerous goods</i>	1 000	100	
UN 1845, Solid carbon dioxide (dry ice)			Clause 2.7
UN 2071, Ammonium nitrate fertilizer, N.O.S.			Clause 2.8
UN 2211, Polymeric beads, expandable			Clause 2.9
UN 3314, Plastics moulding compound			Clause 2.9

NOTES:

- 1 For substances of Group 1, only one minor storage exceeding 1000 L or kg is permitted on any one site.
- 2 This quantity of agricultural chemicals shall only be kept —
 - (a) in packages or IBCs not exceeding 1500 L each; and
 - (b) at distributors, retailers or end users (such as aerial spray operators) where appropriate, documented staff training and storage management systems are in place.

2.7 SPECIAL STORAGE CONDITIONS FOR CARBON DIOXIDE, SOLID (DRY ICE) (UN 1845)

The following requirements apply:

- (a) Solid carbon dioxide (dry ice) liberates asphyxiating gas, so all rooms and enclosed spaces shall have effective ventilation.
- (b) Dry ice shall not be handled with bare hands, as it can burn the skin.

2.8 SPECIAL STORAGE CONDITIONS FOR AMMONIUM NITRATE FERTILIZER (UN 2071)

Ammonium nitrate fertilizer shall not be kept next to combustible material or any other incompatible substance where there is any risk of interaction, e.g. next to petrol, diesel, oil, hay, sulfur, charcoal, chlorates or any type of dry pool chlorine.

2.9 SPECIAL STORAGE CONDITIONS FOR POLYMERIC BEADS (UN 2211) AND PLASTICS MOULDING MATERIAL (UN 3314)

Both of these substances liberate flammable vapours. Unless packaged in closed bags or drums, they should be kept in well ventilated areas. These substances should be kept at least 3 m from ignition sources such as electrical equipment.

SECTION 3 LOCATION, DESIGN AND CONSTRUCTION OF PACKAGE STORES

3.1 SCOPE OF SECTION

This Section sets out requirements and recommendations for the location, design and construction of package stores for Class 9 dangerous goods and articles.

3.2 PLANNING

3.2.1 Types of store

A store for packaged Class 9 dangerous goods and articles may be one or a combination of the following:

- (a) A room, enclosure or area within a building.
- (b) A roofed structure or room, attached to an external wall of a building.
- (c) A free-standing, roofed structure or building.
- (d) A storage cabinet.
- (e) An outdoor storage area which is secured against unauthorized access.

3.2.2 Separation distances to boundaries and protected places

3.2.2.1 General

Stores for Class 9 dangerous goods and articles shall be separated from protected places and boundaries by at least 3 m, unless greater distances are specified in Section 5 of this Standard. Separation distances may be achieved by the use of screen walls.

No specific separation distances (other than those required by the BCA/NZBC for normal fire protection) apply to storages of—

- (a) minor storage quantities of Class 9 dangerous goods (unless specified in Section 2);
- (b) UN 2990, life-saving appliances, self-inflating;
- (c) UN 3072, life-saving appliances, not self-inflating;
- (d) UN 3090, lithium batteries;
- (e) UN 3091, lithium batteries contained in equipment or lithium batteries included with equipment;
- (f) UN 3268, air bag inflators, pyrotechnic or air bag modules, pyrotechnic or seat-belt pretensioners, pyrotechnic; or
- (g) UN 3316, chemical kit or first aid kit.

3.2.2.2 Measurement of separation distances

Separation distances shall be measured in a horizontal plane—

- (a) in the case of liquids, if a bund is provided, from the top inside perimeter of the bund wall, otherwise from the nearest package; or
- (b) in the case of solids, from the nearest package.

Separation distances may be measured around a screen wall, provided that—

- (i) the wall extends above the highest container in the store; and
- (ii) the wall is marked to indicate the maximum permissible storage height.

Such a screen wall shall have an FRL/FRR of at least 60/60/60.

NOTE: Where an FRL/FRR is specified, reference should be made to the BCA/NZBC.

If the FRL/FRR cannot be achieved, the wall shall—

- (A) be at least 1 m higher than the goods stored, but not higher than 2.5 m;
- (B) be made of solid masonry or concrete at least 100 mm thick; and
- (C) have piers or other supports at least every 3 m along its length.

3.3 DESIGN AND CONSTRUCTION REQUIREMENTS FOR PACKAGE STORES

3.3.1 General

The following requirements apply in addition to those of the BCA/NZBC:

- (a) Stores shall be designed and constructed so that the housekeeping requirements of Clause 5.2 can be carried out effectively.
- (b) Main structural members, floors, and wall and roof sheeting, shall be non-combustible and resistant to attack by the goods being stored.
- (c) Floors shall be designed and constructed so that, in a fire, any molten chemicals are safely diverted to a suitable area for disposal.
- (d) All electrical wiring and lighting shall conform to AS/NZS 3000.
- (e) Any shelving shall be designed and installed so that residues cannot build up along ledges or in corners, and any spillage can be readily noticed and cleaned up.
- (f) Where racking systems are installed, their layout shall allow for clear passage of personnel.
- (g) Storage areas shall be secured against unauthorized entry at all times.
- (h) Where appropriate, a supply of water shall be available at a nearby location, for personal hygiene (see also Clause 3.3.5).
- (i) Exits shall be provided in accordance with the BCA/NZBC.

3.3.2 Lighting

During the hours of operation, lighting shall be sufficient to provide—

- (a) safe working conditions; and
- (b) clear visibility of all signs, labels, instruments and other necessary items.

3.3.3 Ventilation

Whenever people are in the storage area, the following ventilation requirements apply:

- (a) Adequate natural or mechanical ventilation shall be provided.
NOTE: This will depend on the nature of the goods being stored.
- (b) Where mechanical ventilation is provided, it shall comply with AS 1668.2/NZS 4303, or AS 1940 where vapours could be present in flammable concentrations.

3.3.4 Spillage containment for package stores

Where liquids are to be stored, spillage containment shall be provided. This may be achieved by using a bund or by having a means of diverting a spill into a compound within the premises, e.g. by installing spoon drains or sloping floors.