

# Australian Dangerous Goods Code Comprehensive Review

Working group paper #10



## Special provisions and conditions of carriage, loading, unloading and handling

February 2024

# Report outline

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<b>Title</b>	Australian Dangerous Goods Code Comprehensive Review – Special provisions (Chapter 3.3) and conditions of carriage, loading, unloading and handling (Part 7).
<b>Type of report</b>	Discussion paper
<b>Purpose</b>	For public consultation
<b>Abstract</b>	<p>In November 2020, transport and infrastructure ministers approved the NTC’s recommendation to conduct a comprehensive review of the Australian Code for the Transport of Dangerous Goods by Road and Rail (the Code).</p> <p>This paper is the tenth of a series of topic specific discussion papers. This paper should be read in conjunction with Part 3, Part 7.</p>
<b>Submission details</b>	<p>The NTC will accept submissions until 22 April 2024 online at <a href="http://www.ntc.gov.au">www.ntc.gov.au</a> or by email to: <a href="mailto:dkirk@ntc.gov.au">dkirk@ntc.gov.au</a></p>
<b>Attribution</b>	<p>This work should be attributed as follows, Source: National Transport Commission, Special provisions and conditions of carriage, loading, unloading and handling, discussion paper #10.</p> <p>If you have adapted, modified or transformed this work in anyway, please use the following, Source: based on National Transport Commission, Special provisions and conditions of carriage, loading, unloading and handling, discussion paper #10.</p>
<b>Key words</b>	Dangerous goods, ADG Code review, ADR, special provisions, carriage, loading, unloading handling, segregation devices, load restraint, compatibility, AU01
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# Have your say

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## What to submit

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This paper is the tenth of a series of topic specific discussion papers relating to the comprehensive review of the Australian Code for the Transport of Dangerous Goods by Road and Rail.

The paper examines the special provisions assigned to specific dangerous goods in Chapter 3.3 and conditions for carriage, loading, unloading and handling of certain classes or specific dangerous goods. The paper includes requirements related to incompatibility, segregation and stowage.

We are seeking stakeholder views on the consultation questions in the Executive summary and throughout the document. We are also interested in any additional information submitters could provide to support their views.

## When to submit

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We are seeking submissions on this issues paper by 22 April 2024.

## How to submit

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Any individual or organisation can make a submission to the NTC.

### Making a submission

 Visit [www.ntc.gov.au](https://www.ntc.gov.au) and select 'Engage NTC' on the homepage.

Or

 Email your submission to [dkirk@ntc.gov.au](mailto:dkirk@ntc.gov.au)

Where possible, you should provide evidence, such as data and documents, to support the views in your submission.

### Publishing your submission

Unless you clearly ask us not to, we publish all the submissions we receive online. We will not publish submissions that contain defamatory or offensive content.

A deidentified list of responses to specific questions, and how these have been considered in the final drafts will be made publicly available.

The *Freedom of Information Act 1982* (Cwlth) applies to the NTC.

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# Purpose of this paper

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The National Transport Commission (NTC) is conducting a comprehensive review of the Australian Code for the Transport of Dangerous Goods by Road & Rail (the Code).

In conducting the review, the NTC will seek to achieve greater alignment with the internationally recognised land mode-specific requirements contained in the Agreement for the International Transport of Dangerous Goods by Road (ADR) and the Agreement for the International Transport of Dangerous Goods by Rail (RID).

The review is focused on outcomes that serve the best interest of all parties involved in the transport of dangerous goods. This includes those parties on which the requirements are imposed, those who regulate and administer the requirements, and those who must maintain them.

This paper is the tenth of a series of topic specific discussion papers. This paper should be read in conjunction with the following sections of the draft code:

- Part 3 – Dangerous goods list, special provisions and exemptions related to limited and excepted quantities.
- Part 7 – Provisions concerning the conditions of carriage, loading, unloading and handling.

The purpose of this discussion paper is to examine the special provisions assigned to specific dangerous goods in chapter 3.3 and the provisions for safe carriage, loading, unloading and handling of dangerous goods. In particular, it examines:

- special provisions originating from the UN MR that are redundant or incomplete
- land mode specific special provisions
- unique Australian special provisions introduced over time to address gaps in the code
- requirements for specific vehicle types or other conditions for safe carriage, such as stowage
- incompatibility and segregation requirements, including specifications for segregation devices
- requirements for safe handling of certain classes or specific dangerous goods.

This paper relates to:

the Code – Part No.	<input checked="" type="checkbox"/>	Working group	<input type="checkbox"/>	Discrete issue	<input type="checkbox"/>
Chapter 3.3 – Special provisions applicable to certain articles or substances  Part 7 – Provisions concerning the conditions of carriage, loading, unloading and handling					



# Executive summary

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Chapter 3.3 and Part 7 of the code contain special provisions applicable to specific dangerous goods or classes of dangerous goods to provide for their safe transport. These provisions provide relaxation from requirements for lower risk substances or activities and stricter controls for higher risk substances or activities. Part 7 of the code also contains general provisions for carriage, loading, unloading and handling, such as safe stowage.

The majority of Chapter 3.3 and Part 7 of the draft code are based on the ADR. The exception to this is the compatibility and segregation requirements, which continue to be based on the International Maritime Dangerous Goods Code (IMDG).

## Context

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A full review of the Australian Dangerous Goods Code (the Code) has not been conducted for over a decade.

The Code is applicable across Australia, and adherence to it by all relevant parties ensures specific risks posed through transport of dangerous goods by land are effectively managed.

In 2020, transport and infrastructure ministers agreed for the NTC to conduct a full review of the Code. The NTC's responsibility for the Code's content and stakeholder engagement over several years, highlighted that the road and rail specific requirements of the Code in particular, do not fully support the smooth and safe movement of dangerous goods across borders and transport modes.

The purpose of the review, therefore, is to ensure that the Code is reflective of the Australian transport environment, draws upon road and rail mode specific concepts used elsewhere in the world where appropriate, and considers inclusion of explosives as regulated dangerous goods under the Code's requirements.

Given the scale of the review, the content of the code has been broken into a series of topics. This paper focuses on the special provisions in chapter 3.3 and the provisions concerning the carriage, loading, unloading and handling in part 7 of the draft code.

## Themes

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### Chapter 2 - Context

This chapter discusses Australia's current lack of a systematic or consistent process for incorporating the UN MR amendments into the ADG Code in a way that ensures they are fully implemented and supported for land transport. This lack of a systematic approach has resulted in significant gaps in the current code.

The development of provisions specific to land transport ensures that controls are proportionate to the risk and appropriate for road or rail transport.

The additional of land mode specific provisions closes significant gaps and implements the UN MR for transport by road or rail.

Provisions applicable to different activities in the transport chain have been restructured in to more logical groupings, resulting in easier navigation of the code and identification of provisions relevant to the task being undertaken.

### **Chapter 3 – Special provisions applicable to certain articles or substances**

This chapter examines the UN MR special provisions. It provides an overview of special provisions that are now redundant or require supplement provisions for them to function as intended in a land mode setting.

The draft code supplements the special provisions derived from the UN MR with the road and rail mode-specific special provisions from the ADR and RID. These additional special provisions include special provisions that:

- Assist in assigning the correct entry in the dangerous goods list, or provide additional information;
- provide full or partial exemption from the requirements of the code, with or without conditions;
- prohibit the carriage of specific substances;
- add additional requirements or restrictions;
- provide detailed transport conditions that replace the requirement for competent authority (CA) intervention before transport can occur;
- enable compliance.

### **Chapter 4 – Provisions concerning the carriage, loading, unloading and handling of certain classes or specific dangerous goods**

This chapter discusses the draft provisions related to permitted vehicle types, stowage, load restraint and segregation, along with specific conditions for carriage in packages, carriage in bulk containers, carriage in tanks and conditions for loading, unloading and handling of certain substances. These provisions are all contained in Part 7 of the draft code.

Many of these are updated versions of existing provisions. Grouping these provisions together provides a single location for duty holders conducting tasks associated with choosing and loading a vehicle ready for carriage, easy identification of the applicable requirements. Part 7 of the code is a logical place that aligns with the transport process.

### **Chapter 5 – Segregation devices for dangerous goods**

Segregation devices are uniquely Australian. This chapter discusses inconsistencies and problems with the current design and performance standards for segregation devices. The draft code addresses these inconsistencies and provides an updated and rationalised set of design and performance standards, as well as specifying approval requirements.

## **Next steps**

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Consultation on this issues paper will close on 22 April 2024.

Submissions received will help inform how classification codes and information may be redrafted in the code.

Opportunities to comment on other provisions in the code will be provided over the next few months. A complete draft code will be released for public comment in August 2024.



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# 1 About this project

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## Key points

- In November 2020, transport and infrastructure ministers approved the NTC's recommendation to conduct a comprehensive review of the Australian Code for the Transport of Dangerous Goods by Road and Rail (the Code).
- Mode-specific requirements of the current code consist of a repository of often disjointed, contradictory requirements that fall apart when closely examined.
- The review seeks to better align Australia with international practices as set out in the ADR and RID.
- The review will focus on outcomes that serve the best interest of all parties involved in the transport of dangerous goods.
- Given the scale of the review, the content of the code has been broken into a series of topics, each allocated to a topic specific working group.

## 1.1 Project objectives

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In November 2020, transport and infrastructure ministers approved the NTC's recommendation to conduct a comprehensive review of the Australian Code for the Transport of Dangerous Goods by Road and Rail (the Code). Ministers also supported the proposal to incorporate into the Code principles from both:

- the Agreement for the International Transport of Dangerous Goods by Road (ADR)
- the Agreement for the International Transport of Dangerous Goods by Rail (RID).

The ADR and RID are used extensively throughout Europe, Africa and Asia. As with the Australian code, both the ADR and RID are based on the United Nations Recommendations on the Transport of Dangerous Goods - Model Regulations (UN Model Regulations). In general, the requirements of the ADR and RID are the same. They only differ where requirements need to apply specifically to either road transport or rail transport.

Stakeholder feedback over the years and a literature review of relevant materials suggests that the mode-specific requirements of the current code consist of a repository of often disjointed, contradictory requirements that fall apart when closely examined. In many instances, there was no supporting evidence or data for their introduction and there is no evidence that they have contributed to safer outcomes. The lack of consistency and cohesiveness in these requirements coupled with a lack of a framework for maintaining the mode-specific requirements results in a continuing cycle of ad-hoc, random amendments without consideration of the consequential inconsistencies or contradictions.

### Goal of the review

The goal of the review is to deliver a code that:

- addresses the specific risks of transport by land, while also recognising any risks unique to the Australian transport environment
- remains contemporary

- is aligned to international practices that support the smooth and safe movement of dangerous goods across borders and transport modes.

The review is focused on outcomes that serve the best interest of all parties involved in the transport of dangerous goods. This includes:

- parties that must meet the requirements
- parties that regulate and administer the requirements
- parties that must maintain the requirements.

The aim of the review is to deliver more than just a cohesive and contemporaneous code. We also aim to deliver a framework for making sure the Code remains up to date and aligned with international standards.

## 1.2 Background

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In 2020, the NTC released an issues paper on the land transport of dangerous goods. The paper focused on the legislative framework that supports the dangerous goods code. However, the responses we received highlighted several problems with the code itself.

A major concern raised in submissions centred on the Australia-specific chapters of the current code. The biennial maintenance cycle of the Code, which keeps it aligned to the UN Model Regulations, is appreciated. However, many submissions noted the Australia-specific chapters have not been reviewed or revised. Many of these chapters were carried over from the sixth edition of the Code (ADG 6), either in full or in part, without examination. They have not been critically reviewed for over 15 years and are now outdated. In the case of some requirements, no evidence base, or justification can be found to support their original introduction.

Industry and regulators also noted the Australian Explosives Code is outdated and has no responsible agency. They expressed a strong preference for the dangerous goods code to be expanded to include Class 1 Explosives, and for the Australian Explosives Code to be made obsolete.

After analysing the submissions received, the NTC made recommendations to infrastructure and transport ministers. All recommendations were endorsed, including the following:

### **Recommendation 4:**

Conduct a full review of the Australian Dangerous Goods Code to update outdated chapters, identify and correct translation errors, incorporate relevant ADR concepts and incorporate requirements for Class 1 and Division 6.2. Note: the technical requirements for Class 1 and Division 6.2 will be incorporated into the [ADG] Code but the legal requirements will not be incorporated into the regulations.

## 1.3 Approach

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A set of Review Principles has been developed to guide the review and give it the best chance of delivering the right outcome. These principles were developed with regard to the following key considerations:

- Impacts and benefits

- stakeholder engagement
- maintaining currency of the Code and associated model laws.

Given the scale of the review, the content of the code has been broken into a series of topics, each allocated to a topic specific working group.

This discussion paper deals specifically with Part 4 of the code, which contains the provisions relating to packing and tank provisions.

Previous consultation papers for this review include:

- Classification of dangerous goods – Working group paper #1, January 2023
- Dangerous Goods List – UN entries – Working group paper #2, February 2023
- Tank provisions in ADR – Terminology – Supplementary paper #S1, March 2023
- Approval of tanks, bulk containers and vehicles – Working group paper #3, March 2024
- Safety equipment for dangerous goods transport – Working group paper #4, May 2023
- Fire extinguishers for dangerous goods transport – Working group paper #5, May 2023
- Part 5 – Consignment procedures – Working group paper #6, June 2023
- Vehicles for dangerous goods transport – Working group paper #7, August 2023
- Tank and bulk container provisions for dangerous goods transport – Working group paper #8, August 2023
- Part 4 – Packaging and tank provisions – Working group paper #9, November 2023



## 2 Context of issue

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### Key points

- Australia has not had a systematic or consistent process for incorporating the UN MR amendments into the ADG Code in a way that ensures they are fully implemented and supported for land transport.
- The development of provisions specific to land transport ensures that controls are proportionate to the risk and appropriate for road or rail transport.
- The addition of land mode specific provisions closes significant gaps and implements the UN MR for transport by road or rail.
- The separation of provisions applicable to different activities in the transport chain and restructuring of them into more logical groupings, results in easier navigation of the code and identification of provisions relevant to the task being undertaken.

### Incorporation of UN MR requirements into mode specific codes

The UN Sub-Committee of Experts on the Transport of Dangerous Goods (UN TDG-SC) develop core special provisions for entries in the dangerous goods list (DGL) to specify conditions or concessions applicable to that particular article or substance. The special provisions in the UN MR are non-mode specific, they do not include special provisions relevant to any specific mode of transport. The expectation of the UN TDG-SC is that the bodies responsible for developing mode specific codes or regulations supplement the UN special provisions with special provisions relevant to their mode of transport.

Likewise, the bodies responsible for the mode-specific codes are expected to systematically examine the amendments to the UN MR before incorporating them into their own codes. The aim is to harmonise their own codes or regulations with the UN MR in a way that implements them at the mode level.

The process between the mode-specific bodies and the UN SC is a two-way process. The harmonisation process often identifies issues that require further clarification or amendment to the UN MR. Australia is an active participant for the air and sea mode codes but not for land mode. There is no systematic or consistent process for incorporating the UN MR amendments into the ADG Code in a way that ensures they are fully implemented and supported for land transport.

### Alignment to the logistics process

Restructuring the code to separate provisions associated with the tasks of consigning and preparing the dangerous goods for transport from the tasks associated with selection and preparation of vehicles and the transport activity, aligns the code with the logistics process. This makes navigation of the code easier, helping duty holders and other stakeholders to easily identify the provisions applicable to them.

### Special provisions applicable to specific article or substances

The current ADG Code replicates the special provisions from the UN MR but does not include additional special provisions for transport by road or rail. This leaves a significant gap for road and rail transport in Australia.

The mode specific special provisions are aimed at providing controls that are proportionate to the risks in land mode transport.

### **Structure and content of Part 7 of the current code**

Part 7 of the draft code contains provisions concerning the conditions of carriage, loading, unloading and handling. These provisions are intended to ensure appropriate controls are in place to enable the safe transport of dangerous goods.

Provisions related to permitted vehicle types, stowage, load restraint and segregation, along with specific conditions for carriage in packages, carriage in bulk containers, carriage in tanks and conditions for loading, unloading and handling of certain substances are all contained in Part 7 of the draft code.

Placing these provisions together provides a single location for duty holders conducting tasks associated with choosing and loading a vehicle ready for carriage, easy identification of the applicable requirements.

### **Starting document for the draft Chapter 3.3 and Part 7 of the future code**

The ADR has been used as the starting document for the draft of Chapter 3.3 and Part 7 of the code, that accompanies this discussion paper. The reason for using the ADR as the starting document is that it is more comprehensive and the drafting is cohesive. The current code contains many omissions and errors and lacks cohesion between the individual requirements.

It is much easier to start with a complete and well drafted document, removing unnecessary requirements as required than to start with a document that is deficient and then try to fill the gaps while achieving seamless integration.

Additionally, the body responsible for harmonising the ADR with the UN Model Regulations (WP.15) has developed road specific requirements that implement to UN MR in a land mode setting. Many of the Australianisms in the current code have their genesis in ADR requirements but are outdated and appear in the code in an ad-hoc, random manner.

While the starting document is the ADR, the table of incompatible dangerous goods remains aligned to the International Maritime Dangerous Goods Code (IMDG) Code. The requirements have simply been updated to the current IMDG Code. Australian methodologies for segregating incompatible goods have for the most part been retained. Alignment with the IMDG Code is in keeping with Review Principle 3.

#### **Principle 3:**

The International Maritime Dangerous Goods Code will be the starting point for:

- the table of dangerous goods that must be segregated for transport
- the point at which emergency information must be included on marking and labelling, and placarding.

### 3 Special provisions applicable to certain articles or substances (Chapter 3.3)

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#### Key points

- Special provisions are assigned to UN entries to specify conditions or concessions applicable to specific article or substances.
- The lack of a systematic approach for incorporating UN MR special provisions has resulted in several significant gaps in the current code.
- The draft code contains special provisions sourced from the UN MR, supplemented by special provisions specific to land transport.

Special provisions are assigned to UN entries in the dangerous goods list (DGL) to specify conditions or concessions applicable to that particular article or substance. The assignment of one or more special provisions is indicated by the special provision number(s) in Column 6 of the DGL. The detail for each special is contained in Chapter 3.3 of the Code.

The core special provisions are developed by the UN Sub-Committee of Experts on the Transport of Dangerous Goods (UN TDG-SC), of which Australia is an active member. The special provisions in the UN MR are non-mode specific, they do not include special provisions relevant to any specific mode of transport. The expectation of the UN TDG-SC is that the bodies responsible for developing mode specific codes or regulations supplement the UN special provisions with special provisions relevant to their mode of transport. The IMDG Code, developed by the International Maritime Organisation (IMO), and the ADR and RID, developed by WP.15 all contain additional special provisions. In ADR and RID, these are currently numbered 500 – 676. In the IMDG, they are currently numbered 900 – 976. Due to the specific risks associated with air transport, a different approach has been taken for special provisions, with all special provisions being tailored specifically for air.

The bodies responsible for the mode-specific codes systematically examine the amendments to the UN MR before incorporating them into their own codes. The aim is to harmonise their own codes or regulations with the UN MR in a way that implements them at the mode level. This may result in minor amendments to a special provision developed by the UN TDG-SC but often, it results in the development of additional special provisions or requirements. The process between the mode-specific bodies and the UN SC is a two-way process. The harmonisation process often identifies issues that require further clarification or amendment to the UN MR. Australia is an active participant for the air and sea mode codes but not for land mode. There is no systematic or consistent process for incorporating the UN MR amendments into the ADG Code in a way that ensures they are fully implemented and supported for land transport.

The current ADG Code replicates the special provisions from the UN MR but does not include additional special provisions for transport by road or rail. This leaves a significant gap for road and rail transport in Australia. The current code does include 7 Australian specific special provisions but for the most part, these are not true special provisions and belong elsewhere in the code. These are discussed in greater detail in section 3.3 of this paper.

The draft code replicates the UN special provisions, with minor amendments. It also includes the road and rail mode-specific special provisions from the ADR and RID.

## 3.1 UN Special provisions

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The special provisions in the draft code, that are sourced from the UN MR, remain largely as per the UN MR and the current code. The amendments are generally divided into the following two categories:

- UN special provisions not being carried forward to the draft code.
- UN special provisions with substantive changes.

These are each discussed below.

### 3.1.1 UN special provisions not carried forward

Several special provisions in the current code have not been carried forward to the draft code. These provisions generally fall into the following categories:

- Special provisions relating to transition periods that have now expired;
- special provisions containing requirements relating to classification;
- special provisions assigned to UN numbers that are not regulated for land transport;
- special provisions that contain requirements relating to matters dealt with elsewhere in the code.

#### Expired special provisions

The following special provisions relate to transition periods that have now expired. These special provisions are therefore no longer relevant and have not been carried forward in the draft code.

SP 381 and SP 384,

#### Special provisions relating to classification

The following special provisions contain additional requirements for classification. The content of these special provisions is now contained in Part 2 – Classification. The inclusion in part 2 of the draft code better aligns with the transport process. The changes and reasoning are discussed in detail in Working Group Paper #1 – Classification of dangerous goods. As a result, these special provisions are now redundant and have therefore not been included in the draft code.

SP 63, SP 204, SP 206, SP 223, SP 299 and SP 362

The clearer requirements in part 2 of the draft code resulted in additional entries in the dangerous goods list (DGL). These additional entries enable more specific assignment of classification, special provisions and other requirements. A more detailed discussion on this can be found in Working Group Paper #2 – Dangerous Goods List – UN entries. As a result of the additional UN entries, the following special provisions have not been included in the draft code.

SP 277, SP 232 and SP 341

**Question 1:** Is there a compelling reason that any of the above special provisions should be retained in the future code? Please explain your reasoning.

## **Special provisions assigned to UN numbers that are not regulated for land transport**

The following special provisions are assigned to UN numbers that are not subject to the code. In the draft code, relevant UN entries in the dangerous goods list are clearly marked as “NOT SUBJECT TO THE CODE”. No special provision, packing instructions, etc. are assigned to these entries. A more detailed discussion can be found in Working Group Paper #2 – Dangerous Goods List – UN entries.

Where analysis of the UN entries assigned these special provisions identified that the exemption was not intended to be a total exemption, the conditions and scope of the exemption is detailed in the land specific special provisions.

These special provisions are no longer used and have therefore not been included in the draft code.

SP 106, SP 117, SP 123, SP 146, SP 276, SP 281 and SP 308.

## **Special provisions that contain requirements relating to matters dealt elsewhere in the code**

Some special provisions in the current code contain requirements that apply to how a specific substance is to be packed, or specific conditions for transport.

The draft code is structured to align with the transport process, making it easier for duty holders to locate requirements applicable to the tasks they perform. In keeping with the revised structure and where possible, the content of some special provisions has been relocated to more appropriate sections of the code. Some have been relocated to the assigned packing instruction in part 4 of the code. Others have been relocated to the special provisions for carriage, contained in either part 7 or part 8. Special provisions for carriage are discussed in section 4 of this paper. Requirements in a special provision that relate to classification criteria have been relocated to the relevant section in Part 2.

The following provides a brief overview of each of the impacted special provisions.

### SP 26 – currently assigned to UN Nos. 1222, 1261 and 1865.

SP 26 prohibits the transport in portable tanks, or intermediate bulk containers with a capacity exceeding 450 litres. These prohibitions are already dealt with through the assigned IBC packing instruction and the non-assignment of tank instructions.

### SP 28 – currently assigned to solid desensitised explosives classified as class 4.1.

This special provision contains two different types of requirements. The first being about classification and the second being about how the substance is to be packed.

In the draft code, all of the relevant UN numbers are included in the list in 2.2.41.1.18, addressing the classification requirements in Part 2 of the code. All of the impacted UN numbers are assigned packing instruction P406. P406 requires the substances to be packed to prevent loss of water or alcohol content.

### SP 132 – currently assigned to UN Nos. 2956 and 3251.

SP 132 requires that during transport, the substances isosorbide-5-mononitrate or 5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene) must be protected from direct sunshine and stored (or kept) in a cool and well-ventilated place, away from all sources of heat.

In the draft code, the content of SP 132 is now addressed in the special provisions for carriage, specifically, CV14 and S24.

#### SP 133 – currently assigned to UN 2956.

UN 2956 is assigned packing instruction P409. SP 133 contains directions relating to marking with EXPLOSIVE, if required by a competent authority who has authorised a different packaging method.

When authorising a packing method that is different to the one assigned in the code, competent authority will specify the conditions and any additional marking requirements.

#### SP 195 – currently assigned to UN Nos. 3101, 3102, 3103, 3104, 3111, 3112, 3113 and 3114.

In the current code, SP 195 is assigned to certain organic peroxides. The special provision simply refers to the packing instruction, which in turn points to 2.5.3.2.4.

SP 195 For certain organic peroxide types B or C, a smaller packaging than that allowed by packing methods OP5 or OP6 respectively has to be used (see 4.1.7 and 2.5.3.2.4).

All of the impacted UN numbers are assigned packing instruction P 520. P520 specifies that the special provisions of 4.1.7 must be met. P520 also states that the packing methods are designated OP1 to OP8, and that the packing methods appropriate for the individual currently assigned organic peroxides and self-reactive substances are listed in 2.4.2.3.2.3 and 2.5.3.2.4.

#### SP 246 – currently assigned to UN No 3241

This special provision contains instructions for packing as well as instructions relating to the transport conditions.

SP 246 This substance must be packed in accordance with packing method OP6 (see applicable packing instruction). During transport, it must be protected from direct sunshine and stored (or kept) in a cool and well-ventilated place, away from all sources of heat.

In the draft code, the requirements are addressed in the relevant packing instruction and in CV14, respectively.

#### SP 331 – currently assigned to UN Nos. 3077 and 3082

SP 133 refers to the requirement for marking with the environmentally hazardous mark. In keeping with the alignment of the structure of the future code with the transport process, this requirement is addressed in 5.2.1.8 under marking and labelling.

#### SP 374 – currently assigned to UN No. 3509

Current code

SP 374 This entry may only be used, as authorised by the competent authority, for packagings, large packagings or intermediate bulk containers (IBC), or parts thereof, which have contained dangerous goods, other than radioactive material, which are transported for disposal, recycling or recovery of their material, other than reconditioning, repair, routine maintenance, remanufacturing or reuse, and which have been emptied to the extent that only residues of dangerous goods adhering to the packaging parts are present when they are handed over for transport.



The requirement for authorisation by the competent authority introduces unnecessary time delays and burden on all parties, including competent authorities. It also introduces the potential for inconsistencies in the conditions and restrictions being imposed across the competent authorities.

In the draft code, UN No. 3509 is assigned special provision SP 663, which removes the requirement for competent authority authorisation but limits the scope of UN 3509 and details the specific requirements that apply.

Land mode specific special provisions are discussed in section 3.2 of this paper.

#### SP 391 – assigned to UN Nos. 3537 to 3548

SP 391 Articles containing dangerous goods of Division 2.3, or Division 4.2, or Division 4.3, or Division 5.1, or Division 5.2 or Division 6.1 for substances of inhalation toxicity requiring Packing Group I and articles containing more than one of the hazards listed in 2.0.3.1 (b), (c), or (d) shall be transported under conditions approved by the competent authority.

The intent of the way this is written by the UN is not for a competent authority to approve the conditions for each transport operation, but rather to develop conditions appropriate to their mode of transport. ADR (WP.15) has done this by assigning CV13 and CV28. CV13 specifies requirements for cleaning, disinfection and decontamination of vehicle or containers following a leak or spill of the substance. CV28 requires that the substance be segregated from food.

**Question 2:** Is there a compelling reason that the above special provisions should be retained? Please explain your reasoning.

**Question 3:** If any of the above special provisions are retained, how should the conflict with the associated requirements in the land mode specific special provisions or other parts of the code be resolved?

#### **3.1.2 UN special provisions with substantive changes.**

The following special provisions in the draft code have content that differs from the current code.

##### SP 274 –assigned to UN entries with N.O.S.

SP 274 requires the proper shipping name to be supplemented with the technical name on documentation and on the package. In the draft code, only the following sentence has been retained: 'The provisions of 3.1.2.8 apply.' The rest of SP 274 is addressed in 3.1.2.8. 3.1.2.8 contains detailed information on the selection of the correct technical name.

##### SP 301 – assigned to UN 3363

In the current code, SP 301 contains the following paragraph:

The competent authority may exempt from regulation articles which would otherwise be transported under this entry.

In the draft code, this paragraph has been deleted and replaced with a reference to special provision SP 672.

SP 672 is discussed in more detail in the next section 3.2.6 of this paper.

#### SP 363- assigned to UN Nos. 3528, 3529 and 3530

The wording of SP 363(a) in the current code is as follows:

SP 363 (a) This entry applies to engines or machinery, powered by fuels classified as dangerous goods via internal combustion systems or fuel cells (e.g. combustion engines, generators, compressors, turbines, heating units, etc.), except those which are assigned under UN Nos. 3166 or 3363.

Special provision 363(a) in the draft code has been amended to omit the reference to UN 3363 and to add a qualification for UN 3166. A note has also been added for clarity around the use of the entry.

SP 363 (a) This entry applies to engines or machinery, powered by fuels classified as dangerous goods via internal combustion systems or fuel cells (e.g. combustion engines, generators, compressors, turbines, heating units, etc.), except vehicle equipment assigned to UN No. 3166 referred to in special provision 666.

NOTE: This entry does not apply to equipment referred to in 1.1.3.2 (a), (d) and (e), 1.1.3.3 and 1.1.3.7.

To align with the deletion of UN 3363 from special provision 363(a), SP 363 is not assigned to UN 3363 in the draft code.

Special provision 666 is discussed in section 3.2.6 of this paper.

SP 363 (f) of the current code provides an exemption from the provisions of 2.9.4 and 38.3 of the Manual of Tests and Criteria for pre-production prototype batteries or batteries of a small production run, consisting of not more than 100 batteries, installed in machinery or engines.

In the draft code, this exemption is omitted and replaced with a reference to SP 667.

The last paragraph of SP 363 (f) in the current code specifies that where a lithium battery installed in a machinery or an engine is damaged or defective, the machinery or engine shall be transported as defined by the competent authority.

In the draft code, this paragraph is omitted and replaced by the reference to SP 667.

SP 667 is discussed in section 3.2.5 of this paper.

#### SP 375 – assigned to UN Nos. 3077 and 3082

This special provision exempts inner receptacles and single packagings of UN 3077 and UN 3082 with a maximum capacity of 5kg/l from all aspects of the code, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

In the draft code, the maximum capacity specified in SP 375 been increased to 30 kg/l.

In the current code, SP 375 is essentially replaced by AU 01. This is discussed in further detail in section 3.3 of this paper.

#### SP 388 –assigned to UN Nos. 3161 and 3171

The penultimate paragraph of special provision 388 in the current code contains the following text:

However, lithium batteries shall meet the provisions of 2.9.4, except that 2.9.4 (a) does not apply when pre-production prototype batteries or batteries of a small production run, consisting of not more than 100 batteries, are installed in vehicles or equipment.

In the draft code, this sentence has been replaced with the following:

However, lithium batteries shall meet the provisions of 2.2.9.1.7, except as otherwise provided for in special provision 667.

Item (a) of SP 667 replicates the concessions contained in SP 388 of the current code, resulting in no actual change to the requirement. 2.2.9.1.7 in the draft code is the equivalent of 2.9.4 of the current code.

The last paragraph of SP 388 in the current code specifies that:

Where a lithium battery installed in a vehicle or equipment is damaged or defective, the vehicle or equipment shall be transported as defined by the competent authority.

In the draft code, the requirement for the competent authority to define the transport conditions is replaced by special provision 667. This is discussed in greater detail in the next section of this paper.

SP 392 – assigned to UN Nos. 1002, 1006, 1011, 1013, 1046, 1049, 1056, 1058, 1065, 1066, 1075, 1080, 1952, 1954, 1956, 1965, 1969, 1971, 1972, 1978, 2036, 3070, 3163, 3297, 3298 and 3299

The table of referenced standards and regulations for fuel gas containment systems has been amended to Australia references. The contents of this table will be further reviewed as part of a gas working group.

**Question 4:** Are there any missing or incorrect references that you would like the gas working group to consider? Please provide details.

SP 209 – currently assigned to UN Nos. 3167, 3168 and 3169

SP 209 relates to non-pressurised gas samples. All of which are assigned packing instruction P201. P201 permits the use of combination packages with hermetically sealed inner packagings of glass or metal with a maximum capacity of 1 litre for toxic gases and 5 litres for non-toxic gases.

It's believed that SP 209 is intended for air transport, where there can be a significant change in air pressure.

SP 209 The gas must be at a pressure corresponding to ambient atmospheric pressure at the time the containment system is closed and this must not exceed 105 kPa absolute.

**Question 5:** Are the requirements in SP 209 relevant for land transport? Please provide details.

## 3.2 Special provisions specific to land transport

### Key points

- The draft code implements the UN TDG-SC intent of developing mode-specific requirements that harmonise with and implement the UN MR provisions.
- The land mode special provisions in the draft code are categorised as:
  - Special provisions that assist in assigning the correct entry in the dangerous goods list, or provide additional information.
  - Special provisions that provide full or partial exemption from the requirements of the code, with or without conditions.
  - Special provisions that prohibit the carriage of specific substances.
  - Special provisions that add additional requirements or restrictions.
  - Special provisions that provide detailed transport conditions that replace the requirement for competent authority intervention before transport can occur.
  - Special provisions that enable compliance.

The draft code contains several special provisions that apply specifically to the land transport of dangerous goods. This is in keeping with the expectation of the UN TDG-SC and the approach in the IMDG Code, the ICAO Technical Instructions and the ADR and RID.

It's proposed to replicate the land mode specific special provisions from the ADR and RID in the revised code. These special provisions are numbered 500 – 676. This section contains several questions aimed at identifying any unique transport conditions in Australia that would necessitate a different approach.

### Problem with the current code.

The current ADG Code replicates the special provisions from the UN MR but does not include additional special provisions for transport by road or rail. This leaves a significant gap for road and rail transport in Australia. The current code does include 7 Australian specific special provisions but for the most part, these are not true special provisions and belong elsewhere in the code. Australia specific special provisions are discussed in greater detail in section 3.3 of this paper.

### Draft code

The draft code supplements the special provisions derived from the UN MR with the road and rail mode-specific special provisions from the ADR and RID.

The land mode specific special provisions generally fall into the following categories:

- Special provisions that assist in assigning the correct entry in the dangerous goods list, or provide additional information;

- special provisions that provide full or partial exemption from the requirements of the code, with or without conditions;
- special provisions that prohibit the carriage of specific substances;
- special provisions that add additional requirements or restrictions;
- special provisions that provide detailed transport conditions that replace the requirement for competent authority intervention before transport can occur;
- special provisions that enable compliance.

The following provides a brief overview of the land specific special provisions and the UN entries in the DGL that they are assigned to. To fully understand the special provisions applicable to specific dangerous goods your organisation handles, please refer to the draft of Part 3 of the code and the draft dangerous goods list.

### **3.2.1 Special provisions that assist in assigning the correct entry in the dangerous goods list, or provide additional information**

#### SP 500 to SP 579

These special provisions do not add requirements or provide concessions. They merely assist the duty holder in assigning a substance to the correct entry in the dangerous goods list. They are not true classification provisions and therefore do not fit within Part 2 of the code.

The primary purpose of these special provisions is to help the duty holder identify the correct UN entry, particularly where there is any ambiguity.

#### SP 581 – assigned to UN 1060, SP 582 – assigned to UN 1078 and SP 583 – assigned to UN Nos. 1075 and 1965

Similar to special provisions 500 to 579, special provisions 581, 582 and 583 detail the specific mixtures that are covered by each of the relevant UN numbers.

#### SP 632 – assigned to UN Nos. 2192, 2199 and 2203

SP 632 provides additional information that these gases (germane, phosphine, silane) are considered to be spontaneously flammable (pyrophoric).

#### SP 638 – assigned to UN Nos. 2956, 3241, 3242 and 3251

SP 638 provides a reminder that these substances are classified as Class 4.1 as they are substances related to self-reactive substances in accordance with 2.2.41.1.19.

#### SP 657 – assigned to UN 1011, 1969, 1978

SP 657 provides a reminder that these UN entries are to be used for the technically pure substance only. Mixtures of LPG components, fall under UN No. 1965 or UN No. 1075 in conjunction with NOTE 2 in 2.2.2.3.

#### SP 659 – assigned to UN Nos. 3500, 3501, 3502, 3503, 3504 and 3505

The UN numbers to which special provision 659 is assigned are all chemicals under pressure with N.O.S.

SP 659 Substances to which PP86 or TP7 are assigned in Column (9a) and Column (11) of Table A in Chapter 3.2 and therefore require air to be eliminated

from the vapour space, shall not be used for carriage under this UN number but shall be carried under their respective UN numbers as listed in Table A of Chapter 3.2.

NOTE: See also 2.2.2.1.7.

#### SP 671 – assigned to UN 3316

SP 671 provides guidance on determining the appropriate transport category for chemical kits or first aid kits when calculating the thresholds for small loads.

SP 671 For the purposes of the exemption related to quantities carried per transport unit, wagon or large container (see 1.1.3.6), the transport category shall be determined in relation to the packing group (see paragraph 3 of special provision 251):

- Transport category 3 for kits assigned to packing group III;
- Transport category 2 for kits assigned to packing group II;
- Transport category 1 for kits assigned to packing group I.

Kits containing only dangerous goods to which no packing group is assigned shall be allocated to transport category 2 for completion of transport documents and the exemption related to quantities carried per transport unit (see 1.1.3.6).

A detailed discussion on transport categories and small loads will be the subject of a future working group paper.

**Question 6:** Is there a valid reason these special provisions should not be included in the future code? Please provide your reasoning.

### **3.2.2 Special provisions that provide full or partial exemption from the requirements of the code**

#### SP 584 – assigned to UN 1013, 1074

SP 584 provides a conditional exemption for very small gas cylinders containing carbon dioxide or nitrous oxide.

SP 584 This gas is not subject to the requirements of this Code when:

- It contains not more than 0.5 % air in the gaseous state;
- It is contained in metal capsules (sodors, sparklets) free from defects which may impair their strength;
- The leakproofness of the closure of the capsule is ensured;
- A capsule contains not more than 25 g of this gas;
- A capsule contains not more than 0.75 g of this gas per cm<sup>3</sup> of capacity.

#### SP 586 – assigned to UN Nos. 1326, 1352 and 1358

SP 586 provides a conditional exemption for hafnium, titanium and zirconium powders.

SP 586 Hafnium, titanium and zirconium powders shall contain a visible excess of water. Hafnium, titanium and zirconium powders, wetted, mechanically produced, of a particle size of 53 µm and over, or chemically produced, of a particle size of 840 µm and over, are not subject to the requirements of this Code.



SP 587 – assigned to UN 1564

SP 587 exempts barium stearate and barium titanate from the requirements of the code.

SP 588 – assigned to UN Nos. 1725 and 1726

SP 588 exempts solid hydrated forms of aluminium bromide and aluminium chloride from the requirements of the code.

SP 590 – assigned to UN 1773

SP 590 exempts ferric chloride hexahydrate from the requirements of the code.

SP 591 – assigned to UN 1794

SP 591 exempts lead sulphate with not more than 3 % free acid from the requirements of Class 8 of this Code.

SP 592 – assigned to UN Nos. 1376, 1932, 2002, 2009 and 2793

SP 592 exempts uncleaned empty packagings (including empty IBCs and large packagings), empty tank-vehicles, empty tank-wagons, empty demountable tanks, empty portable tanks, empty tank-containers and empty small containers which have contained these substances, from the requirements of the Code.

SP 593 – assigned to UN Nos. 1913, 1951, 1963, 1970, 1977, 2591, 3136, 3158

SP 593 provides a conditional exemption from the requirements of the code, except as specified in 5.5.3, when these substances are used for cooling goods not fulfilling the criteria of any class, e.g. medical or biological specimens. A condition of the exemption is that the substance must be contained in double wall receptacles which comply with the provisions of packing instruction P203, paragraph (6) for open cryogenic receptacles of 4.1.4.1.

A full excerpt of section 5.5.3 of the future code was contained in Working Group Paper #2.

SP 594 – assigned to UN Nos. 1044 and 3164

SP 594 provides a conditional exemption from the requirements of the code for fire extinguishers of UN 1044 and articles of UN 3164 that are manufactured and filled according to the provisions applied in the country of manufacture. To qualify for the exemption, the fire extinguishers and articles must meet the following conditions, specified in the special provisions.

- (a) UN No. 1044 fire extinguishers provided with protection against inadvertent discharge, when:
  - they are packaged in a strong outer packaging; or
  - they are large fire extinguishers which meet the requirements of special packing provision PP91 of packing instruction P003 in 4.1.4.1;
- (b) UN No. 3164 articles, pressurized pneumatic or hydraulic, designed to withstand stresses greater than the internal gas pressure by virtue of transmission of force, intrinsic strength or construction, when they are packaged in a strong outer packaging.

**NOTE:** "Provisions applied in the country of manufacture" means the provisions applicable in the country of manufacture or those applicable in the country of use.

SP 596 – assigned to UN 2570

SP 596 exempts cadmium pigments, such as cadmium sulphides, cadmium sulposelenides and cadmium salts of higher fatty acids (e.g. cadmium stearate), from the requirements of this Code.

SP 597 – assigned to UN 2790

SP 597 exempts acetic acid solutions with not more than 10 % pure acid by mass, from the requirements of this Code.

SP 598 – assigned to UN Nos. 2794, 2795, 2800 and 3028

SP 598 provides the following exemptions for batteries meeting the relevant UN Numbers:

- (c) New storage batteries when:
  - they are secured in such a way that they cannot slip, fall or be damaged;
  - they are provided with carrying devices, unless they are suitably stacked, e.g. on pallets;
  - there are no dangerous traces of alkalis or acids on the outside;
  - they are protected against short circuits;
- (d) Used storage batteries when:
  - their cases are undamaged;
  - they are secured in such a way that they cannot leak, slip, fall or be damaged, e.g. by stacking on pallets;
  - there are no dangerous traces of alkalis or acids on the outside of the articles;
  - they are protected against short circuits.

"Used storage batteries" means storage batteries carried for recycling at the end of their normal service life.

SP 600 – assigned to UN 2862

SP 600 exempts vanadium pentoxide, fused and solidified, from the requirements of the Code.

SP 601 – assigned to UN Nos. 1170, 1197, 1204, 1219, 1293, 1851, 1987, 1993, 3077, 3082, 3175, 3243, 3246, 3249, 3272

SP 601 exempts pharmaceutical products (medicines) ready for use, which are substances manufactured and packaged for retail sale or distribution for personal or household consumption, from the requirements of the Code.

SP 635 – assigned to UN Nos. 2990 and 3072

SP 635 exempts packages containing life-saving appliances, self-inflating, and life-saving appliances, not self-inflating containing dangerous goods as equipment, from bearing a Class 9 label, unless the article is fully enclosed by packaging, crates or other means that prevent the ready identification of the article.

SP 637 – assigned to UN 3245

SP 637 essentially replaces Australian specific special provision AU 06. This is discussed in greater detail in the next section of this paper.

SP 639 – assigned to UN 1075

SP 639 provides a reference to 2.2.2.3, classification code 2F, UN No. 1965, Note 2. This Note permits the use of UN 1075 PETROLEUM GASES, LIQUEFIED as an alternative entry

for UN 1965 HYDROCARBON GAS MIXTURE LIQUEFIED, N.O.S. for carriage prior to or following maritime or air carriage.

SP 643 – assigned to UN Nos. 3257, 3258

SP 643 exempts stone or aggregate asphalt mixture from the requirements for Class 9.

SP 646 – assigned to UN 1362

SP 646 exempts carbon made by steam activation process from the requirements of the Code.

SP 647 – assigned to UN 2790

SP 647 conditionally exempts vinegar and food grade acetic acid, as follows:

SP 647 The carriage of vinegar and acetic acid food grade with not more than 25 % pure acid by mass is subject only to the following requirements:

- (a) Packagings, including IBCs and large packagings, and tanks shall be manufactured from stainless steel or plastic material which is permanently resistant to corrosion of vinegar/acetic acid food grade;
- (b) Packagings, including IBCs and large packagings, and tanks shall be subjected to a visual inspection by the owner at least once a year. The results of the inspections shall be recorded and the records kept for at least one year. Damaged packagings, including IBCs and large packagings, and tanks shall not be filled;
- (c) Packagings, including IBCs and large packagings, and tanks shall be filled in a way that no product is spilled or adheres to the outer surface;
- (d) Seals and closures shall be resistant to vinegar/acetic acid food grade. Packagings, including IBCs and large packagings, and tanks shall be hermetically sealed by the packer or the filler so that under normal conditions of carriage there will be no leakage;
- (e) Combination packagings with inner packaging made of glass or plastic (see packing instruction P001 in 4.1.4.1) which fulfil the general packing requirements of 4.1.1.1, 4.1.1.2, 4.1.1.4, 4.1.1.5, 4.1.1.6, 4.1.1.7 and 4.1.1.8 may be used.

The other provisions of this Code do not apply.

SP 648 – assigned to UN Nos. 2588, 2757, 2759, 2761, 2763, 2771, 2775, 2777, 2779, 2781, 2783, 2786, 2902, 2992, 2994, 2996, 2998, 3006, 3010, 3012, 3014, 3016, 3018, 3020, 3026, 3027, 3048, 3345, 3348, 3349, 3352

SP 648 exempts articles impregnated with pesticide meeting these entries, such as fibreboard plates, paper strips, cotton-wool balls, sheets of plastics material, in hermetically closed wrappings, from the provisions of the Code.

SP 653 – assigned to UN 1006, 1013, 1046, 1066

SP 653 provides a conditional exemption for the transport of small cylinders of argon, carbon dioxide, helium and nitrogen.

- 653 The carriage of this gas in cylinders having a test pressure capacity product of maximum 15.2 MPa.litre (152 bar.litre) is not subject to the other provisions of this Code if the following conditions are met:

- The provisions for construction, testing and filling of cylinders are observed;

- The cylinders are contained in outer packagings which at least meet the requirements of Part 4 for combination packagings. The general provisions of packing of 4.1.1.1, 4.1.1.2 and 4.1.1.5 to 4.1.1.7 shall be observed;
- The cylinders are not packed together with other dangerous goods;
- The total gross mass of a package does not exceed 30 kg; and
- Each package is clearly and durably marked with "UN 1006" for argon compressed, "UN 1013" for carbon dioxide, "UN 1046" for helium compressed or "UN 1066" for nitrogen compressed. This mark is displayed within a diamond-shaped area surrounded by a line that measures at least 100 mm by 100 mm.

#### SP 665 – assigned to UN Nos. 1361 and 3088

SP 665 exempts unground hard coal, coke and anthracite, meeting the classification criteria of Class 4.2, packing group III, from the requirements of this Code. This effectively replicates the determination made by the competent authorities panel in November 2023.

#### SP 668 – assigned to UN 3257

Special provision 668 provides a conditional exemption from the requirements of the code for elevated temperature substances for the purpose of applying road markings.

SP 668 Elevated temperature substances for the purpose of applying road markings are not subject to the requirements of this Code, provided that the following conditions are met:

- (a) They do not fulfil the criteria of any class other than Class 9;
- (b) The temperature of the outer surface of the boiler does not exceed 70 °C;
- (c) The boiler is closed in such a way that any loss of product is prevented during carriage;
- (d) The maximum capacity of the boiler is limited to 3000L.

#### SP 669 – assigned to UN Nos. 3166, 3171, 3528, 3529 and 3530

SP 669 clarifies the requirements applicable to trailers fitted with equipment, powered by a liquid or gaseous fuel or an electric energy storage and production system, that is intended for use during carriage operated by this trailer as a part of a transport unit.

669 A trailer fitted with equipment, powered by a liquid or gaseous fuel or an electric energy storage and production system, that is intended for use during carriage operated by this trailer as a part of a transport unit, shall be assigned to UN numbers 3166 or 3171 and be subject to the same conditions as specified for these UN numbers, when carried as a load on a vehicle or wagon, provided that the total capacity of the tanks containing liquid fuel does not exceed 500 litres.

#### SP 676 – assigned to UN Nos. 1010, 1051, 1060, 1081, 1082, 1083, 1086, 1087, 1092, 1093, 1143, 1167, 1185, 1218, 1246, 1247, 1251, 1301, 1302, 1303, 1304, 1545, 1589, 1614, 1724, 1829, 1860, 1917, 1919, 1921, 1991, 2055, 2200, 2218, 2227, 2251, 2277, 2283, 2348, 2352, 2396, 2452, 2521, 2522, 2527, 2531, 2607, 2618, 2838, 3022, 3073, 3078, 3302, 3531, 3532, 3533 and 3534

SP 676 provides conditional concessions for the transport of the above stabilised substances being transported for disposal or recycling.

676 For the carriage of packages containing polymerizing substances the provisions of special provision 386, in conjunction with 7.1.7.3, 7.1.7.4, 5.4.1.1.15 and 5.4.1.2.3.1,

need not be applied, when carried for disposal or recycling provided the following conditions are met:

- (a) Before loading an examination has shown that there is no significant deviation between the outside temperature of the package and the ambient temperature;
- (b) The carriage is effected within a period of not more than 24 hours from that examination;
- (c) The packages are protected from direct sunlight and from the impact of other sources of heat (e.g. additional loads that are being carried above ambient temperature) during carriage;
- (d) The ambient temperatures during the carriage are below 45 °C;
- (e) Vehicles and containers are adequately ventilated;
- (f) The substances are packed in packages with a maximum capacity of 1000 litres.

In assessing the substances for carriage under the conditions of this special provision, additional measures to prevent dangerous polymerization may be considered, for example the addition of inhibitors.

**Question 7:** Is there a valid reason special provisions in 3.2.2 above should not be included in the future code? Please provide your reasoning.

#### SP 636 – assigned to UN Nos. 3480 and 3090

SP 636 provides conditional concessions for lithium cells and batteries being transported to an intermediate processing facility for sorting, disposal or recycling.

SP 636 Up to the intermediate processing facility, lithium cells and batteries with a gross mass of not more than 500 g each, lithium ion cells with a Watt-hour rating of not more than 20 Wh, lithium ion batteries with a Watt-hour rating of not more than 100 Wh, lithium metal cells with a lithium content of not more than 1 g and lithium metal batteries with an aggregate lithium content of not more than 2 g, not contained in equipment, collected and handed over for carriage for sorting, disposal or recycling, together with or without other non-lithium cells or batteries, are not subject to the other provisions of this Code including special provision 376 and 2.2.9.1.7, if the following conditions are met:

- (a) The cells and batteries are packed according to packing instruction P909 of 4.1.4.1 except for the additional requirements 1 and 2;
- (b) A quality assurance system is in place to ensure that the total amount of lithium cells and batteries per transport unit, wagon or large receptacle does not exceed 333 kg;

**NOTE:** *The total quantity of lithium cells and batteries in the mix may be assessed by means of a statistical method included in the quality assurance system. A copy of the quality assurance records shall be made available to the competent authority upon request.*

- (c) Packages are marked "LITHIUM BATTERIES FOR DISPOSAL" or "LITHIUM BATTERIES FOR RECYCLING" as appropriate.

#### SP 670 – assigned to UN Nos. 3091 and 3481

SP 670

- (a) Lithium cells and batteries installed in equipment from private households collected and handed over for carriage for depollution, dismantling, recycling or disposal are

not subject to the other provisions of this Code including special provision 376 and 2.2.9.1.7 when:

- (i) They are not the main power source for the operation of the equipment in which they are contained;
- (ii) The equipment in which they are contained does not contain any other lithium cell or battery used as the main power source; and
- (iii) They are afforded protection by the equipment in which they are contained.

Examples for cells and batteries covered by this paragraph are button cells used for data integrity in household appliances (e.g. refrigerators, washing machines, dishwashers) or in other electrical or electronic equipment;

(b) Up to the intermediate processing facility lithium cells and batteries contained in equipment from private households not meeting the requirements of (a) collected and handed over for carriage for depollution, dismantling, recycling or disposal are not subject to the other provisions of this Code including special provision 376 and 2.2.9.1.7, if the following conditions are met:

- (i) The equipment is packed in accordance with packing instruction P909 of 4.1.4.1 except for the additional requirements 1 and 2; or it is packed in strong outer packagings, e.g. specially designed collection receptacles, which meet the following requirements:
  - The packagings shall be constructed of suitable material and be of adequate strength and design in relation to the packaging capacity and its intended use. The packagings need not meet the requirements of 4.1.1.3;
  - Appropriate measures shall be taken to minimize the damage of the equipment when filling and handling the packaging, e.g. use of rubber mats; and
  - The packagings shall be constructed and closed so as to prevent any loss of contents during carriage, e.g. by lids, strong inner liners, covers for transport. Openings designed for filling are acceptable if they are constructed so as to prevent loss of content;
- (ii) A quality assurance system is in place to ensure that the total amount of lithium cells and batteries per transport unit does not exceed 333 kg;

**NOTE:** *The total quantity of lithium cells and batteries in the equipment from private households may be assessed by means of a statistical method included in the quality assurance system. A copy of the quality assurance records shall be made available to the competent authority upon request.*

- (iii) Packages are marked "LITHIUM BATTERIES FOR DISPOSAL" or "LITHIUM BATTERIES FOR RECYCLING" as appropriate. If equipment containing lithium cells or batteries is carried unpackaged or on pallets in accordance with packing instruction P909 (3) of 4.1.4.1, this mark may alternatively be affixed to the external surface of the vehicles, wagons or containers).

**NOTE:** *"Equipment from private households" means equipment which comes from private households and equipment which comes from commercial, industrial, institutional and other sources which, because of its nature and quantity, is similar to that from private households. Equipment likely to be used by both private households and users other than private households shall in any event be considered to be equipment from private households.*



**Question 8:** What impact will SP 636 and SP 670 have on your operations. Please provide details, including any cost or benefits.

**Question 9:** Do you have any questions or concerns relating to special provisions SP 636 or SP 670? Please provide details.

### 3.2.3 Special provisions that prohibit the carriage of specific substances

#### SP 602 – assigned to UN Nos. 1339, 1340, 1341 and 1343

SP 602 prohibits the carriage of phosphorus sulphides which are not free from yellow and white phosphorus.

#### SP 603 – assigned to UN Nos. 1051 and 1614

SP 603 prohibits the carriage of anhydrous hydrogen cyanide not meeting the description for UN No. 1051 or UN No. 1614. The special provisions also clarifies that hydrogen cyanide (hydrocyanic acid) containing less than 3 % water is stable, if the pH-value is  $2.5 \pm 0.5$  and the liquid is clear and colourless.

#### SP 607 – assigned to UN 1487

SP 607 prohibits the carriage of mixtures of potassium nitrate and sodium nitrite with an ammonium salt.

#### SP 609 – assigned to UN 1510

SP 609 prohibits the carriage of tetranitromethane that is not free from combustible impurities.

#### SP 610 – assigned to UN 3294

SP 610 prohibits the carriage of hydrogen cyanide, solution in alcohol, when it contains more than 45 % hydrogen cyanide.

#### SP 611 – assigned to UN 1942

SP 611 prohibits the carriage of ammonium nitrate containing more than 0.2 % combustible substances (including any organic substance calculated as carbon), unless it is a constituent of a substance or article of Class 1.

#### SP 613 – assigned to UN 2626

SP 613 prohibits the carriage of chloric acid solution containing more than 10 % chloric acid and mixtures of chloric acid with any liquid other than water.

#### SP 614 – assigned to UN 2810

SP 614 prohibits the carriage of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) in concentrations considered highly toxic according to the criteria in 2.2.61.1.

**Question 10:** Are the transport conditions in Australia significantly different from overseas, such that the above substances could be transported safely? Please provide your reasoning.

### 3.2.4 Special provisions that add additional requirements or restrictions

#### SP 616 – assigned to UN 0081

SP 616 requires that substances containing more than 40 % liquid nitric esters satisfy the exudation test specified in 2.3.1. This special provision will be reviewed by the explosives working group.

#### SP 617 – assigned to UN Nos. 0081, 0083, 0084, 0241, 0331 and 0332

SP 617 requires that in addition to the type of explosive, the commercial name of the particular explosive be marked on the package. This special provision will be reviewed by the explosives working group.

#### SP 618 – assigned to UN 1010

SP 618 specifies that in receptacles containing 1,2-butadiene, the oxygen concentration in the gaseous phase shall not exceed 50 ml/m<sup>3</sup>.

#### SP 623 – assigned to UN 1829

SP 623 specifies additional requirements for UN 1829, as follows:

SP 623 UN No. 1829 sulphur trioxide shall be inhibited. Sulphur trioxide, 99.95 % pure or above, may be carried without inhibitor in tanks provided that its temperature is maintained at or above 32.5 °C. For the carriage of this substance without inhibitor in tanks at a minimum temperature of 32.5 °C, the specification "Transport under minimum temperature of the product of 32.5 °C" shall appear in the transport document.

#### SP 625 – assigned to UN 1950

SP 625 requires packages containing aerosols to be clearly marked with "UN 1950 AEROSOLS".

#### SP 633 – assigned to UN Nos. 2211 and 3314

SP 633 requires that packages and small containers containing UN 2211 or UN 3314 be marked with **"Keep away from any source of ignition"**.

#### SP 642 – assigned to UN 1043

SP 642 restricts the use of UN 1043 FERTILIZER AMMONIATING SOLUTION with free ammonia, except as authorized under 1.1.4.2. It refers instead to UN Nos. 2073, 2672 and 3318 for carriage of ammonia solution.

Sub section 1.1.4.2 relates to carriage in a transport chain that includes maritime or air carriage.

**Question 11:** Do you have any questions or concerns relating to the special provisions in this section? Please provide details.

SP 664 – assigned to UN Nos. 1202, 1203, 1223, 1268, 1863 and 3475

SP664 specifies the requirements for tanks equipped with additive devices. Additive devices are becoming increasingly common in the fuel industry. They are used to inject an additive to the fuel at the point of delivery, enabling a road tanker to distribute a variety fuel blends from a single tanker.

SP 664 When substances under this entry are carried in fixed tanks (tank-vehicles) or demountable tanks, these tanks may be equipped with additive devices.

Additive devices:

- are part of the service equipment for dispensing additives of UN 1202, UN 1993 packing group III, UN 3082 or non-dangerous substances during discharge of the tank;
- consist of elements such as connecting pipes and hoses, closing devices, pumps and dosing devices which are permanently connected to the discharge device of the tank's service equipment;
- include means of containment which are an integral part of the shell, or permanently fixed to the exterior of the tank or tank-vehicle.

Alternatively, additive devices may have connectors for connecting packagings. In this latter case, the packaging itself is not considered part of the additive device.

The following requirements shall apply depending on the configuration:

- (a) Construction of the means of containment:
- (i) As an integral part of the shell (e.g. a tank compartment), they shall meet the relevant provisions of Chapter 6.8.
  - (ii) When permanently fixed to the exterior of the tank or to the tank-vehicle, they are not subject to the construction provisions of this Code provided they comply with the following provisions:

They shall be made of a metallic material and comply with the following minimum wall thickness requirements:

<i>Material</i>	<i>Minimum wall thickness <sup>a</sup></i>
Austenitic stainless steels	2.5 mm
Other steels	3 mm
Aluminium alloys	4 mm
Pure aluminium of 99.80 %	6 mm

<sup>a</sup> For means of containment made with double walls, the aggregate thickness of the outer metal wall and the inner metal wall shall correspond to the wall thickness prescribed.

Welding shall be carried out in accordance with the first paragraph of 6.8.2.1.23, except that other suitable methods may be applied to confirm the quality of the welding.

- (iii) Packagings which are connectable to the additive device shall be metal packagings and meet the relevant construction requirements of Chapter 6.1, as applicable for the additive concerned.
- (b) Tank approval
- (c) For tanks equipped or intended to be equipped with additive devices, where the additive device is not included in the original type approval of the tank, the provisions of 6.8.2.3.4 shall apply.
- (d) Use of means of containment and additive devices
  - (i) In case of (a) (i) above, no additional requirements.
  - (ii) In case of (a) (ii) above, the total capacity of the means of containment shall not exceed 400 litres per vehicle.
  - (iii) In case of (a) (iii) above, 7.5.7.5 and 8.3.3 shall not apply. The packagings may only be connected to the additive device during discharge of the tank. During carriage, the closures and connectors shall be closed so as to be leaktight.
- (e) Testing for additive devices

The provisions of 6.8.2.4 shall apply to the additive device. However, in case of (a) (ii) above, at the time of the initial, intermediate or periodic inspection of the tank, the means of containment of the additive device shall only be subject to an external visual inspection and a leakproofness test. The leakproofness test shall be carried out at a test pressure of at least 0.2 bar.

**NOTE:** For the packagings described in (a) (iii) above, the relevant provisions of this Code shall apply.
- (f) Transport document

Only the information required in accordance with 5.4.1.1.1 (a) to (d) needs to be added to the transport document for the additive concerned. In this case, the remark "additive device" shall be added to the transport document.
- (g) Training of drivers

Drivers who have been trained in accordance with 8.2.1 for carriage of this substance in tanks need no additional training for the carriage of the additives.
- (h) Placarding or marking

Placarding or marking of the fixed tank (tank-vehicle) or demountable tank for the carriage of substances under this entry in accordance with Chapter 5.3 is not affected by the presence of an additive device or the additives contained therein.

**Question 12:** Is special provision 664 appropriate for Australia as written or does it require modification? Please provide details.

#### SP 675 – assigned to UN Nos. 2211 and 3314

SP 675 prohibits mixed loading of packages containing dangerous goods of UN 2211 or UN 3314, with substances and articles of Class 1, with the exception of 1.4S.

UN 2211 POLYMERIC BEADS, EXPANDABLE, evolving flammable vapour.

UN 3314 PLASTICS MOULDING COMPOUND in dough, sheet or extruded rope form evolving flammable vapour.

This special provision will be reviewed by the explosives working group.

#### SP 666 – assigned to UN Nos. 3166 and 3171

##### **Current code**

The current code assigns SP 123, SP 356 and SP 388 to UN 3161 and SP 123 and SP 388 to UN 3171.

SP 123 states that these are not subject to the code and that these entries in the dangerous goods list apply only when transported by sea or air.

SP 388 provides guidance on the assignment to UN 3166 vs UN 3171 and provides examples of equipment and examples of vehicles to further assist in assignment to the correct UN entry. SP 388 also provides some concessional exemptions for dangerous goods, such as batteries, airbags, fire extinguishers, compressed gas accumulators, safety devices and other integral components of the vehicle that are necessary for the operation of the vehicle or for the safety of its operator or passengers. See also the discussion on SP 388 in section 3.1.2 of this paper.

SP 356 specifies that metal hydride storage systems installed in vehicles, vessels, machinery, engines or aircraft or in completed components or intended to be installed in vehicles, vessels, machinery, engines or aircraft must be approved by the competent authority before acceptance for transport. The transport document must include an indication that the package was approved by the competent authority or a copy of the competent authority approval must accompany each consignment.

##### **Draft Code**

SP 123 has not been carried forward in the draft code. Where appropriate, entries in the dangerous goods list to which SP 123 was previously assigned are marked “NOT SUBJECT TO THE CODE”. See 3.1.1 above and Working Group Paper #2 – Dangerous Goods List – UN entries.

In addition to SP 388, both UN 3166 and 3171 are assigned SP 666, SP 667 and SP 669. SP 666 provides an exemption for Vehicles and battery powered equipment but the exemption is contingent on the provision of SP 666 being met. SP 666 also incorporates the requirement for competent authority approval previously contained in SP 356. These changes make SP356 redundant for UN 3166 and 3171. As a result, SP 356 is now assigned only to UN 3468 and has been amended to read as follows:

356 Metal hydride storage systems intended to be installed in vehicles, wagons, vessels, machinery, engines or aircraft shall be approved by the competent authority of the country of manufacture<sup>1</sup> before acceptance for carriage. The transport document shall include an indication that the package was approved by the competent authority of the country of manufacture<sup>1</sup> or a copy of the competent authority of the country of manufacture<sup>1</sup> approval shall accompany each consignment.

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<sup>1</sup> *If the country of manufacture is not a Contracting Party to ADR, the approval shall be recognized by the competent authority of a Contracting Party to ADR.*

SP 667 and SP 669 are assigned to other UN numbers in addition to UN 3166 and 3171. These special provisions are discussed in other sections of this paper.

SP 666 Vehicles and battery powered equipment, referred to by special provision 388, when carried as a load, as well as any dangerous goods they contain that are necessary for their operation or the operation of their equipment, are not subject to any other provisions of this Code, provided the following conditions are met:

- (a) For liquid fuels, any valves between the engine or equipment and the fuel tank shall be closed during carriage unless it is essential for the equipment to remain operational. Where appropriate, the vehicles shall be loaded upright and secured against falling;
- (b) For gaseous fuels, the valve between the gas tank and engine shall be closed and the electric contact open unless it is essential for the equipment to remain operational;
- (c) Metal hydride storage systems shall be approved by the competent authority;
- (d) The provisions of (a) and (b) do not apply to vehicles which are empty of liquid or gaseous fuels.

**NOTE 1:** A vehicle is considered to be empty of liquid fuel when the liquid fuel tank has been drained and the vehicle cannot be operated due to a lack of fuel. Vehicle components such as fuel lines, fuel filters and injectors do not need to be cleaned, drained or purged to be considered empty of liquid fuels. In addition, the liquid fuel tank does not need to be cleaned or purged.

**NOTE 2:** A vehicle is considered to be empty of gaseous fuels when the gaseous fuel tanks are empty of liquid (for liquefied gases), the pressure in the tanks does not exceed 2 bar and the fuel shut-off or isolation valve is closed and secured.

## Discussion

The exemption in SP 123 in the current code is written as total and absolute. This results in no safety measures being required. In particular, it results in batteries installed in vehicles not being required to meet the requirements of 2.2.9.1.7, or 38.3 of the Manual of Tests and Criteria.

The high incidence of e-scooter fires would appear evidence that this complete lack of regulation is unsafe and inappropriate.

UN 23 introduced three new entries to the dangerous goods list for battery operated vehicles. To support these new entries, SP 388 has been amended to exclude vehicles powered by lithium or sodium batteries from UN 3171, requiring the use of the new entries instead. A new special provision, SP 405, has also been introduced. It's expected that these amendments will be incorporated into ADR 25. These will be incorporated into the draft code at that time.

## UN 23 amendments

UN No.	Name and description	Class or division	Subsidiary hazard	UN packing group	Special provisions	Limited and excepted quantities	
3556	VEHICLE, LITHIUM ION BATTERY POWERED	9			384 388 405	0	E0
3557	VEHICLE, LITHIUM METAL BATTERY POWERED	9			384 388 405	0	E0
3558	VEHICLE, SODIUM ION BATTERY POWERED	9			384 388 404 405	0	E0

SP 405 Vehicles are not subject to the marking or labelling requirements of chapter 5.2 when they are not fully enclosed by packagings, crates or other means that prevent ready identification.

### **Anticipated impacts**

The removal of the absolute exemption previously provided through SP123, coupled with the addition of SP 666 will continue to provide substantial regulatory relief for these vehicles and equipment.

At the same time, it will impose minimum requirements necessary to provide some assurance of safety.

This will be further enhanced by the incorporation of the UN23 amendments.

**Question 13:** Do you believe that the total exemption in the current code, including the absence of minimum safety requirements for lithium batteries should continue? Please provide your reasoning.

### **3.2.5 Special provisions that provide detailed transport conditions that replace the requirement for competent authority intervention before transport can occur**

#### **SP 663 – assigned to UN 3509**

SP 663 replaces the requirement specified in SP 374 of the current code that this entry is only permitted as authorised by the competent authority.

#### **Problem with the current code**

The requirement for authorisation by the competent authority introduces unnecessary time delays and burden on all parties, including competent authorities. It also introduces the potential for inconsistencies in the conditions and restrictions being imposed across the competent authorities.

#### **Future code**

SP 663 replaces the requirement specified in SP 374 of the current code that this entry is only permitted as authorised by the competent authority. SP 663 replaces this with the permitted use of UN 3509 and the conditions for carriage.

SP 663 This entry may only be used for packagings, large packagings or IBCs, or parts thereof, which have contained dangerous goods which are carried for disposal, recycling or recovery of their material, other than reconditioning, repair, routine maintenance, remanufacturing or reuse, and which have been emptied to the extent that only residues of dangerous goods adhering to the packaging parts are present when they are handed over for carriage.

#### **Scope:**

Residues present in the packagings, discarded, empty, uncleaned shall only be of dangerous goods of classes 3, 4.1, 5.1, 6.1, 8 or 9. In addition, they shall not be:

- Substances assigned to packing group I or that have "0" assigned in Column (7a) of Table A of Chapter 3.2; nor
- Substances classified as desensitized explosive substances of Class 3 or Class 4.1; nor

- Substances classified as self-reactive substances of Class 4.1; nor
- Radioactive material; nor
- Asbestos (UN 2212 and UN 2590), polychlorinated biphenyls (UN 2315 and UN 3432) and polyhalogenated biphenyls, halogenated monomethyldiphenylmethanes or polyhalogenated terphenyls (UN 3151 and UN 3152).

**General provisions:**

Packagings, discarded, empty, uncleaned with residues presenting a primary or subsidiary hazard of Class 5.1 shall not be loaded in bulk together with packagings, discarded, empty, uncleaned with residues presenting a hazard of other classes. Packagings, discarded, empty, uncleaned with residues presenting a primary or subsidiary hazard of Class 5.1 shall not be packed with other packagings, discarded, empty, uncleaned with residues presenting hazards of other classes in the same outer packaging.

Documented sorting procedures shall be implemented on the loading site to ensure compliance with the provisions applicable to this entry.

**NOTE:** *All the other provisions of this Code apply.*

**Question 14:** Do you believe the condition in SP 663 for the use of UN 3509 are appropriate and proportionate to the risk? Please provide your reasoning.

SP 667 – assigned to UN Nos. 3166, 3171, 3528, 3529 and 3530

SP 667 is referenced in special provisions SP 363 and SP 388. These provisions are discussed in section 3.1.2 of this paper.

In the current code, both SP 363 and SP 388 provide an exemption from some aspects of type testing for lithium batteries in 2.9.4 for pre-production prototype batteries or batteries of a small production run, consisting of not more than 100 batteries, installed in machinery or engines.

In the draft code, this is replaced by item (a) of SP 667.

**Problem with the current code**

The last paragraph of SP 363 (f) in the current code specifies that where a lithium battery installed in a machinery or an engine is damaged or defective, the machinery or engine shall be transported as defined by the competent authority.

Similarly, the last paragraph of SP 388 states that where a lithium battery installed in a vehicle or equipment is damaged or defective, the vehicle or equipment shall be transported as defined by the competent authority.

**Draft code**

In the draft code, the requirement for competent authority approval has been omitted and replaced by the reference to SP 667. SP 667 contains detailed requirements for the transport of such damaged or defective machinery, engines, vehicles or equipment.

SP 667



- (a) The provisions of 2.2.9.1.7 (a) do not apply when pre-production prototype lithium cells or batteries or lithium cells or batteries of a small production run, consisting of not more than 100 cells or batteries, are installed in the vehicle, engine or machinery;
- (b) The provisions of 2.2.9.1.7 do not apply to lithium cells or batteries in damaged or defective vehicles, engine or machinery. In such cases the following conditions shall be met:
  - (i) If the damage or defect has no significant impact on the safety of the cell or battery, damaged and defective vehicles, engines or machinery, may be carried under the conditions defined in special provisions 363 or 666, as appropriate;
  - (ii) If the damage or defect has a significant impact on the safety of the cell or battery, the lithium cell or battery shall be removed and carried according to special provision 376;
 

However, if it is not possible to safely remove the cell or battery or it is not possible to verify the status of the cell or battery, the vehicle, engine or machinery may be towed or carried as specified in (i).
- (c) The procedures described in (b) also apply to damaged lithium cells or batteries in vehicles, engines or machinery.

Special provision 376, referenced in SP 667 (b) (ii) specifies the requirements for the transport of damaged or defective batteries. This provision in the draft code remains as per the current code.

## Discussion

When including a statement in a special provision that transport is to be as defined by the competent authority, the expectation of the UN SC is that the bodies responsible for developing and maintaining the mode specific codes will replace the statement with requirements appropriate to their mode of transport. The members of WP.15, the working party responsible for harmonising the ADR and RID with the UN MR, have done this. The requirements have been specified in SP 667.

Leaving the statement as per the current code places a time pressure burden on competent authorities to develop requirements at the time of need. This could result in a vehicle involved in an accident being unable to be moved to a safe location, creating a serious risk to other road users and causing unnecessary delays in clearing impacted roads.

The reliance on ad-hoc solutions at the time of need may also result in inconsistent requirements being applied by different competent authorities.

## Anticipated impacts

Having a clear set of pre-defined requirements will lessen the stress and burden on regulators and duty holders of having to make quick, ad-hoc decisions under extreme time constraints and in stressful situations.

**Question 15:** Do you believe the requirements in SP 667 (b) are appropriate and proportionate to the risk? Please provide your reasoning.

**Question 16:** Will having pre-defined requirements enable a quick and safe response in the event of an incident? Please provide your reasoning.

#### SP 672 – assigned to UN 3363

SP 672 implements the following paragraph of SP 301 from the current code:

The competent authority may exempt from regulation articles which would otherwise be transported under this entry.

#### **Problem with the current code**

Statements such as that contained in the last paragraph of SP 301 are not intended to be included in the special provision when implemented in the mode specific codes. Rather, they are intended as direction to the bodies responsible for developing those codes. This paragraph has not been included in the IMDG Code and SP 301 has been omitted in its entirety from the IATA regulations and replaced with special provisions that are more specific to air.

As is the practice when harmonising with the UN MR, the members of WP.15 have considered the direction from the UN SC and developed exemptions suitable for land transport. This exemption is contained in SP 672.

#### **Draft code**

In the draft code, the last paragraph of SP 301 has been omitted and SP 672 has been assigned to UN 3363.

SP 672 Articles, such as machinery, apparatus or devices carried under this entry and in conformity with special provision 301 are not subject to any other provision of this Code provided they are either:

- packed in a strong outer packaging constructed of suitable material, and of adequate strength and design in relation to the packaging's capacity and its intended use, and meeting the applicable requirements of 4.1.1.1; or
- carried without outer packaging if the article is constructed and designed so that the receptacles containing the dangerous goods are afforded adequate protection.

**Question 17:** Is the concessional exemption in SP 672 appropriate and proportionate to the risk? Please provide your reasoning.

### **3.2.6 Special provisions that enable compliance**

#### Transport of waste paint products of UN 1263

#### **Problem with the current code**

The condition of waste paint products is generally poor and highly variable. They may contain mixtures of various paints and other substances and be in tins or other means of containment that are badly damaged, rusted or with ill-fitting or no lids.

The current code provides no concessions or alternate packing methods for the transport of these waste products, meaning they remain regulated the same as for new products.

The requirements in the current code create a gap in requirements for waste paint products of UN 1263. This forces the duty holder into one or other of the following options:

1. Operate in a manner that is inconsistent or non-compliant with the code;
2. Place every item in approved salvage packaging; or
3. Seek an exemption from the competent authority.

The first option is not acceptable under the law and creates inconsistent and potentially unsafe methods.

The use of salvage packagings for every item is prohibitively expensive and there is likely to be difficulties in obtaining sufficient salvage packages.

The option of obtaining an exemption from compliance with the requirements creates delays and places an unnecessary burden on time and resources of both competent authorities and duty holders. Regulating through exemptions lacks transparency and runs a high risk of inconsistent rules being applied across different duty holders, creating an unfair situation.

A safe, transparent and consistent set of rules is required to provide duty holders with a clear and legal way forward.

### **Draft code**

The draft code replicates special provision 650 from the ADR and RID. These special provisions provide clear and transparent requirements for the safe packing and transport of wastes of paint and paint related material of Class 3.

### **SP 650**

Waste consisting of packaging residues, solidified residues and liquid residues of paint may be carried under the conditions of packing group II. In addition to the provisions of UN No. 1263 packing group II, the waste may also be packed and carried as follows:

- (a) The waste may be packed in accordance with packing instruction P002 of 4.1.4.1 or packing instruction IBC06 of 4.1.4.2;
- (b) The waste may be packed in flexible IBCs of types 13H3, 13H4 and 13H5 in overpacks with complete walls;
- (c) Testing of packagings and IBCs indicated under (a) or (b) may be carried out in accordance with the requirements of Chapters 6.1 or 6.5, as appropriate, in relation to solids, at the packing group II performance level.

The tests shall be carried out on packagings and IBCs, filled with a representative sample of the waste, as prepared for carriage;

- (d) Carriage in bulk in sheeted vehicles, sheeted wagons, movable roof wagons, closed containers or sheeted large containers, all with complete walls is allowed. The body of vehicles, wagons or containers shall be leakproof or rendered leakproof, for example by means of a suitable and sufficiently stout inner lining;
- (e) If the waste is carried under the conditions of this special provision, the goods shall be declared in accordance with 5.4.1.1.3.1 in the transport document, as follows:

"UN 1263 WASTE PAINT, 3, II", or

"UN 1263 WASTE PAINT, 3, PG II".

## Anticipated impacts

The inclusion of special provision 650 in the future code is expected to reduce the burden on both regulators and duty holders and provide clear requirements designed to appropriately control the risk associated with waste paint products.

The testing and performance requirements for packagings may result in increased costs for duty holders who are currently operating in a manner that is non-compliant to current requirements.

**Question 18:** Do you consider the draft requirements for waste paint products of UN 1263 to be proportionate to the risks? Please provide details.

**Question 19:** If you consign or transport waste paint products of UN 1263, will the inclusion of special provision 650 result in a change to your current practices? Please provide details.

## Transport of lighters of UN 1263

### Problem with the current code

The current code assigns special provision 201 to UN 1057.

SP 201 Lighters and lighter refills must comply with the provisions of the country/state in which they were filled. They must be provided with protection against inadvertent discharge. The liquid portion of the gas must not exceed 85% of the capacity of the receptacle at 15 °C. The receptacles, including the closures, must be capable of withstanding an internal pressure of twice the pressure of the liquefied petroleum gas at 55 °C. The valve mechanisms and ignition devices must be securely sealed, taped or otherwise fastened or designed to prevent operation or leakage of the contents during transport. Lighters must not contain more than 10 g of liquefied petroleum gas. Lighter refills must not contain more than 65 g of liquefied petroleum gas.

No concessions or alternate packing methods for the transport of these waste products, meaning they remain regulated the same as for new products.

The lack of an exception from SP 201 effectively means that these products cannot be transported as UN 1057 unless the valve mechanisms and ignition devices are securely sealed, taped or otherwise fastened or designed to prevent operation or leakage of the contents during transport.

As per the discussion above for waste paints and SP 650, the failure in the code to differentiate the requirements for waste lighters from those for new or fit for purpose lighters creates another situation where duty holders are forced into either operating in a manner that is inconsistent or non-compliant with the law, or to seek an exemption.

Additionally, the current code categorises UN 1057 as a domestic consumable dangerous goods which provides them with some of the concessions of the limited quantity provisions. No concessions for marking and labelling or for packaging are provided. The category domestic consumable dangerous goods is uniquely Australian.

### Draft code

The draft code replicates special provisions 654 and 658 from the ADR and RID. To support the application of SP 654, a Note has also been added to SP 201.

## SP 654

SP 654 provides concessions and clear instructions for the transport of waste lighters of UN 1057. Provision 5.4.1.1.3.1 requires that wastes containing dangerous goods be identified on the dangerous goods transport document by the addition of "WASTE" at the start of the proper shipping name.

SP 654 Waste lighters collected separately and consigned in accordance with 5.4.1.1.3.1 may be carried under this entry for the purposes of disposal. They need not be protected against inadvertent discharge provided that measures are taken to prevent the dangerous build-up of pressure and dangerous atmospheres.

Waste lighters, other than those leaking or severely deformed, shall be packed in accordance with packing instruction P003. In addition the following provisions shall apply:

- Only rigid packagings of a maximum capacity of 60 litres shall be used;
- The packagings shall be filled with water or any other appropriate protection material to avoid any ignition;
- Under normal conditions of carriage all ignition devices of the lighters shall fully be covered by the protection material;
- The packagings shall be adequately vented to prevent the creation of flammable atmosphere and the build-up of pressure;
- The packages shall only be carried in ventilated or open vehicles, wagons or containers.

Leaking or severely deformed lighters shall be carried in salvage packagings, provided appropriate measures are taken to ensure there is no dangerous build-up of pressure.

*NOTE: Special provision 201 and special packing provisions PP84 of packing instruction P002 in 4.1.4.1 do not apply to waste lighters.*

SP 201 has been amended to include the following note:

**NOTE:** For waste lighters collected separately see Chapter 3.3, special provision 654.

## SP 658

SP 658 permits the transport of UN 1057 under a modified version of the limited quantity provisions.

SP 658 UN No. 1057 LIGHTERS complying with standard EN ISO 9994:2019 "Lighters – Safety Specification" and UN No. 1057 LIGHTER REFILLS, may be carried subject only to the provisions of 3.4.1 (a) to (h), 3.4.2 (except for the total gross mass of 30 kg), 3.4.3 (except for the total gross mass of 20 kg), 3.4.11 and 3.4.12, provided the following conditions are met:

- (a) The total gross mass of each package is not more than 10 kg;
- (b) Not more than 100 kg gross mass of such packages is carried in a vehicle, wagon or large container; and
- (c) Each outer packaging is clearly and durably marked with "UN 1057 LIGHTERS" or "UN 1057 LIGHTER REFILLS", as appropriate.

## Anticipated Impacts

The inclusion of special provision 654 and the added note to special provision 201 in the future code is expected to reduce the burden on both regulators and duty holders and provide clear requirements designed to appropriately control the risk associated with waste lighters.

The inclusion of special provision 658 is expected to reduce the burden for the packing and transport of lighters and lighter refills. The proposed changes will also remove current inconsistencies and conflicts between domestic consumable dangerous goods and limited quantities.

**Question 20:** Are you aware of an Australian equivalent standard to EN ISO 9994:2019 "Lighters – Safety Specification? Please provide details.

**Question 21:** Do you consider the draft requirements for waste lighters of UN 1057 to be proportionate to the risks? Please provide details.

**Question 22:** If you consign or transport waste lighters of UN 1057, will the inclusion of special provision 654 result in a change to your current practices? Please provide details.

**Question 23:** What impact with the inclusion of special provision 658, as an alternative to domestic consumable dangerous goods, have on your business? Please provide details.

### 3.2.7 Special provisions included here for information only

The following special provisions relate to the transport of gases. They will be reviewed by a specific working group set up to review all gas related transport provisions. They are included here for information only.

652 Austenitic stainless steel, ferritic and austenitic steel (Duplex steel) and welded titanium receptacles which do not meet the requirements of Chapter 6.2 but have been constructed and approved in accordance with national aviation provisions for use as hot air balloon or hot air airship fuel receptacles, brought into service (date of initial inspection) before 1 July 2004, may be carried by road provided they meet the following conditions:

- (a) The general provisions of 6.2.1 shall be complied with;
- (b) The design and construction of the receptacles shall have been approved for aviation use by a national air transport authority;
- (c) As an exemption from 6.2.3.1.2, the calculation pressure shall be derived from a reduced maximum ambient temperature of +40 °C; in this case:
  - (i) as an exemption from 6.2.5.1, cylinders may be manufactured from rolled and annealed commercially pure titanium with the minimum requirements of  $R_m > 450 \text{ MPa}$ ,  $\epsilon_A > 20 \%$  ( $\epsilon_A$  = elongation after fracture);
  - (ii) austenitic stainless steel and ferritic and austenitic steel (Duplex steel) cylinders may be used with a stress level up to 85 % of the minimum guaranteed yield strength ( $R_e$ ) at a calculation pressure derived from a reduced maximum ambient temperature of +40 °C;

- (iii) the receptacles shall be equipped with a pressure relief device having a nominal set pressure of 26 bar; the test pressure of these receptacles shall be not less than 30 bar;
  - (d) When the exemptions from (c) are not applied, the receptacles shall be designed for a reference temperature of 65 °C and shall be equipped with pressure relief devices with a nominal set pressure specified by the competent authority of the country of use;
  - (e) The main body of the receptacles shall be covered by an outer, water-resistant protective layer at least 25 mm thick made from structural cellular foam or similar material;
  - (f) During carriage, the receptacle shall be firmly secured in a crate or an additional safety device;
  - (g) The receptacles shall be marked with a clear, visible label stating that the receptacles are for use only in hot air balloons and hot air airships;
  - (h) The duration of service (from the date of initial inspection) shall not exceed 25 years.
- 655 Cylinders designed, constructed, approved and marked in accordance with Directive 97/23/EC or Directive 2014/68 EU and used for breathing apparatus may be carried without conforming to Chapter 6.2, provided that they are subject to inspections and tests specified in 6.2.1.6.1 and the interval between tests specified in packing instruction P200 in 4.1.4.1 is not exceeded. The pressure used for the hydraulic pressure test is the pressure marked on the cylinder in accordance with Directive 97/23/EC4 or Directive 2014/68 EU5.
- 662 Cylinders not conforming to the provisions of Chapter 6.2 which are used exclusively on board a ship or aircraft, may be carried for the purpose of filling or inspection and subsequent return, provided the cylinders are designed and constructed in accordance with a standard recognized by the competent authority of the country of approval and all the other relevant requirements of this Code are met including:
- (a) The cylinders shall be carried with valve protection in conformity with 4.1.6.8;
  - (b) The cylinders shall be marked and labelled in conformity with 5.2.1 and 5.2.2; and
  - (c) All the relevant filling requirements of packing instruction P200 of 4.1.4.1 shall be complied with.

The transport document shall include the following statement: "Carriage in accordance with special provision 662".

- 674 This special provision applies to periodic inspection and test of over-moulded cylinders as defined in 1.2.1.

Over-moulded cylinders subject to 6.2.3.5.3.1 shall be subject to periodic inspection and test in accordance with 6.2.1.6.1, adapted by the following alternative method:

- Substitute test required in 6.2.1.6.1 d) by alternative destructive tests;
- Perform specific additional destructive tests related to the characteristics of over-moulded cylinders.

The procedures and requirements of this alternative method are described below.

Alternative method:

(a) General

The following provisions apply to over-moulded cylinders produced serially and based on welded steel cylinder shells in accordance with EN 1442:2017, EN 14140:2014 + AC:2015 or annex I, parts 1 to 3 to Council Directive 84/527/EEC. The design of the over-moulding shall prevent water from penetrating on to the inner steel cylinder shell. The conversion of the steel cylinder shell to an over-moulded cylinder shall comply with the relevant requirements of EN 1442:2017 and EN 14140:2014 + AC:2015.

Over-moulded cylinders shall be equipped with self-closing valves.

(b) Basic population

A basic population of over-moulded cylinders is defined as the production of cylinders from only one over-moulding manufacturer using new inner steel cylinder shells manufactured by only one manufacturer within one calendar year, based on the same design type, the same materials and production processes.

(c) Sub-groups of a basic population

Within the above defined basic population, over-moulded cylinders belonging to different owners shall be separated into specific sub-groups, one per owner.

If the whole basic population is owned by one owner, the sub-group equals the basic population.

(d) Traceability

Inner steel cylinder shell marks in accordance with 6.2.3.9 shall be repeated on the over-moulding. In addition, each over-moulded cylinder shall be fitted with an individual resilient electronic identification device. The detailed characteristics of the over-moulded cylinders shall be recorded by the owner in a central database. The database shall be used to:

- Identify the specific sub-group;
- Make available to inspection bodies, filling centres and competent authorities the specific technical characteristics of the cylinders consisting of at least the following: serial number, steel cylinder shell production batch, over-moulding production batch, date of over-moulding;
- Identify the cylinder by linking the electronic device to the database with the serial number;
- Check individual cylinder history and determine measures (e.g. filling, sampling, retesting, withdrawal);
- Record performed measures including the date and the address of where it was done.

The recorded data shall be kept available by the owner of the over-moulded cylinders for the entire life of the sub-group.

(e) Sampling for statistical assessment



The sampling shall be random among a sub-group as defined in sub-paragraph (c). The size of each sample per sub-group shall be in accordance with the table in sub-paragraph (g).

(f) Test procedure for destructive testing

The inspection and test required by 6.2.1.6.1 shall be carried out except (d) which shall be substituted by the following test procedure:

- Burst test (according to EN 1442:2017 or EN 14140:2014 + AC:2015).

In addition, the following tests shall be performed:

- Adhesion test (according to EN 1442:2017 or EN 14140:2014 + AC:2015);
- Peeling and Corrosion tests (according to EN ISO 4628-3:2016).

Adhesion test, peeling and corrosion tests, and burst test shall be performed on each related sample according to the table in sub-paragraph (g) and shall be conducted after the first 3 years in service and every 5 years thereafter.

(g) Statistical evaluation of test results – Method and minimum requirements

The procedure for statistical evaluation according to the related rejection criteria is described in the following.

Test interval (years)	Type of test	Standard	Rejection criteria	Sampling out of a sub-group
After 3 years in service (see (f))	Burst test	EN 1442:2017	<p>Burst pressure point of the representative sample must be above the lower limit of tolerance interval on the Sample Performance Chart</p> $\Omega_m \geq 1 + \Omega_s \times k_3(n;p;1-\alpha)^a$ <p>No individual test result shall be less than the test pressure</p>	$\sqrt[3]{Q}$ or $Q/200$ whichever is lower, and with a minimum of 20 per sub-group (Q)
	Peeling and corrosion	EN ISO 4628-3:2016	Max corrosion grade: Ri2	Q/1 000
	Adhesion of Polyurethane	ISO 2859-1:1999 + A1:2011 EN 1442:2017 EN 14140:2014 + AC:2015	Adhesion value > 0.5 N/mm <sup>2</sup>	See ISO 2859-1:1999 + A1:2011 applied to Q/1000
Every 5 years thereafter (see (f))	Burst test	EN 1442:2017	<p>Burst pressure point of the representative sample must be above the lower limit of tolerance interval on the Sample Performance Chart</p> $\Omega_m \geq 1 + \Omega_s \times k_3(n;p;1-\alpha)^a$ <p>No individual test result shall be less than the test pressure</p>	$\sqrt[6]{Q}$ or $Q/100$ whichever is lower, and with a minimum of 40 per sub-group (Q)
	Peeling and corrosion	EN ISO 4628-3:2016	Max corrosion grade: Ri2	Q/1 000

	Adhesion of Polyurethane	ISO 2859-1:1999 + A1:2011 EN 1442:2017 EN 14140:2014 + AC:2015	Adhesion value > 0.5 N/mm <sup>2</sup>	See ISO 2859-1:1999 + A1:2011 applied to Q/1000
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<sup>a</sup> *Burst pressure point (BPP) of the representative sample is used for the evaluation of test results by using a Sample Performance Chart:*

*Step 1: Determination of the burst pressure point (BPP) of a representative sample*

*Each sample is represented by a point whose coordinates are the mean value of burst test results and the standard deviation of burst test results, each normalised to the relevant test pressure.*

$$BPP: (\Omega_s = \frac{s}{PH}; \Omega_m = \frac{x}{PH})$$

*with*

*x: sample mean value;*

*s: sample standard deviation;*

*PH: test pressure*

*Step 2: Plotting on a Sample Performance Chart*

*Each BPP is plotted on a Sample Performance Chart with following axis:*

- *Abscissa : Standard Deviation normalised to test pressure (  $\Omega_s$  )*
- *Ordinate : Mean value normalised to test pressure (  $\Omega_m$  )*

*Step 3: Determination of the relevant lower limit of tolerance interval in the Sample Performance Chart*

*Results for burst pressure shall first be checked according to the Joint Test (multidirectional test) using a significance level of  $\alpha=0.05$  (see paragraph 7 of ISO 5479:1997) to determine whether the distribution of results for each sample is normal or non-normal.*

- *For a normal distribution, the determination of the relevant lower limit of tolerance is given in step 3.1.*
- *For a non-normal distribution, the determination of the relevant lower limit of tolerance is given in step 3.2.*

*Step 3.1: Lower limit of tolerance interval for results following a normal distribution*

*In accordance with the standard ISO 16269-6:2014, and considering that the variance is unknown, the unilateral statistical tolerance interval shall be considered for a confidence level of 95 % and a fraction of population equal to 99.9999 %.*

*By application in the Sample Performance Chart, the lower limit of tolerance interval is represented by a line of constant survival rate defined by the formula:*

$$\Omega_m = 1 + \Omega_s \times k3(n;p;1-\alpha)$$

*with*

*k3: factor function of n, p and 1- $\alpha$ ;*

*p: proportion of the population selected for the tolerance interval (99.9999 %);*

*1-  $\alpha$ : confidence level (95 %);*

*n: sample size.*

The value for  $k_3$  dedicated to Normal Distributions shall be taken from the table at end of Step 3.

Step 3.2: Lower limit of tolerance interval for results following a non-normal distribution

The unilateral statistical tolerance interval shall be calculated for a confidence level of 95 % and a fraction of population equal to 99.9999 %.

The lower limit of tolerance is represented by a line of constant survival rate defined by the formula given in previous step 3.1, with factors  $k_3$  based and calculated on the properties of a Weibull Distribution.

The value for  $k_3$  dedicated to Weibull Distributions shall be taken from the table below at end of Step 3.

<b>Table for <math>k_3</math></b> $p=99.9999\%$ and $(1-\alpha)=0.95$		
<b>Sample size <math>n</math></b>	<b>Normal distribution <math>k_3</math></b>	<b>Weibull distribution <math>k_3</math></b>
20	6.901	16.021
22	6.765	15.722
24	6.651	15.472
26	6.553	15.258
28	6.468	15.072
30	6.393	14.909
35	6.241	14.578
40	6.123	14.321
45	6.028	14.116
50	5.949	13.947
60	5.827	13.683
70	5.735	13.485
80	5.662	13.329
90	5.603	13.203
100	5.554	13.098
150	5.393	12.754
200	5.300	12.557
250	5.238	12.426
300	5.193	12.330
400	5.131	12.199
500	5.089	12.111
1000	4.988	11.897
$\infty$	4.753	11.408

**NOTE:** If sample size is between two values, the closest lower sample size shall be selected.

(h) Measures if the acceptance criteria are not met

If a result of the burst test, peeling and corrosion test or adhesion test does not comply with the criteria detailed in the table in paragraph (g), the affected sub-group of over-moulded cylinders shall be segregated by the owner for further investigations and not be filled or made available for transport and use.

In agreement with the competent authority or the Xa-body which issued the design approval, additional tests shall be performed to determine the root cause of the failure.

If the root cause cannot be proved to be limited to the affected sub-group of the owner, the competent authority or the Xa-body shall take measures concerning the whole basic population and potentially other years of production.

If the root cause can be proved to be limited to a part of the affected sub-group, not affected parts may be authorized by the competent authority to return to service. It shall be proved that no individual over-moulded cylinder returning to service is affected.

(i) Filling centre requirements

The owner shall make available to the competent authority documentary evidence that the filling centres:

- Comply with the provisions of packing instruction P200 (7) of 4.1.4.1 and that the requirements of the standard on pre-fill inspections referenced in table P200 (11) of 4.1.4.1 are fulfilled and correctly applied;
- Have the appropriate means to identify over-moulded cylinders through the electronic identification device;
- Have access to the database as defined in (d);
- Have the capacity to update the database;
- Apply a quality system, according to the standard ISO 9000 (series) or equivalent, certified by an accredited independent body recognized by the competent authority.

**Question 24:** Do you have any particular comments on the above gas related special provisions that you would like the gas working party to consider? Please provide details.

### 3.3 Australian special provisions

#### Key points

- The Australian specific provisions in the current code have been developed in response to singular issues or stakeholder interests.
- Special provision AU01 which provides an almost blanket exemption for environmentally hazardous substances no longer fits with government or society expectations.
- Many of the Australian specific special provisions are addressed through the draft land mode special provisions or in other provisions of the draft code.

The current code contains seven uniquely Australian special provisions. It is not intended to carry these special provisions into the future code. Some of the Australian special provisions are already dealt with by the incorporation of ADR and RID requirements.

In instances where the content of an Australia special provision is still relevant and required, it will be relocated to a more appropriate section of the future code.

The following provides a discussion of each of the Australian special provisions.

#### AU01 – currently assigned to UN 3077 and 3082

##### **Problem with the current code**

AU01 exempts environmentally hazardous substances meeting the descriptions of UN 3077 or UN 3082 from the Code when transported in;

- (a) packagings that do not incorporate a receptacle exceeding 500 kg(L); or
- (b) IBCs.

This exemption is total, in that it is not conditional on meeting any basic safety requirements or minimum controls. This exemption means that there is no requirement for packagings to be of good quality and suitable for transport. The exemption also means there is no requirement to mark or label the containers to communicate the hazard to anyone who handles or transports the substance or who responds to an incident involving the substances.

The policy of allowing environmentally hazardous materials to be transported completely unregulated in large containers is not in keeping with today's government or societal expectations.

##### **Draft code**

The following provisions in the future code replace the absolute exemption in AU01, while still providing considerable relief.

1. Medicines – the incorporation of special provision SP 601 from ADR would make these exempt.

*SP 601 Pharmaceutical products (medicines) ready for use, which are substances manufactured and packaged for retail sale or distribution for personal or household consumption are not subject to the requirements of this Code.*

2. Small quantities – The increase in quantity for SP 375 to apply to containers with a capacity of 30 kg/l or less (currently 5 kg/l), continues the exemption for retail size packagings.

*SP 375A These substances when carried in single or combination packagings containing a net quantity per single or inner packaging of 30 l or less for liquids or having a net mass per single or inner packaging of 30 kg or less for solids, are not subject to any other provisions of this Code provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.*

3. Larger quantities - In the Dangerous Goods List - UN 3077 and UN 3082 have been categorized as transport category '4'. Under the revised Code, the transport categories are used to determine 'small loads', i.e. loads below the placarding threshold. The quantity of category 4 substances in the load is not counted when calculating the total quantity for the small loads' threshold. Small loads are only

applicable to DGs in packages, including IBCs. Please note that we intend to remove the current requirement for EIPs on IBCs.

## Anticipated impacts

The proposed amendments in the draft code are expected to have the following impacts.

- Deregulate certain medicines, reducing costs without increasing risk.
- Ensure retail size packagings meet the basic safety requirements, such as:
  - Suitable for the dangerous goods
  - Being strong enough to withstand the shocks and loadings normally encountered during transport
  - Packed so as to prevent damage or leakage.

Retail size packagings would remain exempt from all other requirements. It's anticipated that the changes to retail packagings would clarify the minimum accepted packagings, without introducing any additional burden.

- The greatest impact is expected to be on larger packagings, i.e. capacity greater than 30 kg/l. The proposed changes to large capacity packages will result the following:
  - Requirement for the use of Approved packagings;
  - requirement for a dangerous goods transport document;
  - packages to marked and labelled with the following:
    - i. Class 9 label measuring 100mm x 100mm to be displayed. For IBCs, required on two opposing sides
    - ii. UN Number, preceded by 'UN' – minimum 12mm high
    - iii. Proper Shipping Name
    - iv. Environmentally hazardous mark, allowance for use of the GHS pictogram as an alternative

**NOTE:** it's anticipated that items ii, iii and iv could be easily incorporated into a GHS label.

- training requirements would remain as per the current code;
- the amount of UN 3077 and 3082 on the vehicle would not be counted when calculating thresholds for the purpose of placarding, resulting in no change to current requirements;
- the amount of UN 3077 and 3082 on the vehicle would not trigger the requirement driver or vehicle licensing, resulting in no change to current requirements.

A very high proportion of products sold are in containers with a capacity of 20 litres or 20 – 25 kilograms. These will continue to be exempt from all requirements, other than basic quality standards for packagings. All packagings should already be of a standard that would meet the requirements. Therefore, there are no anticipated changes for these packagings.

The greatest impact will be on larger size containers, those with a capacity greater than 30 kg/l. The proposed changes have been drafted to ensure minimum standards for packaging and hazard communication, whilst keeping impacts on duty holders to an absolute minimum.

It's believed that the majority of manufacturers are already including the relevant dangerous goods information including the Class diamond, UN, Correct Shipping Name etc. on the

labels and packages. Where manufacturers are not including this information due to the AU01 exemption, the requirement to do so is not expected to impose a major expense.

There is a potential that transport companies may start charging a dangerous goods levy for the transport of these substances. The only increase in compliance for a transporter is the requirement to carry a dangerous goods transport document, which is provided by the consignor. This should not be seen as justification for increased transport costs.

**Question 25:** If you are a consignor of UN 3077 or 3082, what impact do you believe this will have on your business? Please provide details, including anticipated costs.

**Question 26:** Do you feel that the requirement to identify these substances or to ensure that are properly packed, is unjustified? Please provide your reasons

**Question 27:** If you transport these substances, will you charge a dangerous goods surcharge? If so, please provide your justification.

#### AU02 – assigned to UN 1202, 1258

AU02 GAS OIL or DIESEL OIL or HEATING OIL, LIGHT or PETROLEUM DISTILLATE is not subject to this Code if it does not meet the criteria of Chapter 2.3 for assignment to Class 3; i.e. if the flash point is more than 60°C and the substance is not offered for transport at a temperature above its flash point.

Such substances will normally be C1 combustible liquids which are not classified as dangerous goods for transport purposes. However, the presence of a C1 combustible liquid in one or more compartments of a tank vehicle or portable tank transporting other refined petroleum products must be considered when determining the application of UN Number 1270 in accordance with 3.2.5.4 and 5.3.1.3.3.

#### **Problem with the current code**

AU02 exempts GAS OIL or DIESEL OIL or HEATING OIL, LIGHT or PETROLEUM DISTILLATE from the requirements of the code unless they meet the classification criteria for Class 3 flammable liquids. The intent of this is to exempt these substances from classification as Class 9 environmentally hazardous substance, even if they meet the classification criteria.

The requirement to consider the presence of a C1 combustible liquid in one or more compartments of a tank vehicle or portable tank transporting other refined petroleum products when determining the application of UN Number 1270 in accordance with 3.2.5.4 and 5.3.1.3.3 add no real value. The requirement is to 'consider it'. There is a general understanding that when a C1 combustible is transported in a multicompartment tank transporting Class 3 flammable liquids, the entire load is to be treated as Class 3. However, the wording of AU02 does not mandate this.

The regulation of C1 diesel is part of a broader conversation but the following options propose ways forward for consideration.

Option 1: Keep the current requirements as written.

Option 2: Classify C1 diesel as Class 3 for transport.

Option 3: Classify C1 diesel as Class 3, only when transported in a multicompartment tank that is also transporting a Class 3 flammable liquid.

**Question 28:** Which of the above three options for AU02 do you prefer? Why?

**Question 29:** Are there any particular matters you would like considered when reviewing the potential future regulation of diesel.

#### AU03 – currently assigned to UN Nos. 1011, 1075 and 1978

AU03 specifies a number of conditions for the transport of unodourised LPG, propane or butane.

AU03 Unodourised LP Gas or Propane or Butane may only be transported if each of the following conditions is met:

- (a) each route used for the transport must have been determined by an appropriate risk management assessment; and
- (b) each load must be accompanied by a gas detector suitable for the detection of LP Gas or Propane or Butane, in accordance with AS 1596, and by a person trained in its operation; and
- (c) that person must use the gas detector to check for the presence of LP Gas or Propane or Butane in the vicinity of the load at each routine stop that the vehicle makes, and on any other occasion when there is a significant risk that LP Gas may have leaked, and must record in writing the details of each test; and
- (d) the word "Unodourised" must be included as part of the shipping name displayed on vehicle emergency information panels; and
- (e) a copy of the Transport Emergency Response Plan must be provided to the relevant hazmat incident combat agency, before the journey commences.

AU03 will be reviewed by the gas specific working group.

**Question 30:** Are there any specific issues or concerns you would like the gas working group to consider when reviewing AU03? Please provide details.

#### AU04 – currently assigned to UN 1373

AU04 exempts natural greasy wool from the requirements of the code.

AU 04 Natural 'greasy wool' fleece and bales are not subject to this Code.

The origins and rationale for this exemption are not well known. If the exemption is retained, it will be included as a land mode specific exemption in Chapter 3.3 of the code.

**Question 31:** Do you have any background on the origins of this exemption? Please provide details.

**Question 32:** Do you have any data to support, or not support, the retention of this exemption? Please provide details.



## AU06 – currently assigned to UN 3245

AU06 GMMOs and GMOs to which 2.9.2.1 applies are not subject to this Code.

### **Problem with the current code**

It's unclear what the purpose of AU04 is. Provision 2.9.2.1 already states that GMMOs or GMOs are not subject to the Code when they meet the conditions specified in 2.9.2.1.

2.9.2.1 GMMOs or GMOs are not subject to this Code when they are:

- (a) licensed by the Office of the Gene Technology Regulator (OGTR);
- (b) approved by Food Standards Australia New Zealand (FSANZ); or
- (c) exempt from such licences and approvals under the Gene Technology Act 2000.

Provision 2.9.2.1 is a unique Australian provision. It may be its intent was to specify the competent authorities for the purpose of provision 2.9.2.

2.9.2 GMMOs or GMOs are not subject to this Code when authorised for use by the competent authorities of the countries of origin, transit and destination.

### **Draft code**

In the draft code, the classification criteria for Genetically modified microorganisms (GMMOs) and genetically modified organisms (GMOs) are specified in 2.2.9.1.11. The competent authorities specified in 2.2.2.1 of the current code have been added as a footnote to Note 2 of 2.2.9.1.11.

2.2.9.1.11 Genetically modified microorganisms (GMMOs) and genetically modified organisms (GMOs) are microorganisms and organisms in which genetic material has been purposely altered through genetic engineering in a way that does not occur naturally. They are assigned to Class 9 (UN No. 3245) if they do not meet the definition of toxic substances or of infectious substances, but are capable of altering animals, plants or microbiological substances in a way not normally the result of natural reproduction.

**NOTE 1:** *GMMOs and GMOs which are infectious are substances of Class 6.2, UN Nos. 2814, 2900 or 3373.*

**NOTE 2:** *GMMOs or GMOs are not subject to the provisions of this Code when authorized for use by the competent authorities of the countries of origin, transit and destination<sup>15</sup>.*

**NOTE 3:** *Pharmaceutical products (such as vaccines) that are packed in a form ready to be administered, including those in clinical trials, and that contain GMMOs or GMOs are not subject to this Code.*

**NOTE 4:** *Genetically modified live animals which, in accordance with the current state of scientific knowledge, have no known pathogenic effect on humans, animals and plants and are carried in receptacles that are suitable for safely preventing both the escape of the animals and unauthorized access to them, are not subject to the provisions of this Code. The provisions specified by the International Air Transport Association (IATA) for air transport "Live Animals Regulations, LAR" can be drawn on as guidelines for suitable receptacles for the transport of live animals.*

**NOTE 5:** *Live animals shall not be used to carry genetically modified microorganisms classified in Class 9 unless the substance can be carried no other way. Genetically*

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<sup>15</sup>

GMMOs and GMOs are authorized in Australia if they are:

- (a) licensed by the Office of the Gene Technology Regulator (OGTR); or
- (b) approved by Food Standards Australia New Zealand (FSANZ); or
- (c) exempt from such licences and approvals under the Gene Technology Act 2000.

*modified live animals shall be carried under terms and conditions of the competent authorities of the countries of origin and destination.*

UN 3245 is assigned special provision 637.

SP 637 Genetically modified microorganisms and genetically modified organisms are those which are not dangerous for humans and animals, but which could alter animals, plants, microbiological substances and ecosystems in such a way as cannot occur naturally. Genetically modified microorganisms and genetically modified organisms are not subject to the requirements of this Code when authorized for use by the competent authorities of the countries of origin, transit and destination.

Live vertebrate or invertebrate animals shall not be used to carry these substances classified under this UN number unless the substance can be carried in no other way.

For the carriage of easily perishable substances under this UN number appropriate information shall be given, e.g.: **"Cool at +2/+4 °C"** or **"Carry in frozen state"** or **"Do not freeze"**.

**Question 33:** Do the proposed changes achieve the outcome intended in AU06? Please provide your reasoning.

**Question 34:** Do 2.2.9.1.11 and special provision SP 637 provide clearer guidance on the classification and requirements for GMMOs and GMOs? Please provide your reasoning.

#### AU07 – currently assigned to UN 1017

AU07 UN 1017 CHLORINE has a subsidiary hazard 5.1, as well as 8. Despite this, when transported in cylinders, pressure drums, MEGCs or tanks, chlorine gas is not considered incompatible with dangerous goods of Class 8 or 9, or Division 6.1, or combustible liquids.

#### **Problem with the current code**

AU07 was originally introduced in response to the reclassification of UN 1017 to include the subsidiary hazard of Class 5.1. The inclusion of 5.1 was made by the UN TDG-SC in revision 15 of the UN MR, in 2007.

The inclusion of Class 5.1 increased the number of dangerous goods classes that chlorine was now listed as incompatible with. The argument at the time of introducing AU07 was that chlorine had been transported for many years, without incident. What is not known is if chlorine was generally transported in a mixed load with incompatible dangerous goods.

The compatibility table in Part 9 of the code is based on the inherent properties of the different dangerous goods classes. The compatibility table and segregation requirements were generally based on those of the IMDG Code. This was to reduce the intermodal barriers when moving from sea to air.

The current IMDG Code requires UN 1017 Chlorine to be segregated as a Class 5.1.

#### **Draft code**

It is not proposed to carry the concession for segregation of chlorine from incompatible dangerous goods into the draft code. This will result in the incompatibility and segregation of chlorine being based on its inherent hazards.

Removing the current concession will also align to the IMDG Code.

**Question 35:** Do you currently consign or transport UN 1017 Chlorine in a placard load with dangerous goods of Classes 2.1, 3, 4.1, 4.2, 4.3, 5.2, or other dangerous goods of Class 2.3, 5.1 or 8? Please provide details.

**Question 36:** What impact would removing the concession in AU07 have on your operations? Please provide details.

#### AU08 – currently assigned to UN Nos. 2794

AU08 provides for the use of a nominal figure of 25% of the gross weight of the battery when calculating the quantity of dangerous goods.

#### **Problem with the current code**

The special provision was originally introduced to replicate a Determination that had been issued by competent authorities. The wording has been refined and simplified over subsequent editions of the code.

The need to develop special provision AU08 has its roots in a number of historical and unique Australian concepts. Primarily the Australian definitions of ‘article’ and ‘aggregate quantity’.

Special provision is assigned to UN 2794 BATTERIES, WET, FILLED WITH ACID, electric storage but is not assigned to UN 2795 BATTERIES, WET, FILLED WITH ALKALI, electric storage. It’s likely that this disparity arose because the original Determination was only for UN 2794.

#### **Comparison of terms**

Term	ADG 7.9	UN MR	ADR/RID
Article	Article means a manufactured item, other than a fluid or particle, that:  (a) is formed into a particular shape or design during manufacture; and  (b) has hazard properties and a function that are wholly or partly dependent on the shape or design – and includes automotive and marine batteries and other large batteries such as those used in telecommunications facilities, small and other assorted batteries, aerosols,	No global definition of ‘article’  2.0.5.1 Articles containing dangerous goods may be classified as otherwise provided by these Regulations under the proper shipping name for the dangerous goods they contain or in accordance with this section.  For the purposes of this section “article” means machinery, apparatus or other devices containing one or more dangerous goods (or residues thereof) that are an integral element of the article, necessary for its functioning and that cannot be removed for the	No global definition of ‘article’  2.1.5.1 Articles containing dangerous goods may be classified as otherwise provided by ADR under the proper shipping name for the dangerous goods they contain or in accordance with this section.  For the purposes of this section “article” means machinery, apparatus or other devices containing one or more dangerous goods (or residues thereof) that are an integral element of the article, necessary for its functioning and that

Term	ADG 7.9	UN MR	ADR/RID
	gas-filled lighters, seat belt pre-tensioners and refrigerating machines.	purpose of transport. An inner packaging shall not be an article.	cannot be removed for the purpose of carriage.
Aggregate quantity	<p>Aggregate quantity means the total of:</p> <p>(a) the number of kilograms of:</p> <p>(i) solid dangerous goods; and</p> <p>(ii) articles (including aerosols); and</p> <p>(b) the number of litres or kilograms, whichever is used in the transport documentation to describe the goods, of liquid dangerous goods; and</p> <p>(c) the total capacity in litres of receptacles containing dangerous goods of Class 2 (except aerosols).</p> <p>Note: For receptacles that are manifolded together (e.g. MEGCs), the capacity is the internal volume of all spaces connected during transport.</p>	<p>No equivalent concept</p> <p>The closest is the requirement in 5.4.1.5.1 for the dangerous goods transport document.</p> <p>5.4.1.5.1 Except for empty uncleaned packagings, the total quantity of dangerous goods covered by the description (by volume or mass as appropriate) of each item of dangerous goods bearing a different proper shipping name, UN number or packing group shall be included. For Class 1 dangerous goods, the quantity shall be the net explosive mass. For dangerous goods transported in salvage packagings, an estimate of the quantity of dangerous goods shall be given.</p>	<p>The means of calculating the total quantity of dangerous goods for a load is specified in 1.1.3.6.3 as:</p> <p>"maximum total quantity per transport unit" means:</p> <ul style="list-style-type: none"> <li>For articles, total mass in kilograms of the articles without their packagings (for articles of Class 1, net mass in kilograms of the explosive substance; for dangerous goods in machinery and equipment specified in this Annex, the total quantity of dangerous goods contained therein in kilograms or litres as appropriate);</li> <li>For solids, liquefied gases, refrigerated liquefied gases and dissolved gases, net mass in kilograms;</li> <li>For liquids, the total quantity of dangerous goods contained in litres;</li> <li>For compressed gases, adsorbed gases and chemicals under pressure, the water capacity of the receptacle in litres.</li> </ul>

### Draft code

The draft code omits the definition of 'aggregate quantity'. The draft code will incorporate a modified version of 1.1.3.6 of the ADR for determining the quantity of dangerous goods in a load. The use of 1.1.3.6 will be discussed in more detail in a future discussion paper.

A note has also been added to the definition of 'maximum quantity' in 1.1.3.6.1, to incorporate the permitted use of 25% of the gross weight of the battery.

The definition in 1.1.3.6.3 above table, "maximum total quantity per transport unit" means:

- For articles, total mass in kilograms of the articles without their packagings (for articles of Class 1, net mass in kilograms of the explosive substance; for dangerous goods in machinery and equipment specified in this Annex, the total quantity of dangerous goods contained therein in kilograms or litres as appropriate)

**NOTE:** *For automotive batteries, where the acid volume is not known, 25% of the gross weight of the battery in kilograms;*

- For solids, liquefied gases, refrigerated liquefied gases and dissolved gases, net mass in kilograms;
- For liquids, the total quantity of dangerous goods contained in litres;
- For compressed gases, adsorbed gases and chemicals under pressure, the water capacity of the receptacle in litres.

**Question 37:** Does the proposed change achieve the same outcome as the current AU08?

## 4 Provisions concerning the conditions of carriage, loading, unloading and handling (Part 7)

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### Key points

- Provisions relating to the transport operation have been relocated and grouped in Part 7 of the draft code.
- Part 7 includes provisions concerning the conditions of carriage, loading, unloading and handling, including:
  - permitted vehicle types
  - correct stowage and load restraint
  - incompatibility and segregation methods.

The draft code has been structured to align with the logistics process. In doing this, provisions relating to the transport operation have been relocated and grouped in Part 7 - Provisions concerning the conditions of carriage, loading, unloading and handling.

Provisions related to permitted vehicle types, stowage, load restraint and segregation, along with specific conditions for carriage in packages, carriage in bulk containers, carriage in tanks and conditions for loading, unloading and handling of certain substances are all contained in Part 7 of the draft code.

Placing these provisions together provides a single location for duty holders conducting tasks associated with choosing and loading a vehicle ready for carriage, easy identification of the applicable requirements. Part 7 of the code is a logical place that aligns with the transport process.

- Chapter 7.1 – general provisions
- Chapter 7.2 – provisions concerning carriage in packages
- Chapter 7.3 – provisions concerning carriage in bulk
- Chapter 7.4 – provisions concerning carriage in tanks
- Chapter 7.5 – provisions concerning loading, unloading and handling (including stowage and mixed loading)

### 4.1 General provisions (Chapter 7.1)

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Chapter 7.1 of the draft code contains the general provisions applicable to carriage, loading, unloading and handling. Many of these provisions are already contained in the current code in some form albeit scattered throughout the code.

Existing provisions in the current code have been updated as relevant and grouped together.

The following provides a brief overview and identifies any significant differences between the current provisions and those in the draft code.

Section 7.1.7 contains the special provisions applicable to the carriage of self-reactive substances of Class 4.1, organic peroxides of Class 5.2 and substances stabilized by temperature control (other than self-reactive substances and organic peroxides). These are essentially equivalent to section 7.1.5 of the current code.

The following amendments have been made to existing provisions in sub-section 7.1.7.4 (7.1.5) – carriage under temperature control.

- The carrier of substances under temperature control is to be provided with a list of the suppliers of coolant available en route (7.1.7.4.1(b)).
- An adequate quantity of non-flammable coolant (e.g. liquid nitrogen or solid carbon dioxide), allowing a reasonable margin for delay, is carried or a means of replenishment is assured (7.1.7.4.5(b)(i)).

The draft code introduces the following additional provisions for the carriage of substances under temperature control.

- 7.1.7.4.6 The methods described in 7.1.7.4.5 (d) and (e) may be used for all organic peroxides and self-reactive substances and polymerizing substances.

The method described in 7.1.7.4.5 (c) may be used for organic peroxides and self-reactive substances of Types C, D, E and F and, when the maximum ambient temperature to be expected during carriage does not exceed the control temperature by more than 10 °C, for organic peroxides and self-reactive substances of Type B and polymerizing substances.

The method described in 7.1.7.4.5 (b) may be used for organic peroxides and self-reactive substances of Types C, D, E and F and polymerizing substances when the maximum ambient temperature to be expected during carriage does not exceed the control temperature by more than 30 °C.

The method described in 7.1.7.4.5 (a) may be used for organic peroxides and self-reactive substances of Types C, D, E and F and polymerizing substances when the maximum ambient temperature to be expected during carriage is at least 10 °C below the control temperature.

- 7.1.7.4.7 Insulated, refrigerated and mechanically refrigerated containers intended for the carriage of temperature controlled substances shall conform to the following conditions:

- (a) The overall heat transfer coefficient of an insulated container shall be not more than 0.4 W/m<sup>2</sup>/K;
- (b) The refrigerant used shall not be flammable; and
- (c) Where containers are provided with vents or ventilation valves care shall be taken to ensure that refrigeration is not impaired by the vents or ventilation valves.

Where substances are required to be carried in insulated, refrigerated or mechanically-refrigerated vehicles, these vehicles shall satisfy the requirements of Chapter 9.6.

- 7.1.7.4.8 If substances are contained in protective packagings filled with a coolant, they shall be loaded in closed or sheeted vehicles or closed or sheeted containers. If the vehicles or containers used are closed they shall be adequately ventilated. Sheeted vehicles and containers shall be fitted with sideboards and a tailboard. The sheets of these vehicles and containers shall be of an impermeable and non-combustible material.

**Question 38:** Is there any reason the general provisions in Chapter 7.1 of the draft code should not be included in the future code? Please provide your reasoning.

## 4.2 Provisions concerning carriage in packages (Chapter 7.2)

Chapter 7.2 sets out the general and specific provisions concerning carriage of dangerous goods in packages. The general requirements are specified in section 7.2.1, as follows:

- 7.2.1 Unless otherwise provided in 7.2.2 to 7.2.4, packages may be loaded:
- (a) in closed vehicles, closed wagons or in closed containers; or
  - (b) in sheeted vehicles, sheeted wagons or in sheeted containers; or
  - (c) in open vehicles, open wagons or in open containers (unsheeted).

This is qualified by provision 7.2.2 which requires packages with packagings made from materials that are sensitive water to be loaded into vehicles, wagons or containers that are closed or sheeted.

Additional provisions applicable to the carriage of particular substances are contained in section 7.2.4 of the draft code. The provisions for carriage in packages applicable to a given substance are identified in column 16 of the dangerous goods list.

### 4.2.1 Provisions for carriage in packages applicable to specific substances

#### V1

V1 is assigned to all class 4.2 and class 4.3 substances, other than articles of UN 3542 and UN 3543. It is also assigned to organic peroxides of 5.2, and medical and clinical wastes of 6.2.

All class 4.2 and class 4.3 substances assigned V1 are PG I or PG II. The exception to this is UN 3342 Xanthates, where V1 is also applied to PG III.

V1 - Packages shall be loaded on to closed or sheeted vehicles, closed or sheeted wagons, or into closed or sheeted containers.

In the current code, not all of the impacted substances are permitted in IBCs. Where they are permitted in and IBC, they are generally assigned IBC special packing provision B1 or B2. Both B1 and B2 require IBCs to be transported in a closed vehicle. V1 extends the permitted vehicle type to include sheeted vehicles.

In the current code, the vehicle type requirement for these substances is applied only to IBCs. The draft code extends the vehicle requirement to **all** packages of substances to which V1 is assigned.

A detailed explanation for omitting IBC special packing provisions B1 and B2 and replacing them with V codes is provided in Working Group Paper #9.

**Question 39:** Will extending the requirement for transport in closed or sheeted vehicles to **all** packages, impact your operations? Please provide details.



V2 and V3 – These apply to Class 1 only. They will be reviewed by the explosives working group.

## V5

V5 is assigned to Type B organic peroxides of UN 3101 (liquid) and UN 3102 (solid). Packages for these two substances are required to display a Class 1 Explosives label.

V5 Packages may not be carried in small containers.

Note: 'small container' means a container which has an internal volume of not more than 3 m<sup>3</sup>. For the full definition of 'container' refer to the definitions in Part 1 of the ADR.

The current code contains no such restriction on the size of container used for the carriage of these substances. It's understood that the use of small containers is not common in Australia.

**Question 40:** Will the inclusion of V5 impact your operations? Please provide details.

## V8

V8 is assigned to stabilised and temperature-controlled substances (self-reactive substances of Class 4.1, organic peroxides of Class 5.2 and substances stabilized by temperature control (other than self-reactive substances and organic peroxides)). The special provisions applicable to the carriage of these substances are detailed in section 7.1.7 of the draft code. For the most part, these provisions replicate those in section 7.1.5 of the current code. See 4.1 of this paper above for a more detailed discussion.

V8 See 7.1.7.

**NOTE:** *This special provision V8 does not apply to substances referred to in 3.1.2.6 when substances are stabilized by the addition of chemical inhibitors such that the SADT is greater than 50 °C. In this case, temperature control may be required under conditions of carriage where the temperature may exceed 55 °C.*

V8 requires compliance with section 7.1.7 but provides an exemption to those requirements when the conditions in the Note to V8 are met.

## V10

V10 replaces the use of IBC special packing provision B1 of the current code. Every entry assigned V10 in the draft code is assigned B1 in the current code. This requirement has not been extended to any additional entries.

V10 IBCs shall be carried in closed or sheeted vehicles, closed or sheeted wagons or closed or sheeted containers.

In the current code, IBC special packing provision B1 requires IBCs containing these substances to be transported in a closed vehicle. V10 extends the permitted vehicle type to include sheeted vehicles.

## V11

V11 replaces the use of IBC special packing provision B2 of the current code. Every entry assigned V11 in the draft code is assigned B2 in the current code. This requirement has not been extended to any additional entries.

V10 IBCs other than metal or rigid plastics IBCs shall be carried in closed or sheeted vehicles, closed or sheeted wagons or closed or sheeted containers.

In the current code, IBC special packing provision B2 requires IBCs containing these substances to be transported in a closed vehicle. V11 extends the permitted vehicle type to include sheeted vehicles.

### V12

V12 introduces a new requirement for the vehicle types permitted for the carriage of PG III liquids in composite IBCs with flexible plastics inner receptacles.

V12 requires the impacted entries to be transported in closed vehicles or containers.

V12 IBCs of type 31HZ2 (31HA2, 31HB2, 31HN2, 31HD2 and 31HH2) shall be carried in closed vehicles, closed wagons or containers.

### V13

V13 is assigned to UN Nos. 1361, 2213 and 3077 when packed in bags of the following types:

- textile without an inner liner or coating (5L1)
- woven plastic without an inner liner or coating (5H1)
- paper, multiwall (5M1).

The restriction on vehicle type does not to other packaging types.

V13 When packed in 5H1, 5L1 or 5 M1 bags, shall be carried in closed vehicles, closed wagons or containers.

### V14

V14 is assigned to UN 1950. It replicates the requirements in 7.1.4.5(a) of the current code.

V14 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 vehicles, ventilated or open wagons or containers.

### V15

Is assigned to UN 3550 Cobalt Dihydroxide. It requires IBCs to be carried in closed vehicles.

### **Sheeted vehicles vs closed vehicles**

The requirement to used closed or sheeted vehicles is based on the hazards of the substance and any particular risks during carriage, for example dust inhalation or contamination. Carriage is restricted to closed or sheeted vehicles when the transport in an open vehicle is considered to present an unacceptable risk.

While there may some exceptions, the requirement for closed vehicles (V12, V13 or V15) vs closed or sheeted vehicles (V1, V10 or V11) is generally applied on the following basis:

- Closed vehicles or sheeted vehicles, permitted for solids, and for liquids meeting the following:
  - liquids not permitted in IBCs
  - class 4.3 (where the risk is from exposure to water)
  - organic peroxide Type F.
- Closed vehicles for IBCs containing liquids and IBCs containing UN 3555 Cobalt dihydroxide.

The requirement for closed vehicles vs closed or sheeted vehicles, provides controls that are proportionate to the risk and that do not unnecessarily impede transport.

**Question 41:** Do you support the above argument on when transport is permitted only in a closed vehicle as opposed to when a closed or sheeted vehicle is permitted? Please provide your reasoning.

### Anticipated impacts

Relocating the conditions for carriage to Part 7 of the code groups the requirements and locates them in a logical location that aligns with the transport process. This is expected to make it easier for duty holders to identify the provisions relevant to the tasks they're performing.

Permitting the use of sheeted vehicles where the risk relates to dusts or powders, or from contact with water, will significantly reduce the burden on carriers, without reducing safety.

The extension of the restriction of vehicle types to smaller packages and to composite IBCs with flexible plastics inner receptacles, recognises the risks these pose during carriage. While no data is available for the number of transport operations that would be impacted by this change, it's believed that there would be very few.

The substances for which the requirement has been extended to include all packages, not just IBCs, represent a very small and niche industry sector.

The use of composite IBCs with flexible plastic inner receptacles within Australia is understood to be extremely rare.

**Question 42:** Are there other impacts (costs or benefits) we haven't considered? Please provide details.

## 4.3 Provisions concerning carriage in bulk (Chapter 7.3)

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Chapter 7.3 of the draft code contains the provisions concerning carriage in bulk. For the most part, these provisions replicate the provisions in Chapter 4.3 of the current code. There has been some minor restructuring of the content to improve the flow and readability.

The following table provides a comparison of provisions in the draft code compared to the current code. Key differences are highlighted. Each of the highlighted provisions are discussed in more detail in this section.

Draft code	ADG 7.9	Draft code	ADG 7.9
7.3.1.1	4.3.1.2, 4.3.1.3	7.3.2.1	4.3.1.1
7.3.1.2	4.3.1.4	7.2.2.2	4.3.1.1
7.3.1.3	4.3.1.5	7.3.2.3	4.3.2.1
7.3.1.4	4.3.1.6	7.3.2.4	4.3.2.2
7.3.1.5	4.3.1.7	7.3.2.5	4.3.2.3
7.3.1.6	4.3.1.8	7.3.2.6	4.3.2.4
7.3.1.7	4.3.1.9	7.3.2.7	4.3.2.5
7.3.1.8	4.3.1.10	7.3.2.8	4.3.2.6
7.3.1.9	4.3.1.11	7.3.2.9	
7.3.1.10	4.3.1.12	7.3.2.10	4.3.1.16
7.3.1.11	4.3.1.13	7.3.3	
7.3.1.12	4.3.1.14		
7.3.1.13	4.3.1.15		

Both the current code and the draft code provide two types, or avenues of permissions for carriage in bulk containers.

In the current code, these are specified in provisions 4.3.1.2 and 4.3.1.3, as follows:

- 4.3.1.2 Except as provided in 4.3.1.3, bulk containers may only be used when a substance is assigned to a bulk container code in Column 10 of the Dangerous Goods List in Chapter 3.2.
- 4.3.1.3 When a substance is not assigned a bulk container code in Column 10 of the Dangerous Goods List in Chapter 3.2, a determination in accordance with Regulation 1.5.1(2) may be issued by the competent authority. The determination must be included in the documentation of the consignment and contain, as a minimum, the information normally provided in the bulk container instruction and the conditions under which the substance must be transported. Appropriate measures should be initiated by the competent authority to include the assignment in the Dangerous Goods List.

In the draft code, the permissions for carriage in bulk containers are specified in 7.3.1.1, as follows:

- 7.3.1.1 Goods may not be carried in bulk in bulk containers, containers, vehicles or wagons unless:
  - (a) either a special provision, identified by the code "BK" or a reference to a specific paragraph, explicitly authorizing this mode of carriage is indicated in column (10) of Table A of Chapter 3.2 and the relevant conditions of 7.3.2 are satisfied in addition to those of this section; or

- (b) a special provision, identified by the code "VC" or a reference to a specific paragraph, explicitly authorizing this mode of carriage is indicated in column (17) of Table A of Chapter 3.2 and the conditions of this special provision, together with any additional provision identified by the code "AP", 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 this Code.

#### Use of bulk containers of type BK1, BK2 and BK3

The entries in the dangerous goods list, and the bulk container types permitted under 7.3.1.1(a) of the draft code are the same as permitted by 4.3.1.2 of the current code. The one exception being that the permitted bulk container types for UN 3077 has been extended to include BK1. BK1 permits carriage in sheeted bulk containers. The inclusion of sheeted containers is in line with the use of sheeted vehicles for IBCs containing solids. See discussion in the previous section of this paper.

#### Additional provisions applicable to the carriage of certain substances (7.3.3)

##### **Problem with the current code**

The current code is clear that, except as provided by 4.3.1.3, bulk containers may only be used if the substance is assigned a bulk container code in Column 10 of the dangerous goods list. If no bulk container code is assigned in column 10, carriage in bulk is only permitted if the competent authority issues a determination.

As with many similar provisions in the current code, the requirements for a competent authority determination creates a reactive process at the time of need. This creates unnecessary delays and has the potential to result in ad-hoc and inconsistent requirements.

The intent of the UN TDG-SC when including requirements for competent authority intervention is that the bodies responsible for developing the mode specific codes will take a proactive approach in defining the requirements. The current process for incorporating amendments from the UN MR into the code does include development of additional requirements to implement the UN MR in a land mode setting.

##### **Draft code**

The draft code omits the requirement for competent authority determination and replaces it with special provisions that explicitly authorise the carriage in bulk for specific substances. The authorisation for a specific substance is indicated by a 'VC' code in column 17 of the dangerous goods list. Where additional provisions apply, these are identified by the code 'AP' in column 17.

The VC codes and additional provisions are contained in section 7.3.3 of the draft code. The VC codes, VC1, VC2 and VC3 refer to the same types as BK1, BK2 and BK with the exception that they do not need to be in conformity with the requirements of Chapter 6.11. The requirements of 7.3.1 must still be met.

There are ten additional provisions, defined as per the following AP codes:

- AP1 Vehicles, wagons and containers shall have a metal body and where fitted the sheet shall be non-combustible.
- AP2 Vehicles, wagons and containers shall have adequate ventilation.
- AP3 Sheeted vehicles, sheeted wagons and sheeted containers shall be used only when the substance is in pieces (not in powder, granular, dust or ashes form).

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

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

"WARNING  
NO VENTILATION  
OPEN WITH CAUTION"

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

AP7 Carriage in bulk shall only be as a full load.

AP8 The design of the load compartment of vehicles, wagons or containers shall take account of any residual currents and impacts from the batteries.

AP9 Carriage in bulk is permitted for solids (substances or mixtures, such as preparations or wastes) containing on average not more than 1 000 mg/kg of substance to which this UN number is assigned. At no point of the load shall the concentration of this substance or these substances be higher than 10 000 mg/kg.

AP10 Vehicles, wagons and containers shall be made leak tight or fitted with a leak tight and puncture resistant sealed liner or bag, and shall have a means of retaining any free liquid that might escape during carriage, e.g. absorbent material. Packagings, discarded, empty, uncleaned with residues of Class 5.1 shall be carried in vehicles, wagons and containers which have been so constructed or adapted that the goods cannot come into contact with wood or any other combustible material.

The AP codes specify additional requirements applicable to specific classes of dangerous goods. For example:

*Goods of Class 4.3*

AP2 Vehicles, wagons and containers shall have adequate ventilation.

AP3 Sheeted vehicles, sheeted wagons and sheeted containers shall be used only when the substance is in pieces (not in powder, granular, dust or ashes form).

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

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

"WARNING  
NO VENTILATION  
OPEN WITH CAUTION"

Requirements for UN 3509

The draft code includes the following requirement for the transport of UN 3509 in a bulk container. This provision is in line with other changes in the draft code that specify requirements for the use of UN 3509. See the discussion for special provisions 374 and special provision 663 in 3.1 and 3.2 of this paper.

7.3.2.9.1 For UN 3509, only closed bulk containers (code BK2) may be used. Bulk containers shall be made leak tight or fitted with a leak tight and puncture resistant sealed liner or bag, and shall have a means of retaining any free liquid that might escape during carriage, e.g. absorbent material. Packagings, discarded, empty, uncleaned with residues of Class 5.1 shall be carried in bulk containers which have

been so constructed or adapted that the goods cannot come into contact with wood or any other combustible material.

**Question 43:** Will the inclusion of VC type bulk containers and the additional AP provisions provide clearer requirements and remove regulatory barriers? Please provide your reasoning.

## **4.4 Provisions concerning carriage in tanks (Chapter 7.4)**

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Chapter 7.4 of the draft code provides the definitions for different vehicle types used for the carriage of dangerous goods in tanks. The permitted vehicle types are specified in Column 14 of the dangerous goods list.

A detailed discussion on vehicle types is contained in Working Group Paper #11.

## **4.5 Provisions concerning loading, unloading and handling (Chapter 7.5)**

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Chapter 7.5 of the future code contains provisions concerning loading, unloading and handling. The contents in this chapter are aimed primarily at persons who load and prepare a vehicle ready for transport.

The chapter specifies requirements related to mixed loading prohibitions, segregation rules, load restraint and various miscellaneous precautions. This chapter also contains several additional provisions that apply to certain classes or specific goods.

### **4.5.1 General provisions concerning loading, unloading and handling (Section 7.5.1)**

The general provisions contained in section 7.5.1 of the draft code provide general duties and compliance requirements for the vehicle and vehicle crew. They cover basic requirements such as complying with safety and security requirements at loading and unloading sites.

There are also general requirements around examining documents and conducting a visual inspection of the vehicle for cleanliness and serviceability.

### **4.5.2 Mixed loading prohibitions (Section 7.5.2)**

The mixed loading provisions are specified in section 7.5.2 of the draft code.

The table of incompatible dangerous goods and the requirements for segregation are in section 7.5.2 7.5 of the draft code. This locates them with other provisions relating to loading and carriage.

### **Problem with the current code**

The incompatibility contained in table 9.1 – ‘Incompatibility based on classification’ and table 9.2 – ‘Examples of particular incompatible dangerous goods’, have their origins in the IMDG Code. The decision to use the IMDG Code as the basis for incompatibility was intended to reduce intermodal barriers.

In ADG 6, the list of incompatibility based on classification was written in text format. This was reformatted into table format in ADG 7, as table 9.1 but no other changes were made. Table 9.2 of the current code remains the same as it was in ADG 6.

Table 9.2 is no longer aligned to the IMDG Code and contains information that is now incorrect and/or out of date.

Table 9.2 is based on chemical groupings but there is no information in the code to help identify what UN numbers are included in any particular chemical grouping.

### **Draft code**

Tables 9.1 and 9.2 of the draft code have been updated for currency with the IMDG Code.

Table 9.1 has been expanded to differentiate compatibility based on the different divisions of Class 1. The Notes to the table have been simplified and rationalised but no substantive changes have been made to the compatibility between classifications or when segregation is required.

The incompatibilities in the table of examples of particular incompatible dangerous goods have been updated to align with the current IMDG Code. The changes to Table 9.2 update incompatibilities of the substances listed in the current ADG Code. The IMDG Code identifies incompatibilities for every entry in the dangerous goods list. Replicating this in the ADG code would be unnecessary complicated and unworkable. There is also a significant difference in risk between dangerous goods on a ship at sea for many weeks and dangerous goods transported by road.

To assist in the application of table 9.2, a list of UN numbers for the relevant chemical groupings has been added to Chapter 3.2, as Table C. The chemical groupings included are:

- Acids, with strong acids identified
- Alkalis
- Ammonium compounds
- Bromates
- Chlorates
- Chlorites
- Cyanides
- Hypochlorites
- Nitrites
- Perchlorates
- Permanganates
- Peroxides
- Powdered metals

A full excerpt of Chapter 3.2, Table C is contained in Appendix A of this paper.

Requirements relating to segregation of incompatible goods and segregation methods are contained in 7.5.2.3. Segregation methods for packaged dangerous goods, other than Class 1 are specified in 7.5.2.3.2. These remain aligned to the current code, i.e.:

- (a) Placing the dangerous goods in a separate vehicle or separate trailer of a combination vehicle to the incompatible goods;
- (b) Segregating the dangerous goods from the incompatible goods through the use a segregation method conforming to Chapter 6.15 of this Code.



The design, construction and type approval requirements for segregation devices are specified in Chapter 6.15 of the draft code. These are discussed in greater detail in section 5 of this paper.

**Question 44:** Will the proposed changes to Table 9.2 and the addition of Chapter 3.2, Table C assist you in determining specific segregation requirements? Please provide details.

#### **4.5.3 Protective distances (Section 7.5.3)**

Section 7.5.3 of the draft code sets out the required protective distances between wagons on a train. These have been replicated directly from RID. They will be reviewed in consultation with rail stakeholders.

#### **4.5.4 Precautions with respect to foodstuffs, other articles of consumption and animal feeds (Section 7.5.4)**

In the draft code, the requirement to separate a specific substance from foodstuffs and other articles of consumption, and animal feeds is indicated by the assignment of special provision CV28 in Column 18 of the dangerous goods list.

When CV28 is indicated for a specific substance, the substance must be segregated as per the requirements in 7.5.4.

Unlike the current code, the draft code permits segregation to be achieved by the use of partitions, non-incompatible goods or distance.

The draft code also removes the blanket requirement for segregation from Class 8.

#### **4.5.5 Limitation of the quantities carried (Section 7.5.5)**

Section 7.5.5 of the draft code introduces a limitation on the maximum quantity of certain dangerous goods in a transport unit. These limitations apply to Class 1 and to organic peroxides, self-reactive substances and polymerizing substances.

With respect to organic peroxides of Class 5.2 and self reactive substances of Class 4.1 of Types B, C, D, E or F and of polymerizing substances of Class 4.1, the maximum quantity permitted is 20 000 kg per transport unit.

#### **4.5.6 Handling and stowage (Section 7.5.7)**

Section 7.5.7 of the draft code deals primarily with load restraint. It replicates most of the requirements from Part 8 of the current code. The primary difference being that the draft code does not specify the use of gates or other specific restraint methods.

The requirements in this section are aimed at ensuring correct stowage and the protection of the dangerous goods.

#### **Problem with the current code**

Load restraint requirements in the current code have remained relatively unchanged since ADG 5 was released in 1992 and potentially even prior.

These requirements were developed prior to the current mandatory load restraint requirements specified in relevant transport laws such as the Heavy Vehicle (Mass,

Dimension and Loading) National Regulations, or the Road Rules. They were developed based on the needs of the time. Modern performance standards for load restraint were not introduced until after ADG 5 was published. The first Load Restraint Guide was published in 1994, with most Australian states and territories subsequently calling up the performance standards in their regulations.

With the introduction of mandatory performance standards for load restraint, the mandating of specific load restraint methods is no longer appropriate. It introduces duplication and potential conflict with other legislation.

### **Draft code**

The draft code retains the requirements relating to correct stowage of dangerous goods, e.g. upright, restrained to prevent movement that could change the orientation of the packages or cause them to be damaged. The draft code also retains the requirements relating to protection of the dangerous goods from other goods in the load.

Requirements relating to specific methods for restraining the loads to prevent them being dislodged from the vehicle or shifting so as to cause the vehicle to become unstable, have been omitted. These have been replaced with a requirement to comply with the load restraint requirements in relevant legislation.

### **Discussion**

Load restraint requirements in the code generally fall into one or other of the following categories:

- Requirements designed to protect the dangerous goods from damage and ensure they do not change orientation.
- Requirements designed to ensure the load remains on the vehicle and does not move in such a way as to affect the vehicle's stability.

Requirements in the first category are specific to the safe transport of dangerous goods and have therefore been retained in the draft code.

Requirements that fall into the second category apply to all vehicles and all loads, not just dangerous goods. Such matters are the subject of transport regulations such as the Heavy Vehicle (Mass, Dimension and Loading) National Regulations, or the Australian Road Rules. It is no longer necessary or appropriate to include specific load restraint methods in the code. Retaining these requirements in the code results in duplication of the laws and potential for conflicts or contradictions to develop over time.

The mandatory use of gates is an example of a requirement that has now become outdated and is in conflict with the concept of performance standards in load restraint laws. Gates introduce a manual handling risk that may be considered unacceptable today. A set of gates for a vehicle could weigh as much as 300kg.

### **Anticipated impacts**

Removing the specific methods for restraining a load on a vehicle will remove the duplication and potential for conflict with load restraint legislation. The removal of the mandatory requirement for gates has the potential to significantly reduce costs and injuries.

There are no negative impacts or reduction in safety outcomes expected from these changes.

**Question 45:** Are there other impacts (costs or benefits) we haven't considered?  
Please provide details.

#### **4.5.7 Cleaning after unloading (Section 7.5.8)**

Section 7.5.8 of the draft code contains general provisions regarding cleaning of vehicles, wagons or containers if, after unloading packaged dangerous goods, any of the contents have escaped.

#### **4.5.8 Prohibition on smoking (Section 7.5.9)**

Section 7.5.9 of the draft code contains a general prohibition on smoking during handling operations in the vicinity of vehicles or containers and inside the vehicles or containers. The provision also clarifies that the prohibition includes the use of electronic cigarettes and similar devices.

#### **4.5.9 Precautions against electrostatic charges (Section 7.5.10)**

Section 7.5.10 in the draft code includes a provision for managing static electricity during transfer of flammable liquids.

Chapter 10.2 of the current code contains a number of other provisions relating to product transfer. Most other countries regulate transfer of dangerous goods under other legislation such as workplace safety laws, rather than dangerous goods transport laws. However, it's recognised that retaining some transfer requirements in the code in Australia may be appropriate. Any provisions retained will be combined under section 7.5.10 in the draft code.

We are preparing a more detailed paper on this topic. To assist with the development of this paper, please provide any information you have on the current transfer provisions.

**Question 46:** What provisions relating to transfer in the current code work well?  
Please provide details.

**Question 47:** What provisions relating to transfer in the current code don't work well or need to change? {Please provide details.

#### **4.5.10 Additional provisions applicable to certain classes or specific goods (Section 7.5.11)**

Section 7.5.11 of the draft code specifies additional provisions applicable to the loading, unloading or handling of certain classes or specific goods. These provisions are in addition to the requirements in sections 7.5.1 to 7.5.10. The provisions assigned to a given substance are identified in column 18 of the dangerous goods list.

Many of the additional provisions are updated versions of requirements contained in Part 7 of the current code.

The provisions are number CV1 to CV37 but of these, 12 are marked '*Reserved*'. The following table provides a general analysis of the CV codes and the substances they are assigned to.

CV No.	Impacted Classes or specific substances	Requirements and comments
CV1	Assigned to all Class 1, all Class 6.1, other than those assigned CV13, and to Class 9 substances of UN Nos. 3151, 3152, 3245 and 3432	Prohibits loading or unloading in a public place without permission of the competent authority.
CV2	Assigned to all Class 1 entries	Will be reviewed by the explosives working group.
CV3	Assigned to all Class 1 entries	Imposes the requirements of 7.5.5.2, which places limits on quantities per transport unit.  Will be reviewed by the explosives working group.
CV4	Assigned to All Class 1, compatibility group L	Substances and articles of compatibility group L shall only be carried as a full load.  Will be reviewed by the explosives working group.
CV9	Assigned to Class 2 other than UN Nos. 3537, 3538 and 3539	Packages shall not be thrown or subjected to impact.  Receptacles shall be so stowed in the vehicle, wagons or container that they cannot overturn or fall.
CV10	Assigned to all Class 2 entries assigned packing instruction P200, P205, P206 or P208	Specifies the orientation of cylinders when loaded on a vehicle.  Will be reviewed by the gas working group.
CV11	Assigned to refrigerated liquids of Class 2	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.
CV12	Assigned to UN Nos. 1950, 2037, 3478, 3479, 3500, 3501, 3502, 3503, 3504 and 3505	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.
CV13	Assigned to Class 6.2 (other than UN 3373), liquids with a primary or secondary hazard of 6.1 and UN Nos. 1811, 2212, 2315, 2590, 2923, 3077, 3082, 3151, 3152, 3245, 3432 and 3537 to 3548	Specifies actions to be taken after a spill or leak. Includes examination for contamination, cleaning, disinfecting and decontamination.  See 7.1.7.2 of the current code

CV14	Assigned to Class 4.1 of UN Nos. 2956, 3241, 3242 and 3251	<p>Goods shall be shielded from direct sunlight and heat during carriage.</p> <p>Packages shall be stored only in cool, well-ventilated places away from heat sources.</p> <p>See 7.1.5.1 of the current code</p>
CV15	Assigned to organic peroxides of Class 5.2 and self-reactive substances of Class 4.1 of Types B, C, D, E or F and of polymerizing substances of Class 4.1	Imposes the requirements of 7.5.5.3, which places limits on quantities per transport unit.
CV20	Assigned to specific organic peroxides of Class 5.2 and some self-reactive substances of Class 4.1	The provisions of Chapter 5.3 and 7.1.7.4.7 and 7.1.7.4.8 as well as special provision V1 of Chapter 7.2 shall not apply provided that the substance is packaged in accordance with packing method OP1 or OP2 of packing instruction P520 in 4.1.4.1, as required, and the total quantity of substances to which this derogation applies per transport unit is limited to 10 kg.
CV21	Assigned to organic peroxides of Class 5.2 and self-reactive substances of Class 4.1	Specifies requirements relating to ensuring temperature control is maintained.
CV22	Assigned to organic peroxides of Class 5.2 and self-reactive or polymerising substances of Class 4.1	<p>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 vehicle, wagon or large container exceed 5 000 kg of flammable solids, of polymerizing substances and/or organic peroxides, the load shall be divided into stacks of not more than 5 000 kg separated by air spaces of at least 0.05 m.</p>
CV23	Assigned to substances of Class 4.3. Equivalent to 7.1.11 of the current code.	<p>Requires protection from contact with water.</p> <p>See 7.1.11 of the current code.</p>
CV24	Assigned to substances of Class 5.1 or 5.2 and to Class 8 with a subsidiary hazard of 5.1	<p>Before loading, vehicles, wagons and containers shall be thoroughly cleaned and in particular be free of any combustible debris (straw, hay, paper, etc.).</p> <p>The use of readily flammable materials for stowing packages is prohibited.</p>
CV25	Assigned to all substances of Class 6.2, other than UN 3373	<p>(1) Packages shall be so stowed that they are readily accessible.</p> <p>(2) When packages are to be carried at an ambient temperature of not more than 15 °C or refrigerated, the temperature shall be maintained when unloading or during storage.</p>

		(3) (Packages shall be stored only in cool places away from sources of heat.
CV26	Assigned to UN 3245 and to all Class 6.2, other than UN Nos. 3291 and 3373	The wooden parts of a vehicle, wagon or container which have come into contact with these substances shall be removed and burnt.
CV27	Assigned to UN 3245	<p>(1) Packages shall be so stowed that they are readily accessible.</p> <p>(2) When packages are to be carried refrigerated, the functioning of the cooling chain shall be ensured when unloading or during storage.</p> <p>(3) Packages shall only be stored in cool places away from sources of heat.</p>
CV28	Assigned to substances with a primary or subsidiary hazard of 6.1 or 6.2 and to UN Nos. 2212, 2315, 2590, 3151, 3152, 3245 and 3432.	Imposes the requirements of 7.5.4, which requires segregation from foodstuffs and other articles of consumption, and animal feeds.
CV33	Assigned to Class 7	
CV34	Assigned to UN 1052	Prior to carriage of pressure receptacles it shall be ensured that the pressure has not risen due to potential hydrogen generation.
CV35	Assigned to Calcium hypochlorite mixtures of Class 5.1	If bags are used as single packagings, they shall be adequately separated to allow for the dissipation of heat.
CV36	Assigned to Class 2 other than UN Nos. 1002, 1043, 1044, 1057, 1950, 2037, 2073, 2857, 3150, 3164, 3167, 3168, 3169, 3318, 3358, 3478, 3479, 3529, 3537, 3538, 3539.	<p>Specifies a preference for transport on open or ventilated vehicles. Specifies the precautions to be taken when transport on open or ventilated is not feasible and a closed vehicles is used.</p> <p>Replaces 7.1.4.5 of the current code with requirements that are clearer and measurable.</p>
CV37	Assigned to UN 3170	

**Question 48:** Are there any reasons that the CV codes are unsuitable for Australia?  
Please provide details.

## 5 Segregation devices for dangerous goods

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### Key points

- The current code includes a mixture of segregation devices and packages that have developed over time.
- The provisions have been reviewed, and rationalised into a set of segregation devices that provide a more coherent range of segregation devices.
- These segregation devices are subject to a clearer set of controls to permit more appropriate construction, approval and use requirements.

The current ADG Code recognises 4 types of segregation devices:

- Overpacking drum segregation device
- Type I segregation device
- Type II segregation device
  - This is proposed to be replaced by a *Type II removable segregation device*.
- Non-type I underslung segregation device
  - This is proposed to be replaced by a *Type II attached segregation device*.

Segregation devices do not exist in ADR but are a key risk control for segregating dangerous goods from incompatible goods for transport in Australia. As a result, they will be carried forward into the future code. However, the provisions have been rationalised into a coherent system.

The draft provisions for segregation devices are included in Appendix B of this paper.

### 5.1 Type I segregation device

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A type I segregation device is relatively small. They do not require performance testing or approval, provided they conform to the design requirements laid down in Part 6. These devices are designed to remain attached to a vehicle, and not to be removed while loaded with dangerous goods.

These have been carried forward into the draft future code without change.

### 5.2 Type II segregation devices

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In the current code, type II segregation devices are design to be filled with goods, and to be lifted on or off a vehicle while loaded.

These devices:

- Are larger than type I, though no more than 3000 L in capacity.
- Require competent authority approval, after design and prototype testing.

In reviewing the requirements for segregation devices in the current code, the type II segregation device stands out as not needing to be liquid tight. All other segregation devices require this.

### **Type II removable segregation device**

The draft code includes the requirements for type II segregation. However, the requirements have been modified to require them to be liquid tight when used for segregation. The inclusion of “when used for segregation” is to continue to provide the ability for the device to be collapsible. If included, transitional provisions will be considered for currently approved and in-use segregation devices.

**Question 49:** Do you consider it inappropriate to require type II segregation devices to be liquid tight? Please provide details.

**Question 50:** If the draft requirement for Type II segregation devices to be liquid tight is retained, what transitional provisions should be included? Please provide your reasoning.

### **Type II attached segregation devices**

These provisions replace the non-type I underslung segregation devices. The current code has no provisions for a segregation device that is permanently (or semi-permanently) attached to a vehicle, that is not underslung. Additionally, the current model subordinate instrument does not provide a power to approve such a device, which appears to be an omission.

There are some permanently attached segregation devices that have been approved as a method of segregation. These have been designed using the non-type I underslung device parameters, and it seems appropriate to address this gap in the code.

Unlike the removable segregation device, the attached device does not require testing. However, it contains an additional provision to prevent removal of the device while loaded with goods.

**Question 51:** Are there reasons why the “non-type I underslung segregation device” should not be changed into a general “type II attached segregation device”? Please provide details.

## **5.3 Approval and marking requirements**

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The approval and marking requirements for type II segregation devices have been combined and harmonised, as they are fundamentally the same, and perform the same function.

## **5.4 Overpacks for segregation**

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The current code includes a number of other segregation packages and overpacks:

- Overpacking drum segregation device (6.11.2)
- Packaging for segregation (9.2.2.4)
- Large packaging (9.2.2.5)

These are all subject to differing levels of controls and requirements.



In the draft code, these three uses of packagings for the purpose of segregation have been combined into a single “overpack for segregation”.

### **Overpacking drum segregation device**

The current overpacking drum segregation device simply requires the use of an open head drum of type 1A2 (steel), 1B2 (aluminium) or 1H2 (plastics). Provided the device is closed in accordance with its approval, no further requirements apply.

### **Packaging for segregation**

By contrast, the packaging for segregation in the current code is subject to extensive requirements, but these date to the 6<sup>th</sup> edition of the Code (or earlier). These do not appear to have been properly integrated into the UN packing instructions that were introduced with the 7<sup>th</sup> edition of the Code. It is not clear how the packaging for segregation is intended to interact with the requirements of the UN packing instructions.

### **Large packagings**

Section 9.2.2.5 of the current code provides that dangerous goods are segregated from incompatible goods if the dangerous goods are packed in a large packaging in accordance with a large packing instruction (LP) in Chapter 4.1 that is authorised for the dangerous goods. No additional requirements are applied.

A large packaging is a packaging consisting of an outer packaging which contains articles or inner packagings and which:

- (a) is designed for mechanical handling; and
- (b) exceeds 400 kg net mass or 450 litres capacity but has a volume of not more than 3 m<sup>3</sup>.

It is in effect another form of a combination packaging. It provides no greater protection than a smaller combination packaging but carries a greater risk due to the potentially larger volumes of dangerous goods.

### **Redefined overpack for segregation requirements**

To manage these issues, the draft code replaces these three segregation methods with a single “overpack for segregation”. This uses the same requirements as a salvage packaging. Salvage packagings are required to undergo testing in accordance with the relevant provisions for packagings for solids or articles, with the following stipulations:

- The drop test is in accordance with the packing group II requirements.
- The leakproofness test is in accordance with the packing group I requirements.

The overpack then needs to be marked as an “overpack for segregation”.

The dangerous goods are required to be packed in accordance with the relevant packing instructions prior to being loaded into the overpack for segregation.

As these are subject to the same requirements as a salvage packaging, some users may decide to use an already approved salvage packaging. A note has been drafted to clarify that when used as a salvage overpack, the device does not also function as a segregation device. Segregation is only achieved when the dangerous goods in the overpack are properly packaged.

We have applied the same principle to large packagings when used as an overpack for segregation. They will need to conform to the same performance requirements as a large packaging used as a salvage packaging. Section 6.15.2 of the draft code includes references to the relevant sections in Chapter 6.6 alongside those to Chapter 6.1.

This renders the requirements in 9.2.2.5 in the current code obsolete.

Current users of packagings for segregation will need to be provided with a transitional provision to enable time to switch over to the new overpack for segregation requirements.

**Question 52:** Are there reasons why the three segregation packagings should not be replaced by a single requirement including performance requirements? Please explain your reasoning.

**Question 53:** If you currently use a packaging for segregation, what do you consider an appropriate timeframe to transition to the overpack for segregation requirements?

## 6 Anticipated impacts of changes to Chapter 3.3, Part 7 and segregation devices (Chapter 6.15)

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### Key points

- The proposed amendments do not represent radical departures from current practice.
- The proposed amendments provide a more transparent link between risks and required controls.
- Controls are more proportionate to the risks, providing relief for lower risk substances or transport scenarios.
- Increased requirements for high-risk scenarios, where current requirements are inadequate are expected to impact small or niche sectors of the transport industry.

### 6.1 Benefits of the proposed changes

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The inclusion of land mode specific special provisions in Chapter 3.3 is expected to provide significant clarity and guidance that will increase safety, without increasing costs. Most importantly, it will close several gaps in the current code and reduce the time-pressure burden on competent authorities and duty holders to make decisions in extraordinary circumstances. This is expected to result in more considered and appropriate controls.

Many of the amendments are aimed at ensuring a minimum level of safety for specific substances to qualify for exemptions.

The draft Part 7 of the code clearly specifies the requirements for transporting certain classes or specific substances. It distinguishes between dangerous goods in packages vs those in tanks or in bulk containers. Having all of the requirements concerning carriage located together in Part 7 of the code allows easier navigation of the code and identification of requirements specific to the tasks involved in selecting and loading vehicles for carriage.

The risk basis for controls is more transparent and appropriate to the level of risk. This will provide relief from some of the current requirements for lower risk substances or transport scenarios. Likewise, there will be some increase in controls required for higher risk substances. For the most part, these are expected to impact a minority of consignor and transport providers.

Relocating the conditions for carriage to Part 7 of the code groups the requirements and locates them in a logical location that aligns with the transport process. This is expected to make it easier for duty holders to identify the provisions relevant to the tasks they're performing.

Permitting the use of sheeted vehicles where the risk relates to dusts or powders, or from contact with water, will significantly reduce the burden on carriers, without reducing safety.

The inclusion of Table C in Chapter 3.2 will greatly assist duty holders in applying the segregation requirements for specific substances.

## AU01

The proposed amendments in the draft code are expected to have the following impacts.

- Deregulate certain medicines, reducing costs without increasing risk.
- Ensure retail size packagings meet the basic safety requirements, such as:
  - Suitable for the dangerous goods
  - Being strong enough to withstand the shocks and loadings normally encountered during transport
  - Packed so as to prevent damage or leakage.

Retail size packagings would remain exempt from all other requirements. It's anticipated that the changes to retail packagings would clarify the minimum accepted packagings, without introducing any additional burden.

## **6.2 Anticipated costs**

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The extension of the restriction of vehicle types to the transport of smaller packages of certain substances and to composite IBCs with flexible plastics inner receptacles, recognises the risks these pose during carriage. While no data is available for the number of transport operations that would be impacted by this change, it's believed that there would be very few.

The substances for which the requirement has been extended to include all packages, not just IBCs, represent a very small and niche industry sector.

The use of composite IBCs with flexible plastic inner receptacles within Australia is understood to be extremely rare. Any cost implications are therefore expected to be minimal.

The introduction of testing and performance requirements specified in special provision SP650, for the transport of waste paints and related materials for packagings, may result in increased costs for duty holders who are currently operating in a manner that is non-compliant to current requirements.

There are two key changes increased costs may be incurred, changes to AU01 and requirements for segregation devices.

The removal of the blanket exemption for environmentally hazards will impose new requirements on packagings with a capacity greater than 30 kg/l. The proposed changes to large capacity packages will result in the following:

- Requirement for the use of Approved packagings.
- Requirement for a dangerous goods transport document.
- Packages to marked and labelled with the following:
  - i. Class 9 label measuring 100mm x 100mm to be displayed. For IBCs, required on two opposing sides.
  - ii. UN Number, preceded by 'UN' – minimum 12mm high.
  - iii. Proper Shipping Name

- iv. Environmentally hazardous mark, allowance for use of the GHS pictogram as an alternative

**NOTE:** it's anticipated that items ii, iii and iv could be easily incorporated into a GHS label)

- Training requirements would remain as per the current code.
- The amount of UN 3077 and 3082 on the vehicle would not be counted when calculating thresholds for the purpose of placarding, resulting in no change to current requirements .
- The amount of UN 3077 and 3082 on the vehicle would not trigger the requirement driver or vehicle licensing, resulting in no change to current requirements.

It's believed that the majority of these products are already packed in Approved dangerous goods packagings. In which case, there would be no additional costs expected.

The main anticipated cost for environmentally hazardous substances is the potential that transport providers will start imposing a dangerous goods levy on their transport. Given that the only new compliance requirements for transport providers is the requirement to carry a transport document, such a levy would seem unjustified. The NTC will work with industry stakeholders to educate transport providers and minimize any flow on effects of the changes.

The introduction of mandatory performance requirements for segregation devices may mean that some segregation devices currently in use will need to be phased out and replaced with those meeting the revised requirements. The NTC will work with stakeholders to determine appropriate transition requirements for impacted segregation devices.

**Question 54:** Are there any impacts you believe have not been identified? Please provide details.

## 6.3 Transitional provisions

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Transitional provisions will be developed for the code in its entirety, rather than focusing on individual parts, to ensure that all potential issues are addressed. Transitional provisions will generally be ongoing, except in cases where it is appropriate to prevent ongoing use. These include cases where the current practice or equipment is unsafe or manifestly inadequate; or where the transitional provision is introduced to prevent administrative problems, such as approvals in place at the time of transition.

## 6.4 Consequential changes

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Aside from transitional provisions, there are likely to be consequential changes that need to be made to other parts of the code, to ensure that no significant gaps result. There may also be some changes made after reviewing responses to this paper, especially where options are still being explored.

The introduction of the code will also be accompanied by legislative reforms. During that process, it may be identified that some requirements that are in the draft code should be in legislation instead. Nonetheless, the intent of the provisions will be retained.

## 6.5 Guidance documents

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The intent of these changes is not to introduce radical departures from current practice, but to define the requirements more clearly. The look and feel of transport in Australia should not change dramatically due to these changes.

The structure of the future code should be more logical, and easier for all participants in transport to navigate. Making it easier to identify requirements relevant to the task being performed.

The introduction of these changes will be accompanied by guidance materials to support industry and regulators to understand what has changed, and what has not. This will include navigation guides and frequently asked questions.

## 7 Next steps

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Consultation on this issues paper will close on 22 April 2024.

Submissions received will help inform how classification codes and information may be redrafted in the code.

Opportunities to comment on other provisions in the code will be provided over the next few months. A complete draft code will be released for public comment in August 2024.

# Appendix A Chemical groupings (Ch. 3.2.3)

**Table C: Groupings of dangerous goods having similar chemical properties**

The following groupings are provided to assist in the application of segregation for incompatible dangerous goods. Compatibility requirements are specified in Part 7 of this Code.

The table is provided as guidance only and should not be considered as definitive.

## Acids

### \* Identifies strong acids

1052	HYDROGEN FLUORIDE, ANHYDROUS*	1747	BUTYLTRICHLOROSILANE
1182	ETHYL CHLOROFORMATE	1750	CHLOROACETIC ACID SOLUTION
1183	ETHYLDICHLOROSILANE	1751	CHLOROACETIC ACID, SOLID
1238	METHYL CHLOROFORMATE	1752	CHLOROACETYL CHLORIDE
1242	METHYLDICHLOROSILANE	1753	CHLOROPHENYL-TRICHLOROSILANE
1250	METHYLTRICHLOROSILANE	1754	CHLOROSULPHONIC ACID (with or without sulphur trioxide)
1295	TRICHLOROSILANE	1755	CHROMIC ACID SOLUTION
1298	TRIMETHYLCHLOROSILANE	1756	CHROMIC FLUORIDE, SOLID
1305	VINYLTRICHLOROSILANE	1757	CHROMIC FLUORIDE SOLUTION
1595	DIMETHYL SULPHATE	1758	CHROMIUM OXYCHLORIDE
1715	ACETIC ANHYDRIDE	1762	CYCLOHEXENYLTRICHLORO-SILANE
1716	ACETYL BROMIDE	1763	CYCLOHEXYLTRICHLORO-SILANE
1717	ACETYL CHLORIDE	1764	DICHLOROACETIC ACID
1718	BUTYL ACID PHOSPHATE	1765	DICHLOROACETYL CHLORIDE
1722	ALLYL CHLOROFORMATE	1766	DICHLOROPHENYL-TRICHLOROSILANE
1723	ALLYL IODIDE	1767	DIETHYLDICHLOROSILANE
1724	ALLYLTRICHLOROSILANE, STABILIZED	1768	DIFLUOROPHOSPHORIC ACID, ANHYDROUS
1725	ALUMINIUM BROMIDE, ANHYDROUS	1769	DIPHENYLDICHLOROSILANE
1726	ALUMINIUM CHLORIDE, ANHYDROUS	1770	DIPHENYLMETHYL BROMIDE
1727	AMMONIUM HYDROGENDIFLUORIDE, SOLID	1771	DODECYLTRICHLOROSILANE
1728	AMYLTRICHLOROSILANE	1773	FERRIC CHLORIDE, ANHYDROUS
1729	AMYLTRICHLOROSILANE	1775	FLUOROBORIC ACID
1730	ANTIMONY PENTACHLORIDE, LIQUID	1776	FLUOROPHOSPHORIC ACID, ANHYDROUS
1731	ANTIMONY PENTACHLORIDE SOLUTION	1777	FLUOROSULPHONIC ACID*
1732	ANTIMONY PENTAFLUORIDE	1778	FLUOROSILICIC ACID
1733	ANTIMONY TRICHLORIDE	1779	FORMIC ACID with more than 85 % acid by mass
1736	BENZOYL CHLORIDE	1780	FUMARYL CHLORIDE
1737	BENZYL BROMIDE	1781	HEXADECYLTRICHLOROSILANE
1738	BENZYL CHLORIDE	1782	HEXAFLUOROPHOSPHORIC ACID
1739	BENZYL CHLOROFORMATE	1784	HEXYLTRICHLOROSILANE
1740	HYDROGENDIFLUORIDES, SOLID, N.O.S.	1786	HYDROFLUORIC ACID AND SULPHURIC ACID MIXTURE*
1742	BORON TRIFLUORIDE ACETIC ACID COMPLEX, LIQUID	1787	HYDRIODIC ACID*
1743	BORON TRIFLUORIDE PROPIONIC ACID COMPLEX, LIQUID	1788	HYDROBROMIC ACID*
1744	BROMINE or BROMINE SOLUTION	1789	HYDROCHLORIC ACID*
1745	BROMINE PENTAFLUORIDE	1790	HYDROFLUORIC ACID*
1746	BROMINE TRIFLUORIDE	1792	IODINE MONOCHLORIDE, SOLID
		1793	ISOPROPYL ACID PHOSPHATE
		1794	LEAD SULPHATE with more than 3 % free acid
		1796	NITRATING ACID MIXTURE*
		1798	NITROHYDROCHLORIC ACID*



1799	NONYLTRICHLOROSILANE	2331	ZINC CHLORIDE, ANHYDROUS
1800	OCTADECYLTRICHLOROSILANE	2353	BUTYRYL CHLORIDE
1801	OCTYLTRICHLOROSILANE	2395	ISOBUTYRYL CHLORIDE
1802	PERCHLORIC ACID with not more than 50 % acid, by mass*	2407	ISOPROPYL CHLOROFORMATE
1803	PHENOLSULPHONIC ACID, LIQUID	2434	DIBENZYL-DICHLOROSILANE
1804	PHENYLTRICHLOROSILANE	2435	ETHYLPHENYL-DICHLOROSILANE
1805	PHOSPHORIC ACID, SOLUTION	2437	METHYLPHENYL-DICHLOROSILANE
1806	PHOSPHORUS PENTACHLORIDE	2438	TRIMETHYLACETYL CHLORIDE
1807	PHOSPHORUS PENTOXIDE	2439	SODIUM HYDROGENDIFLUORIDE
1808	PHOSPHORUS PENTOXIDE	2440	STANNIC CHLORIDE PENTAHYDRATE
1809	PHOSPHORUS TRICHLORIDE	2442	TRICHLOROACETYL CHLORIDE
1810	PHOSPHORUS OXYCHLORIDE	2443	VANADIUM OXYTRICHLORIDE
1811	POTASSIUM HYDROGENDIFLUORIDE, SOLID	2444	VANADIUM TETRACHLORIDE
1815	PROPIONYL CHLORIDE	2475	VANADIUM TRICHLORIDE
1816	PROPYLTRICHLOROSILANE	2495	IODINE PENTAFLUORIDE
1817	PYROSULPHURYL CHLORIDE	2496	PROPIONIC ANHYDRIDE
1818	SILICON TETRACHLORIDE	2502	VALERYL CHLORIDE
1826	NITRATING ACID MIXTURE, SPENT*	2503	ZIRCONIUM TETRACHLORIDE
1827	STANNIC CHLORIDE, ANHYDROUS	2506	AMMONIUM HYDROGEN SULPHATE
1828	SULPHUR CHLORIDES	2507	CHLOROPLATINIC ACID, SOLID
1829	SULPHUR TRIOXIDE, STABILIZED	2508	MOLYBDENUM PENTACHLORIDE
1830	SULPHURIC ACID with more than 51 % acid*	2509	POTASSIUM HYDROGEN SULPHATE
1831	SULPHURIC ACID, FUMING*	2511	2-CHLOROPROPIONIC ACID
1832	SULPHURIC ACID, SPENT*	2513	BROMOACETYL BROMIDE
1833	SULPHUROUS ACID	2531	METHACRYLIC ACID, STABILIZED
1834	SULPHURYL CHLORIDE	2564	TRICHLOROACETIC ACID SOLUTION
1836	THIONYL CHLORIDE	2571	ALKYLSULPHURIC ACIDS
1837	THIOPHOSPHORYL CHLORIDE	2576	PHOSPHORUS OXYBROMIDE, MOLTEN
1838	TITANIUM TETRACHLORIDE	2577	PHENYLACETYL CHLORIDE
1839	TRICHLOROACETIC ACID	2578	PHOSPHORUS TRIOXIDE
1840	ZINC CHLORIDE SOLUTION	2580	ALUMINIUM BROMIDE SOLUTION
1848	PROPIONIC ACID with not less than 10 % and less than 90 % acid by mass	2581	ALUMINIUM CHLORIDE SOLUTION
1873	PERCHLORIC ACID with more than 50 % but not more than 72 % acid, by mass*	2582	FERRIC CHLORIDE SOLUTION
1898	ACETYL IODIDE	2583	ALKYLSULPHONIC ACIDS, SOLID or ARYLSULPHONIC ACIDS, SOLID with more than 5 % free sulphuric acid
1902	DIISOCTYL ACID PHOSPHATE	2584	ALKYLSULPHONIC ACIDS, LIQUID or ARYLSULPHONIC ACIDS, LIQUID with more than 5 % free sulphuric acid
1905	SELENIC ACID	2585	ALKYLSULPHONIC ACIDS, SOLID or ARYLSULPHONIC ACIDS, SOLID with not more than 5 % free sulphuric acid
1906	SLUDGE ACID*	2586	ALKYLSULPHONIC ACIDS, LIQUID or ARYLSULPHONIC ACIDS, LIQUID with not more than 5 % free sulphuric acid
1938	BROMOACETIC ACID SOLUTION	2604	BORON TRIFLUORIDE DIETHYL ETHERATE
1939	PHOSPHORUS OXYBROMIDE	2626	CHLORIC ACID, AQUEOUS SOLUTION with not more than 10 % chloric acid
1940	THIOGLYCOLIC ACID	2642	FLUOROACETIC ACID
2031	NITRIC ACID, other than red fuming*	2670	CYANURIC CHLORIDE
2032	NITRIC ACID, RED FUMING*	2691	PHOSPHORUS PENTABROMIDE
2214	PHTHALIC ANHYDRIDE with more than 0.05 % of maleic anhydride	2692	BORON TRIBROMIDE
2215	MALEIC ANHYDRIDE	2698	TETRAHYDROPHTHALIC ANHYDRIDES with more than 0.05 % of maleic anhydride
2218	ACRYLIC ACID, STABILIZED	2699	TRIFLUOROACETIC ACID
2225	BENZENESULPHONYL CHLORIDE		
2226	BENZOTRICHLORIDE		
2240	CHROMOSULPHURIC ACID		
2262	DIMETHYLCARBAMOYL CHLORIDE		
2267	DIMETHYL THIOPHOSPHORYL CHLORIDE		
2305	NITROBENZENE-SULPHONIC ACID		
2308	NITROSYLSULPHURIC ACID, LIQUID*		





2426 AMMONIUM NITRATE, LIQUID (hot concentrated solution)  
 2505 AMMONIUM FLUORIDE  
 2683 AMMONIUM SULPHIDE SOLUTION  
 2687 DICYCLOHEXYL-AMMONIUM NITRITE  
 2817 AMMONIUM HYDROGENDIFLUORIDE SOLUTION  
 2818 AMMONIUM POLYSULPHIDE SOLUTION  
 2854 AMMONIUM FLUOROSILICATE  
 2859 AMMONIUM METAVANADATE  
 2861 AMMONIUM POLYVANADATE  
 2863 SODIUM AMMONIUM VANADATE  
 3375 AMMONIUM NITRATE EMULSION or SUSPENSION or GEL, intermediate for blasting explosives  
 3423 TETRAMETHYL-AMMONIUM HYDROXIDE, SOLID  
 3424 AMMONIUM DINITRO-o-CRESOLATE SOLUTION

#### **Bromates**

1450 BROMATES, INORGANIC, N.O.S.  
 1473 MAGNESIUM BROMATE  
 1484 POTASSIUM BROMATE  
 1494 SODIUM BROMATE  
 2469 ZINC BROMATE  
 2719 BARIUM BROMATE  
 3213 BROMATES, INORGANIC, AQUEOUS SOLUTION, N.O.S.

#### **Chlorates**

1445 BARIUM CHLORATE, SOLID  
 1452 CALCIUM CHLORATE  
 1458 CHLORATE AND BORATE MIXTURE  
 1459 CHLORATE AND MAGNESIUM CHLORIDE MIXTURE, SOLID  
 1461 CHLORATES, INORGANIC, N.O.S.  
 1485 POTASSIUM CHLORATE  
 1495 SODIUM CHLORATE  
 1506 STRONTIUM CHLORATE  
 1513 ZINC CHLORATE  
 2427 POTASSIUM CHLORATE, AQUEOUS SOLUTION  
 2428 SODIUM CHLORATE, AQUEOUS SOLUTION  
 2429 CALCIUM CHLORATE, AQUEOUS SOLUTION  
 2573 THALLIUM CHLORATE  
 2721 COPPER CHLORATE  
 2723 MAGNESIUM CHLORATE  
 3405 BARIUM CHLORATE SOLUTION  
 3407 CHLORATE AND MAGNESIUM CHLORIDE MIXTURE SOLUTION

#### **Chlorites**

1453 CALCIUM CHLORITE  
 1462 CHLORITES, INORGANIC, N.O.S.  
 1496 SODIUM CHLORITE  
 1908 CHLORITE SOLUTION

#### **Cyanides**

1541 ACETONE CYANOHYDRIN, STABILIZED  
 1565 BARIUM CYANIDE  
 1575 CALCIUM CYANIDE  
 1587 COPPER CYANIDE  
 1588 CYANIDES, INORGANIC, SOLID, N.O.S.  
 1620 LEAD CYANIDE  
 1626 MERCURIC POTASSIUM CYANIDE  
 1642 MERCURY OXYCYANIDE, DESENSITIZED  
 1653 NICKEL CYANIDE  
 1679 POTASSIUM CUPROCYANIDE  
 1680 POTASSIUM CYANIDE, SOLID  
 1684 SILVER CYANIDE  
 1689 SODIUM CYANIDE, SOLID  
 1694 BROMOBENZYL CYANIDES, LIQUID  
 1713 ZINC CYANIDE  
 1889 CYANOGEN BROMIDE  
 1935 CYANIDE SOLUTION, N.O.S.  
 2205 ADIPONITRILE  
 2316 SODIUM CUPROCYANIDE, SOLID  
 2317 SODIUM CUPROCYANIDE SOLUTION  
 3413 POTASSIUM CYANIDE SOLUTION  
 3414 SODIUM CYANIDE SOLUTION  
 3449 BROMOBENZYL CYANIDES, SOLID

#### **Hypochlorites**

1471 LITHIUM HYPOCHLORITE  
 1748 CALCIUM HYPOCHLORITE, DRY or CALCIUM HYPOCHLORITE MIXTURE, DRY with more than 39 % available chlorine (8.8 % available oxygen)  
 1791 HYPOCHLORITE SOLUTION  
 2208 CALCIUM HYPOCHLORITE MIXTURE, DRY with more than 10 % but not more than 39 % available chlorine  
 2741 BARIUM HYPOCHLORITE with more than 22 % available chlorine  
 2880 CALCIUM HYPOCHLORITE, HYDRATED, or CALCIUM HYPOCHLORITE, HYDRATED MIXTURE, with not less than 5.5 % but not more than 16 % water  
 3212 HYPOCHLORITES, INORGANIC, N.O.S.  
 3255 tert-BUTYL HYPOCHLORITE  
 3485 CALCIUM HYPOCHLORITE, DRY, CORROSIVE or CALCIUM HYPOCHLORITE MIXTURE, DRY, CORROSIVE with more than 39 % available chlorine (8.8 % available oxygen)  
 3486 CALCIUM HYPOCHLORITE MIXTURE, DRY, CORROSIVE with more than 10 % but not more than 39

3487      % available chlorine  
 CALCIUM HYPOCHLORITE,  
 HYDRATED, CORROSIVE or  
 CALCIUM HYPOCHLORITE,  
 HYDRATED MIXTURE, CORROSIVE  
 with not less than 5.5 % but not more  
 than 16 % water

#### Nitrites

1487      POTASSIUM NITRATE AND SODIUM  
 NITRITE MIXTURE  
 1488      POTASSIUM NITRITE  
 1500      SODIUM NITRITE  
 2627      NITRITES, INORGANIC, N.O.S.  
 2726      NICKEL NITRITE  
 3219      NITRITES, INORGANIC, AQUEOUS  
 SOLUTION, N.O.S.

#### Perchlorates

1442      POTASSIUM SODIUM ALLOYS,  
 LIQUID  
 1447      BARIUM PERCHLORATE, SOLID  
 1455      CALCIUM PERCHLORATE  
 1470      LEAD PERCHLORATE, SOLID  
 1475      MAGNESIUM PERCHLORATE  
 1481      PERCHLORATES, INORGANIC,  
 N.O.S.  
 1489      POTASSIUM PERCHLORATE  
 1502      SODIUM PERCHLORATE  
 1508      STRONTIUM PERCHLORATE  
 3211      PERCHLORATES, INORGANIC,  
 AQUEOUS SOLUTION, N.O.S.  
 3406      BARIUM PERCHLORATE SOLUTION  
 3408      LEAD PERCHLORATE SOLUTION

#### Permanganates

1448      BARIUM PERMANGANATE  
 1456      CALCIUM PERMANGANATE  
 1482      PERMANGANATES, INORGANIC,  
 N.O.S.  
 1490      POTASSIUM PERMANGANATE  
 1503      SODIUM PERMANGANATE  
 1515      ZINC PERMANGANATE  
 3214      PERMANGANATES, INORGANIC,  
 AQUEOUS SOLUTION, N.O.S.

#### Peroxides

1449      BARIUM PEROXIDE  
 1457      CALCIUM PEROXIDE  
 1472      LITHIUM PEROXIDE  
 1476      MAGNESIUM PEROXIDE  
 1483      PEROXIDES, INORGANIC, N.O.S.  
 1491      POTASSIUM PEROXIDE  
 1504      SODIUM PEROXIDE  
 1509      STRONTIUM PEROXIDE  
 1516      ZINC PEROXIDE

2014      HYDROGEN PEROXIDE, AQUEOUS  
 SOLUTION with not less than 20 % but  
 not more than 60 % hydrogen peroxide  
 (stabilized as necessary)  
 2015      HYDROGEN PEROXIDE, STABILIZED  
 2466      POTASSIUM SUPEROXIDE  
 2547      SODIUM SUPEROXIDE  
 3149      HYDROGEN PEROXIDE AND  
 PEROXYACETIC ACID MIXTURE  
 3377      SODIUM PERBORATE  
 MONOHYDRATE  
 3378      SODIUM CARBONATE  
 PEROXYHYDRATE

#### Powdered metals

1309      ALUMINIUM POWDER, COATED  
 1326      HAFNIUM POWDER, WETTED with  
 not less than 25 % water  
 1352      TITANIUM POWDER, WETTED with  
 not less than 25 % water  
 1358      ZIRCONIUM POWDER, WETTED with  
 not less than 25 % water  
 1383      PYROPHORIC METAL, N.O.S. or  
 PYROPHORIC ALLOY, N.O.S.  
 1396      ALUMINIUM POWDER, UNCOATED  
 1398      ALUMINIUM SILICON POWDER,  
 UNCOATED  
 1418      MAGNESIUM POWDER or  
 MAGNESIUM ALLOYS POWDER  
 1435      ZINC ASHES  
 1436      ZINC POWDER or ZINC DUST  
 1854      BARIUM ALLOYS, PYROPHORIC  
 2008      ZIRCONIUM POWDER, DRY  
 2009      ZIRCONIUM, DRY, finished sheets,  
 strip or coiled wire  
 2545      HAFNIUM POWDER, DRY  
 2546      TITANIUM POWDER, DRY  
 2878      TITANIUM SPONGE GRANULES or  
 TITANIUM SPONGE POWDERS  
 2881      METAL CATALYST, DRY  
 2950      MAGNESIUM GRANULES, COATED,  
 particle size not less than 149 microns  
 3078      CERIUM, turnings or gritty powder  
 3089      METAL POWDER, FLAMMABLE,  
 N.O.S.  
 3170      ALUMINIUM SMELTING BY-  
 PRODUCTS or ALUMINIUM  
 REMELTING BY-PRODUCTS  
 3189      METAL POWDER, SELF-HEATING,  
 N.O.S.

# Appendix B Segregation device provisions

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Draft provisions for Chapter 6.15 – Segregation devices for dangerous goods

## 6.15.1 General and definitions

A segregation device may be:

- (a) an overpack for segregation described in 6.11.2; or
- (b) a Type I segregation device as detailed in 6.11.3; or
- (c) a Type II removable segregation device in accordance with 6.11.4, used in accordance with an approval issued by the Competent Authority in 6.11.6; or
- (d) a Type II attached segregation device.

The segregation devices in 6.15.2, 6.15.3, 6.15.4, 6.15.5 and 6.15.7 do not provide segregation for class 1 substances or articles.

## 6.15.2 Overpack for segregation

**NOTE 1:** *An overpack for segregation only provides segregation for dangerous goods that are properly packed in accordance with the appropriate packing instructions. A salvage packaging that is used for damaged or leaking containers is not also a packaging for segregation.*

**NOTE 2:** *This provision replaces both the overpacking drum segregation device and the packaging for segregation requirements from ADG 7. Approved packagings for segregation may continue to be used in accordance with relevant transitional provisions in 1.6.*

Overpacks for segregation shall be tested and marked in accordance with the requirements applicable to packing group II packagings intended for the carriage of solids or inner packagings, except as follows:

- (a) The test substance used in performing the tests shall be water, and the packagings shall be filled to not less than 98 % of their maximum capacity. It is permissible to use additives, such as bags of lead shot, to achieve the requisite total package mass so long as they are placed so that the test results are not affected. Alternatively, in performing the drop test, the drop height may be varied in accordance with 6.1.5.3.5 (b), or 6.6.5.3.4.4.2 (b) in the case of large packagings.
- (b) Packagings shall, in addition, have been successfully subjected to the leakproofness test at 30 kPa, with the results of this test reflected in the test report required by 6.1.5.8 or 6.6.5.4 in the case of large packagings;
- (c) Packagings shall be marked as a “SEGREGATION DEVICE” as required by 5.1.2.

## 6.15.3 Type I segregation device

6.15.3.1 A Type I Segregation Device shall not exceed 450 litres in capacity. It need not be performance tested or approved.

6.15.3.2 The device shall be rigid, of substantial construction, liquid tight, with a permanently attached hinged lid and at least two suitable closing devices.

6.15.3.3 The device shall be fixed to the vehicle by bolting, clamping or other suitable means and shall not be lifted onto or from the vehicle when filled.

6.15.3.4 The interior of the Segregation Device shall be smooth and free of any protrusion or fitting likely to cause damage to the packages within. It shall allow for easy cleaning and be free of any cavities wherein spillage, dirt or contaminants might collect.

<b>6.15.4</b>	<b>Type II removable segregation device</b>
<b>6.15.4.1</b>	<b>General requirements</b>
6.15.4.1.1	A Type II removable Segregation Device shall not exceed 3000 litres in capacity.
6.15.4.1.2	A Type II removable Segregation Device may include a packaging, a large packaging, a tank, an Intermediate Bulk Container or a freight container provided it meets the requirements of this sub-section and is approved by the Competent Authority.
6.15.4.1.3	A Type II removable segregation device shall be design-type approved in accordance with 6.15.6.
<b>6.15.4.2</b>	<b>Design and construction requirements</b>
6.15.4.2.1	The segregation device shall be of suitable design, construction, materials and strength for the intended service.
6.15.4.2.2	All body panels shall be solid, substantial, liquid tight when used for segregation and resistant to penetration. Mesh, crate construction or similar is not acceptable but mesh reinforcing layers may be used. The body and panels shall be resistant to or adequately protected from environmental deterioration.
6.15.4.2.3	The segregation device may be of fixed construction or may be designed to be folded, dismantled or collapsed for return transport.
6.15.4.2.4	The device shall incorporate a base (which may also function as a lifting device) which raises the floor of the device at least 100mm above the floor of the transport vehicle at all times.
6.15.4.2.5	The segregation device shall be designed for safe mechanical handling when fully loaded.
6.15.4.2.6	If intended to be stacked the device shall be designed for safe stacking and be sufficiently strong to support the load imposed by similar devices to the maximum height likely to occur in transport.
6.15.4.2.7	The segregation device shall be able to be restrained on or attached to the transport vehicle. Restraint components shall be of sufficient strength to securely restrain the device when it is loaded to twice the approved gross load. Restraints shall be of a type and so positioned that no distortion or undue stress is imposed on the device.
6.15.4.2.8	The interior of the segregation device shall be smooth and free of any protrusion or fitting likely to cause damage to the packages transported within. It shall allow for cleaning and be free of any cavities in which spillage, dirt or contaminants may collect.
6.15.4.2.9	Each type of segregation device shall be designed, manufactured and tested under a quality assurance program in order to ensure that each meets the requirements of this Code.
<b>6.15.4.3</b>	<b>Design tests for Type II attached segregation devices</b>
6.15.4.3.1	The tests to which Type II attached segregation devices shall be subjected are those specified for Large Packagings in Chapter 6.6, except that: <ul style="list-style-type: none"> <li>(a) the preparation for testing shall be in accordance with 6.11.5.7; and</li> <li>(b) irrespective of the intended contents, the drop height shall be based on the requirements for packing group III.</li> </ul>
6.15.4.3.2	Subject to 6.11.5.9, tests shall be carried out on a segregation device design-type as it would be prepared for transport.
6.15.4.3.3	One Type II attached segregation device of each type, size and manner of construction shall be subjected to the tests specified in order in the table below, as set out in the clauses indicated in the table.

Test	Reference Clause	Applicability
Bottom lift	6.6.5.3.1	Required <sup>a</sup>
Top lift	6.6.5.3.2	Required <sup>a</sup>
Stacking	6.6.5.3.3	Required <sup>b</sup>
Drop	6.6.5.3.4	Required
Table notes:		
a. When the device is designed for this means of lifting		
b. When the device is designed to be stacked		

- 6.15.4.3.4 A segregation device shall be design type tested to a minimum rating of 0.75 kg per litre of available capacity. The person submitting the segregation device for approval shall nominate any higher test rating required, before testing is initiated.
- 6.15.4.3.5 These tests shall be repeated after each modification which significantly alters the design, material or manner of construction of the device.
- 6.15.4.3.6 The Competent Authority may at any time require proof, by tests in accordance with this section, that a Type II Segregation Device meets the requirements of the design type tests.
- 6.15.4.3.7 The design type tests shall be performed:
- (a) by a testing laboratory registered by the National Association of Testing Authorities (NATA) for the relevant tests and the results reported on a NATA endorsed test certificate;
  - (b) by a testing laboratory located overseas and recognised by the Competent Authority; or
  - (c) where no such laboratory is available, at a suitable facility where the tests are supervised by a representative witnesses from the Competent Authority and the results are reported on a test certificate in accordance with the ADG Code.
- 6.15.4.3.8 The Competent Authority may permit the selective testing of segregation devices which differ only in minor aspects from the tested design type.
- 6.15.4.3.9 Preparation of Test Samples
- 6.15.4.3.9.1 Liner Bag
- A 70-micron linear low-density polyethylene bag shall be inserted into the test sample. The liner bag may be a pillow or gusseted bag of the following dimensions:
- For pillow bags:
- $$Length = H + 1.5 \times W$$
- $$Width = 1.2 \times (L + W)$$
- For gusseted bags
- $$Length = H + 1.5 \times W$$
- $$Width = 1.2 \times (L + W) - G$$
- Where:
- L = Length of segregation device
  - W = Width of segregation device
  - H = Height of segregation device
  - G = gusset width (for gusseted bags)
- 6.15.4.3.9.2 Filling Material
- High flow plastic granules of approximately 0.75kg/L bulk density are to be used as the bulk filling material. For lift tests it is permissible to use additives such as bags of lead shot to achieve the requisite total contained mass with the condition that they are placed so that the test results are not affected in any way.
- 6.15.4.3.9.3 Filling



The Segregation Device is to be filled so that the filling material occupies not less than 95% of the total volume of the test sample (see 6.11.5.4).

**6.15.5            Type II attached segregation device**

- 6.15.5.1            A Type II Attached Segregation Device shall be design-type approved in accordance with 6.15.6.
- 6.15.5.2            The device shall be fitted with a permanently attached door and be liquid tight.
- 6.15.5.3            The device shall have a door fitted with at least 2 securing devices and be capable of being locked against unauthorised access.
- 6.15.5.4            The device shall be attached to the vehicle to withstand a 2g force in any direction when loaded to its maximum design load. It shall not be possible to remove the device from the vehicle while loaded with dangerous goods.
- 6.15.5.5            The device shall have a smooth interior free of any protrusion or fitting likely to damage packages within.
- 6.15.5.6            The device shall be easy to clean and free from cavities where spillage or dirt or contaminants might collect.
- 6.15.5.7            The device shall have a means of draining any liquid from the device which may accumulate due to leakage of any contents. When the device is in use the drainage facility shall be tightly sealed.
- 6.15.5.8            The device, including supports and attachments, shall have a ground clearance of at least 350mm and not project beyond the perimeter of the vehicle.

**6.15.6            Application for approval**

- 6.15.6.1            An application for the approval of a Type II Segregation Device shall be in writing and shall include:
  - (a) a full description of the device;
  - (b) details of the dimensions, volumetric capacity and maximum design load (kg) of the device;
  - (c) signed detailed drawings of the device;
  - (d) details of the materials used in the device;
  - (e) details of the construction of the device;
  - (f) details of how the device is to be attached to the vehicle;
  - (g) the results of any tests required by this Code;
  - (h) any other information required by the Competent Authority.
- 6.15.6.2            In approving a segregation device, the Competent Authority may restrict the use of a particular device to certain specified dangerous goods or specified classes of dangerous goods.
- 6.15.6.3            Marking

An approved segregation device shall be clearly and permanently marked, in a conspicuous position, in lettering not less than 25mm high with the following:

AUSTRALIAN COMPETENT AUTHORITIES  
APPROVED SEGREGATION DEVICE  
FOR USE IN AUSTRALIA ONLY  
APPROVAL XXX  
MAX LOAD YYY  
TARE MASS ZZZ

where:

XXX    is the approval number issued by the Competent Authority  
YYY    is the maximum gross mass of goods, in kg, that the device may be loaded with  
ZZZ    is the tare mass, in kg, of the segregation device

# Glossary

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Term	Definition
The Code	Refers to the Australian Code for the Transport of Dangerous Goods by Road & Rail – no specific edition
Current code	Refers to edition of 7.8 of the code
Future code	Refers to the revised code
ADR	Agreement concerning the International Carriage of Dangerous goods by Road
RID	Agreement concerning International Carriage of Dangerous Goods by Rail
IMDG Code	International Maritime Dangerous Goods Code
UN MR	United Nations Model Regulations on the Transport of Dangerous Goods
WP.15	Working Party on the Transport of Dangerous Goods
UN TDG-SC	The UN Sub-Committee of Experts on the Transport of Dangerous Goods

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