

Australian Dangerous Goods Code Comprehensive Review

Working group paper #2



Dangerous Goods List – UN entries

February 2023

Report outline

Title	Dangerous Goods List – UN entries
Type of report	Discussion paper
Purpose	For public consultation
Abstract	<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 second of a series of topic specific discussion papers. It discusses UN entries in the Dangerous Goods list that are marked: ‘not subject to the Code’ or ‘prohibited from carriage’. This paper also looks at UN entries that have been divided into multiple entries to provide additional information. This paper should be read in conjunction with the NTC’s <i>ADG Code Review – Working Group Discussion Paper #1 – Classification of Dangerous Goods</i>.</p>
Submission details	<p>The NTC will accept submissions until 24 March 2023 online at www.ntc.gov.au or by email to: dkirk@ntc.gov.au</p>
Attribution	<p>This work should be attributed as follows, Source: National Transport Commission, Dangerous Goods List – UN entries, discussion paper #2.</p> <p>If you have adapted, modified or transformed this work in anyway, please use the following, Source: based on National Transport Commission, Dangerous Goods List – UN entries, discussion paper #2.</p>
Key words	Dangerous goods, Dangerous Goods List, ADG Code review, transport, ADR
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Have your say

What to submit

This paper is the second 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 UN entries in the Dangerous Goods List in Table 3.2.3 of edition 8 of the Australian Code for the transport of dangerous goods by road & rail (ADG 7.8) and the entries in the Agreement for the International Transport of Dangerous Goods (ADR).

We are seeking stakeholder views on the 13 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

We are seeking submissions on this issues paper by 24 March 2023.

How to submit

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

Making a submission



Email your submission to dkirk@ntc.gov.au



Send a hard copy to:

National Transport Commission
Public submission – <insert project/report name>
Level 3, 600 Bourke Street
Melbourne VIC 3000.

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.

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

Contents

Report outline.....	3
Have your say.....	4
Executive summary	7
1 About this project.....	10
1.1 Project objectives	10
1.2 Background	11
1.3 Approach	12
2 Context of issues.....	13
3 UN entries unregulated or prohibited	15
3.1 UN entries marked as ‘not subject to the Code’	15
3.1.1 UN 1327 Hay, Straw or Bhusa	17
3.1.2 UN 1845 Carbon dioxide, solid (Dry ice)	18
3.2 Substances ‘prohibited for carriage’	20
3.2.1 Substances not listed by name in the DGL	22
3.2.2 Substances meeting a specific entry in the DGL	23
3.3 Application of special provision SP 223	24
4 UN Numbers with additional entries	26
4.1 Implementation of classification-related special provisions	26
4.2 Enabling compliance with other requirements	27
4.2.1 Special provision SP 341 – use of bulk containers	27
4.2.2 Identification of hazards associated with refrigerated liquid nitrogen	28
4.2.3 Vapour pressure (provision 4.1.1.10)	29
4.2.4 Viscous substances	31
4.2.5 Selection of correct packing instructions for UN 1790	33
4.2.6 Entries requiring further investigation	35
5 Expected impacts of changes proper shipping names in the DGL.....	37
6 Next steps	39
Appendix A Requirements of 5.5.3.....	40
Appendix B Excerpts of 2.2.x.2 of Part 2 of the draft code (prohibited substances)	45
Appendix C Excerpts of 2.2.x.1 of Part 2 of the draft code (SP 223)	50
Appendix D Draft DGL entries	51
Appendix E Glossary	61

Purpose of this paper

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 second of a series of topic specific discussion papers. This paper should be read in conjunction with the NTC's *ADG Code Review – Working Group Discussion Paper #1 – Classification of Dangerous Goods*.

The purpose of this discussion paper is to examine the differences in the UN entries in the Dangerous Goods List in the ADR and the entries in ADG 7.8. More specifically it provides information relating to:

- UN entries marked as 'not subject to the ADR'
- UN entries marked as 'prohibited from carriage'
- UN entries that have been further divided to provide additional information.

Out of scope for this paper are the specific special provisions, limited and excepted quantity values, packing instructions, etc. assigned to each UN entry. These matters will be the subject of a future discussion paper.

This paper relates to:

the Code – Part No.	<input type="checkbox"/>	Working group	<input checked="" type="checkbox"/>	Discrete issue	<input checked="" type="checkbox"/>
		Dangerous Goods List, Special Provisions and Special Provisions for Carriage		Dangerous Goods List – UN entries	

Executive summary

Context

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 classification of dangerous goods.

Themes

Chapter 1 – Project to Review the Australian Dangerous Goods Code

In November 2020, transport and infrastructure ministers approved the NTC's recommendation to conduct a comprehensive review of the Code.

The review seeks to better align Australia with international practices contained in the road and rail mode specific versions of the UN Model Regulations and will focus on improving transport of dangerous goods safety outcomes.

Chapters 2 and 3 – Identification of substances that are unregulated or prohibited

The dangerous goods list (DGL) in Part 3 of the code contains a list of known dangerous goods, listed in UN number order. Once the correct UN number for a substance is identified, the table provides cross-references to other requirements in the code applicable to the substance.

The DGL includes entries for substances that are either unregulated for transport by land or are considered too dangerous to transport. The current DGL includes cross-references to requirements such as packing instructions, limited and excepted quantity values, etc. for these entries.

The draft DGL provides clarity to entries that are either unregulated or prohibited by removing all irrelevant cross-references and replacing them with clear statements of either 'Not Subject to this Code' or 'Prohibited for Carriage'.

Appendix A of the current code includes a list of substances that are considered too dangerous to transport, the majority of which are not listed by UN number or name in the DGL. This list is outdated and, in some areas, contradictory to the DGL. The proposed draft of Part 2 of the code makes this appendix redundant. Three options are proposed for the future of this Appendix.

Chapter 4 UN numbers with additional entries in the DGL

Several entries in the draft DGL have been broken into multiple line items. The proper shipping names for each line item is supplemented with descriptive information that facilitates compliance with other provisions of the code. Classification related special provisions are discussed in detail in the NTC's *Discussion paper #1 – Classification of dangerous goods*. The draft of Part 2 ensures all classification requirements are contained in Part 2, with all possible classification outcomes listed in the DGL.

There are also several UN numbers where additional concessions, restriction or requirements apply only to some substances of the same UN number. These requirements, which are not related to classification criteria, include:

- special provision SP 341 – use of bulk containers
- substances in refrigerated liquid nitrogen
- vapour pressure (provision 4.1.1.10)
- viscous substances
- identifying correct packing instruction for UN 1790
- entries requiring further investigation

Additional line items have been added to impacted UN numbers. Additional descriptive text added to the proper shipping name for each line items allows for clearer cross-referencing of requirements.

Next steps

Consultation on this issues paper will close on 24 March 2023.

Submissions received will help inform the final draft of the list of entries in the dangerous goods list in Part 3 of the code.

Opportunities to comment on other provisions in the code will be provided over the next 12 months. A complete draft code will be released for public comment in early 2024.

List of questions

- Question 1:** Are you aware of an industry code of practice or other guidance document, for the safe transport of hay, straw or bhusa? Please provide details. **18**
- Question 2:** Do you support the proposal to deregulate the transport of UN 1327 by road or rail? If no, please provide your reasoning..... **18**
- Question 3:** Do you support making UN 1845 when transported as cargo, subject only to the provisions of 5.5.3? If no, please provide your reasons..... **20**
- Question 4:** Are you aware of UN 1845 CARBON DIOXIDE, SOLID (Dry ice), being transported by sea as cargo from the Australian mainland? **20**

Question 5:	Do you support the proposal to reference the Australian Cold Chain Guidelines 2017 in 5.5.3.3.3? If no, please provide your reasons.	20
Question 6:	Which of the three options do you prefer? Include your reasoning.	22
Question 7:	Are you aware of any potential impacts of prohibiting these 14 UN Numbers? Please provide details.	24
Question 8:	Do you support the prohibiting of these UN entries? If no, please provide your reasons.	24
Question 9:	Do you support limiting the restrictions in 4.1.1.10 to metal IBCs only? Please provide your reasons.	31
Question 10:	Do you have any evidence that the risk of transporting liquids with a vapor pressure at 50 °C more than 110 kPa in metal IBCs is greater than in non-metal IBCs? Please provide your data.	31
Question 11:	Do you have information that would help us understand the significance of these temperatures?	36
Question 12:	Are there any impacts you believe have not been identified? Please provide details.	38
Question 13:	Do you have data that could help us calculate the costs savings from the deregulation of UN 1327?	38

1 About this project

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

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

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

A set of Review Principles has been developed to guide the review to 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 the list of entries in the dangerous goods list in Part 3 of the code.

2 Context of issues

Key points

- The dangerous goods list in Part 3 of the code provides cross-references to specific requirements to be applied for the transport of each listed substance or article, and to the chapters or sections where these specific requirements can be found.
- Some entries in the dangerous goods list are either not regulated for transport by land or are prohibited from transport. These entries are not clearly identifiable in the current code.
- Different requirements may apply to different substances of the one UN number. This is not easily identifiable in the current code.
- The proposed changes will provide greater detail to duty holders, making it easier to find and comply with requirements.

Dangerous Goods List entries

The dangerous goods list (DGL) in part 3 of the UN Model Regulations contains a list of known dangerous goods, listed in numerical order of UN number. Once the UN number of a specific dangerous substance or article is known, the table provides cross-references to the requirements to be applied for the transport of that substance or article, and to the chapters or sections where these requirements can be found.

The entries in the DGL reflect the outcome of the application of classification requirements in Part 2 of the code. Each entry in the DGL provides references to related requirements in the code for that substance or article. These requirements are aimed at controlling risks during transport. Identifying the correct entry in the DGL is the first step in identifying the correct packing instruction, marking and labelling, special provisions and other related requirements.

Providing clear information for dangerous goods that are unregulated or prohibited

Some dangerous goods substances and articles are not regulated for land transport. This may be because the United Nations Sub-Committee of Experts on the Transport of Dangerous Goods (UN SC) has determined that they only require regulating when transported by sea and/or air. Australia is a member of the UN SC and takes part in these discussions and decisions.

Likewise, some substances or articles are considered too unstable or the risk during transport too high. The transport of these substances is therefore prohibited.

Applicable entries in the ADR are clearly identified in the DGL as 'NOT SUBJECT TO ADR' or 'CARRIAGE PROHIBITED', as applicable. Other than this statement, the only columns in the DGL that contain information are the UN number and proper shipping name.

Unlike the ADR approach, the DGL in the current code provides information in each column, as if the entry was fully regulated. It relies on the duty holder identifying the dangerous goods as unregulated or prohibited from an assigned special provision, or from the list of goods too dangerous to transport in Appendix A of the code.

In addition, a substance named in the DGL, may be considered not to be a dangerous good because its chemical or physical properties are such that when tested it does not meet the criteria for the class or division listed for that UN number, or any other class or division. In the current code, this is conveyed by the assignment of special provision SP 223. However, SP223 is only assigned to some UN entries. Meeting the classification criteria is a core principle and should be addressed in Part 2 of the code. Assigning SP 223 to individual entries, leads to the potential for confusion and overclassification.

Enabling compliance with other provisions

There are some UN numbers where different hazards and control requirements apply depending on other factors. This is obvious for different packing groups within the specified UN number, where different packing instructions, concessions and special provisions may be assigned. However, some requirements are related to other properties of the substance, for example, the viscosity or vapour pressure of a liquid. The DGL needs to provide sufficient granularity of the entries to enable compliance with these requirements.

More detail added to the draft dangerous goods list

The UN entries in the draft dangerous goods list mirror those in the ADR. While not changing the procedures or criteria for classification or assignment of substances or articles to a specific UN entry or DG class, the proposed changes will provide greater detail to duty holders, making it easier to find and comply with requirements. This paper discusses the benefits to Australian duty holders, regulators and policy makers from the additional information and granularity of the draft dangerous goods list.

Scope of this paper

This discussion paper examines the differences in the UN entries in the ADR and the entries in ADG 7.8. More specifically it provides information relating to:

- UN entries marked as 'not subject to the ADR'
- UN entries marked as 'prohibited from carriage'
- UN entries that have been further divided to provide additional information.

This paper does not look at the specific special provisions, limited and excepted quantity values, packing instructions, etc. assigned to each UN entry. These matters will be the subject of a future discussion paper.

3 UN entries unregulated or prohibited

3.1 UN entries marked as ‘not subject to the Code’

Key points

- In the draft code UN entries not subject to regulation for land transport, or prohibited from transport have been clearly identified, removing confusion for duty holders.
- Greater clarity has been provided in the draft code for substances named in the DGL, but not meeting the classification criteria as a dangerous good, removing the potential for over classification.
- The list of goods too dangerous to transport (Appendix A) in the current code is redundant. In recognition that duty holders may wish to retain some information, three options are presented for moving forward.

There are several entries in the United Nations list of dangerous goods that are regulated only when transported by air or by sea. These entries are identified in Table 3.2.3 – Dangerous Goods List (DGL), in the current code by one of the following Special Provisions (SP):

- SP 106 Not subject to this Code. Dangerous Goods only when transported by air.
- SP 117 Not subject to this Code. Dangerous Goods only when transported by sea.
- SP 123 Not subject to this Code. This entry in the Dangerous Goods List applies only when transported by air or sea.

Problem with the current code

Entries in the code to which SP 106, SP 117 or SP 123 apply are not immediately obvious. Each entry is assigned packing instructions, limited quantity (LQ) and excepted quantity (EQ) values, etc. as if fully regulated. It is only by reading the assigned special provision that a duty holder can identify that a substance is not subject to the code. This has the potential to create confusion for duty holders.

The assigned special provisions also state that the associated UN numbers are regulated when transported by air and/or sea. The code applies only to transport by road or rail, and as a general principle, should not contain, or specify requirements for transport by other modes. Requirements for transport by sea or by air are specified in the IMDG Code and ICAO Technical Instructions, respectively. The NTC does not have input into these requirements and does not monitor them. Any requirements relating to sea or air transport in the code are likely to become out of date and misaligned. This is likely to add more confusion. It is the responsibility of duty holders consigning or transporting dangerous goods to ascertain and comply with the relevant requirements for each mode by which the goods will be transported.

Draft code

As part of the ADG Code review, the NTC proposes to remove SP 106, SP 117 and SP 123 from the list of special provisions. The irrelevant requirements will also be deleted from the DGL for the relevant UN entries and replaced with 'NOT SUBJECT TO THIS CODE', as per the following example.

UN No.	Name and Description	Class or Division	Sub Hazard	UN Packing Group	Special Provisions	Limited and excepted Quantities		Packaging	
								Packing Instruction	Special Packing Provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)
Ref	3.1.2	2	2	2.0.1.3	3.3	3.4		4.1.4	4.1.4
3360	FIBRES, VEGETABLE, DRY	4.1		NOT SUBJECT TO THIS CODE					

The name and description in column (2) of the DGL will appear in lower case. Upper case is used only for the proper shipping name of dangerous goods, with lower case used for all other descriptive text.

Impacted UN Numbers

UN No.	Name and description
1327	Hay, straw or bhusa
1372	Fibres, animal or fibres, vegetable burnt, wet or damp.
1387	Wool waste, wet
1845	Carbon dioxide, solid (dry ice)
1856	Rags, oily
1857	Textile waste, wet
1910	Calcium oxide
2216	Fish meal (fish scrap), stabilized
2807	Magnetized material
2812	Sodium aluminate, solid
3334	Aviation regulated liquid, n.o.s.
3335	Aviation regulated solid, n.o.s.

3360	Fibres, vegetable, dry
3496	Batteries, nickel-metal hydride

Issues to be resolved

There are currently 12 entries in the DGL that are not subject to the code. The ADR DGL also lists these 12 entries as not subject to the ADR. In addition to these 12 entries, the ADR lists the following two entries as not subject to the ADR (UN 1327) or not subject to the ADR except for 5.5.3 (UN 1845).:

- UN 1327 Hay, straw or bhusa
- UN 1845 Carbon dioxide, solid (Dry ice)

We are seeking your input on these two entries, each of which is discussed in further detail below.

3.1.1 UN 1327 Hay, Straw or Bhusa

The current code assigns Special Provision SP 281 to UN 1327.

SP 281 The transport by sea of hay, straw or bhusa, wet, damp or contaminated with oil is prohibited. Transport by other modes is also prohibited except with special authorisation by the competent authorities.
Hay, straw and bhusa, when not wet, damp or contaminated with oil, are not subject to this Code. Dangerous Goods only when transported by sea.

The ADR does not assign SP 281 to UN 1327. Instead, the entry is marked 'NOT SUBJECT TO ADR'.

Discussion

In August 2022, the dangerous goods transport competent authorities were asked if they supported marking UN 1327 in the DGL as 'Not Subject to the Code'. The following table provides a summary of the responses received.

UN 1327 HAY, STRAW OR BHUSA

There have been a number of fires in Australia in recent years involving trucks transporting hay. Wet hay may have been the cause, but no detailed reports about what actually caused the fire have been sighted.

Moisture content for hay must be below 14% when being transported by sea. However, it is not for the ADG code to keep up with the IMDG Code.

Hay, straw and bhusa are not classed as dangerous goods for storage.

The agricultural industry is well versed in the risks presented by handling and transporting wet or contaminated hay, straw or bhusa.

Most of this transport is high volume, low value, which tends to restrict distances travelled except in emergencies such as droughts. In drought conditions, the material being wet is less likely.

Is there a code of practice or some guidance documents that relate to this issue?

We don't consider the DG regulations to be the best method of regulating this transport, so no objections to marking it as not subject to the ADG Code.

UN 1327 Hay, Straw or Bhusa should not be subject to the ADG Code

If the ADG Code could be clearer about what hay can be transported under the IMDG Code (SP954) that would remove any opacity when changing modes with hay - this is shipped a fair bit across the Bass Strait I am pretty sure - and other routes as well no doubt.

Responses from competent authorities for land transport of dangerous goods showed support for deregulating UN 1327 when transported by road or rail. None of the responses identified a potential increase in risk. One comment requested that the code provide clearer information on the requirements for transport by sea.

For reasons already discussed in this paper, it is not appropriate for the code to comment on the requirements for transport by modes not covered by the code.

Question 1: Are you aware of an industry code of practice or other guidance document, for the safe transport of hay, straw or bhusa? Please provide details.

Question 2: Do you support the proposal to deregulate the transport of UN 1327 by road or rail? If no, please provide your reasoning.

3.1.2 UN 1845 Carbon dioxide, solid (Dry ice)

The current code regulates UN 1845 when transported as cargo but when used as a coolant, it is only subject to the requirements of 5.5.3. One of the requirements of 5.5.3 is for an asphyxiation warning sign to be displayed on the cargo transport unit. The regulation of UN 1845 when transported as cargo, includes requirements for packages to be marked and labelled and for a DG transport document. However, placarding of the cargo transport unit is with either a Class 9 placard or a mixed class placard. No asphyxiation warning is required. If the load is below placarding thresholds, the cargo transport unit would have no class diamonds or warning signs. This could expose workers and emergency responders to a risk of asphyxiation.

Under the ADR (section 5.5.3.1.1), UN 1845 is subject to 5.5.3 only, whether used as a coolant or transported as cargo.

ADR 5.5.3.1 *Scope*

5.5.3.1.1 This section is not applicable to substances which may be used for cooling or conditioning purposes when carried as a consignment of dangerous goods, except for the carriage of dry ice (UN No. 1845). When they are carried as a consignment, these substances shall be carried under the relevant entry of Table A of Chapter 3.2 in accordance with the associated conditions of carriage.

For UN No. 1845, the conditions of carriage specified in this section, except 5.5.3.3.1, apply for all kinds of carriage, as a coolant, conditioner, or as a consignment. For the carriage of UN No. 1845, no other provisions of ADR apply.

Provision 5.5.3.3.3 of the ADR includes a reference to the **Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP)**. As Australia does not appear to be a signatory to this agreement, the reference will need to be replaced with a suitable Australian reference. An appropriate reference may be the **Australian Cold Chain Guidelines 2017**.

A full excerpt of the provisions in 5.5.3 of the ADR is contained in Appendix A.

Discussion

In August 2022, the dangerous goods transport competent authorities were asked if they believed following the requirements of the ADR for the transport of UN 1845 would adequately address the risks in Australia. The following table provides a summary of the responses received.

UN 1845
No objection to following ADR. The asphyxiation warning mark for cargo transport units would be retained, which is useful. The hazards of dry ice would be adequately covered by WHS regulations.
The main hazard is asphyxiation. 5.5.3 in the ADG Code already contains the majority of the same provisions as ADR to manage this hazard. Dry ice being transported as a substance, compared to being used (in transport) as a conditioning agent is not likely to present significantly different risks, provided the controls that are detailed are used. The risks appear to be well managed by adopting the method in ADR 5.5.3, so no objections to marking it as not subject to the ADG Code.
If there is no risk involved with adopting the ADR UN 1845 Carbon dioxide, solid (Dry ice) entry, we should adopt the ADR entry.
Carbon dioxide is treated in the IMDG Code the same way as it is currently in the ADG Code - which is likely because the ADG Code is also created from the UN MR as a base text. If the proposed change to align with the ADR Code is made, this will add a fairly significant speedbump in a domestic change of mode.

Responses from competent authorities for land transport of dangerous goods showed support for adopting the ADR approach to UN 1845, making it subject only to the provisions

of 5.5.3, whether transported as coolant or as cargo. None of the responses identified a potential increase in risk. One comment raised potential impacts when transported as cargo by both road and sea.

A high-level comparison of the requirements under ADR vs those in the IMDG Code show the primary differences as being the placarding of the cargo transport unit and the requirement for an MO41 for sea transport. Both of these requirements are specific to the IMDG Code and must be complied with by any duty holder involved in the transport of dangerous goods by sea. The code seeks to minimise the barriers to multimodal transport, but the primary focus remains on transport by road or rail.

Question 3: Do you support making UN 1845 when transported as cargo, subject only to the provisions of 5.5.3? If no, please provide your reasons.

Question 4: Are you aware of UN 1845 CARBON DIOXIDE, SOLID (Dry ice), being transported by sea as cargo from the Australian mainland?

Question 5: Do you support the proposal to reference the Australian Cold Chain Guidelines 2017 in 5.5.3.3.3? If no, please provide your reasons.

3.2 Substances ‘prohibited for carriage’

Many substances are considered too dangerous to transport, as the associated risks are deemed unacceptable. The majority of these substances do not meet any of the UN numbers or descriptions in the DGL. Specific direction is necessary to prevent these from being classified as a dangerous good.

There are some substances that do meet a given UN number and description in the DGL. These need to be clearly identified in the DGL to prevent them being inadvertently consigned and transported.

Problem with the current code

The current code does not clearly indicate entries in the DGL that are prohibited from transport. Instead, it provides full information, including packing instructions, limited quantity values, excepted quantity values, etc. for each of these entries. One entry (UN 2455) is listed in the DGL as if it may be transported, even though it is also listed in Appendix A of the code as ‘too dangerous to transport’.

The code defines ‘goods too dangerous to transport’ as:

- (a) goods set out or described in Appendix A of this Code; or
- (b) goods determined under Regulation 1.5.1(2)(a) to be too dangerous to be transported; or
- (c) goods or combinations of goods for which the statement ‘are not to be accepted for transport’ applies in a special provision in Chapter 3.3 of this Code that is applied to the goods by column (6) of the Dangerous Goods List; or
- (d) other goods that are so sensitive or unstable that they cannot be safely transported even if all relevant requirements of the Regulations and this Code are complied with (see 2.1.3.3.2).

Appendix A of the current code contains a list of specific substances that are considered 'too dangerous to transport'. The list has not been reviewed or maintained for many years. It's assumed that the substances listed in Appendix A of the code were determined as too dangerous to transport under previous versions of the code and associated regulations. However, records of such determinations have not been found.

Draft code

The draft of Part 2 of the proposed code replicates Part 2 of the ADR. This includes specifying substances that are not accepted for carriage. This information may be collective in nature, or list specific substances. If a substance is listed by name in the DGL, then the UN number is included.

Substances in each Class, that are not accepted for carriage are listed in 2.2.x.2 of the relevant sub-chapters in Part 2. An excerpt of all the relevant provisions is contained in Appendix B. The list of prohibited substances includes the following 14 UN numbers:

UN No.	Name and description
0020	AMMUNITION, TOXIC with burster, expelling charge or propelling charge
0021	AMMUNITION, TOXIC with burster, expelling charge or propelling charge
1798	NITROHYDROCHLORIC ACID
2186	HYDROGEN CHLORIDE, REFRIGERATED LIQUID
2249	DICHLORODIMETHYL ETHER, SYMMETRICAL
2421	NITROGEN TRIOXIDE
2455	METHYL NITRITE
3097	FLAMMABLE SOLID, OXIDIZING, N.O.S.
3100	OXIDIZING SOLID, SELF-HEATING, N.O.S.
3121	OXIDIZING SOLID, WATER-REACTIVE, N.O.S.
3127	SELF-HEATING SOLID, OXIDIZING, N.O.S.
3133	WATER-REACTIVE SOLID, OXIDIZING, N.O.S.
3137	OXIDIZING SOLID, FLAMMABLE, N.O.S.
3255	tert-BUTYL HYPOCHLORITE

In keeping with the approach taken for entries in the DGL that are not subject to the code, we propose to clearly identify entries that are not accepted for carriage, as per the following example:

UN No.	Name and Description	Class or Division	Sub Hazard	UN Packing Group	Special Provisions	Limited and excepted Quantities		Packaging	
								Packing Instruction	Special Packing Provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)
Ref	3.1.2	2	2	2.0.1.3	3.3	3.4		4.1.4	4.1.4
1798	NITROHYDROCHLORIC ACID	8		NOT ACCEPTED FOR CARRIAGE					

Issues to be resolved

Substances that are prohibited for transport fall into one of the following two categories:

- substances not accepted for transport and not listed by name in the DGL
- substances meeting a specific entry in the DGL.

We are seeking your input on the specific substances listed in each of these categories.

3.2.1 Substances not listed by name in the DGL

Substances not accepted for transport are contained in the draft Part 2 of the code, making Appendix A of the current code redundant. Appendix A is extremely outdated. It contains terms and references that are no longer used. However, duty holders may find it helpful to have a collective list of all prohibited substances. If Appendix A is carried forward to the new code, it will require a substantial review. We have developed the following three options for Appendix A.

Option 1: Do not include Appendix A in the revised code.

Option 2: Include Appendix A in the revised code but replace the contents with a consolidated list of substances from 2.2.x.2.

Option 3: Include Appendix A in the revised code. Replace the contents with a consolidated list of substances from 2.2.x.2, expanded to include relevant substances from the current list in Appendix A. Substances retained from the current list will need to be mapped to an item in 2.2.x.2.

Question 6: Which of the three options do you prefer? Include your reasoning.

3.2.2 Substances meeting a specific entry in the DGL

There are 14 entries in the DGL that are listed by UN number and name in the draft Part 2 of the code as not accepted for carriage. Of these 14, only one (UN 2455) is specifically listed in Appendix A of the current code. The remaining 13 are likely to meet (d) of the definition of 'too dangerous to transport' in the current code. However, this statement is subjective in nature and provides no real guidance to duty holders or regulators.

- (d) other goods that are so sensitive or unstable that they cannot be safely transported even if all relevant requirements of the Regulations and this Code are complied with (see 2.1.3.3.2).

Road and rail competent authorities in many parts of the world have assessed substances meeting the 14 listed UN Numbers as not safe for transport. In addition to being prohibited for transport by the 54 contracting parties to the ADR and RID, all 14 substances are listed as 'forbidden' by Transport Canada. Information on the status in other countries was not readily available.

Discussion

In August 2022, the dangerous goods transport competent authorities were asked for their views on prohibiting the transport of these 14 UN numbers. Information on known uses was also sought. Limited responses were received. The following table provides a summary of the responses that were received.

UN No.	Comment
	The ADG Code cannot prohibit small amounts of dangerous goods (for R & D) because of the exemption for small quantities under Table 1.1.1.2.
	The listed chemicals are all highly reactive chemicals. Given the nature of Australia's chemical industry, we doubt there would be much demand for them to be transported in Australia outside of the location where they are made (if they're used at all in Australia).
	If someone is currently transporting these substances, or needs to, then a specific exemption would be warranted to ensure the correct controls are in place for that particular scenario.
	We are not aware of any places where these substances are likely to be manufactured or used, and note that we have not issued any packaging approvals or determinations for the purpose of Packing Instruction P101 (UN 0020 and UN 0021) or Packing Instruction P099 (UN 2186, UN 2249, UN 3097, UN 3100, UN 3121, UN 3127, UN 3133, UN 3137 and UN 3255)
2249	Dichlorodimethyl ether symmetrical [Bis (chloromethyl ether)] is very toxic Acute Exposure Guideline Level for 1 hour exposure AEGL2 is 0.044 ppm for irreversible or serious adverse health effect, and AEGL3 is 0.18 ppm for life threatening exposure. Confirmed human carcinogen. TLV 0.001 ppm

	Was once produced at large scale, but because it is highly carcinogenic, production was discontinued in the early 1980's except in China.
2421	<p>A toxic substance and a powerful oxidizing agent, but it is used in the chemical industry. It is likely that the chemical industry manufactures it for its own use on site without transport.</p> <p>It is available on special request from Sigma Aldrich for R& D only so it used in research laboratories.</p>
3097, 3100, 3121, 3127, 3133, 3137	<p>It does not seem to be prudent to categorically prohibit generic N.O.S entries not knowing what exact chemicals are being prohibited</p> <p>Many of these are permitted if they meet the class 1 requirements (i.e. they are effectively explosives, but not classified as such), but not using those entries. It makes sense to exclude those given the combinations of oxidising and other reactive properties. If they meet the definition of a class 1 material and can be transported, then they should be transported as explosives.</p>

Of the comments received, two highlighted potential problems with prohibiting these entries.

1. Potential conflict with the exemptions for small quantities under Table 1.1.1.2
2. The use of UN 2421 in research laboratories.

By marking these 14 entries as 'not accepted for carriage' in the DGL, the conflict with Table 1.1.1.2 will be removed. If a duty holder has a genuine need to transport samples of any of these UN Numbers, they should apply for an exemption from the competent authority. This enables the competent authority to restrict the transport and specify appropriate controls.

In relation to UN 2421 Nitrogen Trioxide, Sigma Aldrich / Merck have confirmed that this UN number is flagged in their system as 'not sold in country'. This substance is manufactured in the USA, and they have no record of it ever having been imported into Australia. Nor do they have a record of any sales here.

Question 7: Are you aware of any potential impacts of prohibiting these 14 UN Numbers? Please provide details.

Question 8: Do you support the prohibiting of these UN entries? If no, please provide your reasons.

3.3 Application of special provision SP 223

Substances and articles are classified as dangerous goods if their chemical and physical properties are such that they meet the relevant criteria, specified in Part 2 of United Nations Model Recommendations (UN MR) and the Manual of Tests and Criteria.

Some substances, even though listed by name in the DGL may be classified as non-dangerous goods because they do not meet the specified criteria. The UN MR

communicates this through the assignment of special provision SP 223. Special provision SP 223 is assigned to more than 300 entries in the DGL.

SP 223 If the chemical or physical properties of a substance covered by this description are such that when tested it does not meet the established defining criteria for the Class or division listed in column (3), or any other Class or division, it is not subject to this Code.

When restructuring the ADR and RID some years ago, the working party responsible for them (WP.15) identified problems and inconsistencies with the application of SP 223. To address these issues, WP.15 chose not to follow the UN MR approach. Instead, they included general statements in 2.2.x.1 in Part 2, that mirrored SP 223. As a consequential amendment, SP 223 was no longer assigned to individual entries in the DGL and was therefore deleted from the list of special provisions.

Problem with the current code

The current code replicates the UN MR by assigning special provision 223 to individual entries in the DGL. This creates confusion and potential contradictions for named substances in the DGL where SP 223 is not assigned.

Duty holders may interpret that if a substance is named in the DGL but does not have SP 223 assigned, it must be classified as a dangerous good, even if it does not meet the classification criteria.

These confusion and interpretation issues were highlighted in **Informal Document INF.35** which was discussed at the 61st session of the UN SC, held in December 2022. The UN SC confirmed that the first step in classification is determining if the substance meets the specified classification criteria for any of the classes. If it doesn't, then it is not considered a dangerous good.

Draft code

The draft Part 2 of the proposed code mirrors that of the ADR, placing clear statements in 2.2.x.1 in Chapter 2.2 of the code, as per the following example:

2.2.3.1.7 On the basis of the test procedures in accordance with 2.3.3.1 and 2.3.4, and the criteria set out in 2.2.3.1.1, it may also be determined whether the nature of a solution or a mixture mentioned by name or containing a substance mentioned by name is such that the solution or mixture is not subject to the provisions for this Class (see also 2.1.3). (Class 4.1)

A draft of Part 2 of the proposed code accompanied the NTC's *Discussion paper #1 – Classification of dangerous goods*. A list of relevant excerpts is contained in Appendix C of this paper.

As a consequential amendment of the redrafted Part 2 of the proposed code, SP 223 will no longer be assigned to individual entries in the DGL. SP 223 will also be removed from the list of special provisions.

4 UN Numbers with additional entries

Key points

- With the redraft of Part 2 of the code, special provisions SP 63, SP 204 and SP 303 will no longer be needed, and as such will be deleted.
- Entries in the DGL where additional requirements apply only to some substances meeting the particular UN Number have been divided into multiple line items, each supplemented with descriptive text.
- The added descriptive text to proper shipping names enable identification of substances subject to concessions or requirements relating to viscosity, vapour pressure, selection of correct packing instruction, use of bulk containers or asphyxiation hazards when substances are contained in refrigerated liquid nitrogen.

There are several entries in the DGL that are broken into multiple line items. The proper shipping names for each line item is supplemented with descriptive information that facilitates compliance with other provisions of the code. These provisions can be classified into one of the following categories:

- classification related special provisions
- additional requirements not related to classification criteria.

These are each discussed in detail below.

4.1 Implementation of classification-related special provisions

There are number of entries in the draft that are divided into multiple entries, each with additional descriptions added to the proper shipping name, to implement classification-related special provisions. Special provisions SP 63, SP 204 and SP 303 of the current code all specify additional classification criteria.

Part 2 of the code specifies the process and criteria for classification. The redraft of Part 2 ensures all classification requirements are contained in Part 2, with all possible classification outcomes listed in the DGL. As a result, there are now multiple entries in the DGL for the associated UN numbers. As special provisions SP 63, SP 204 and SP 303 will no longer be needed, they will be deleted.

The impacted DGL entries are UN 0015, UN 0016, UN 0303, UN 1950, UN 2037.

See the NTC's *Discussion paper #1 – Classification of dangerous goods* for a detailed explanation of these changes.

4.2 Enabling compliance with other requirements

There are several entries in the DGL where additional requirements apply only to some substances meeting the particular UN Number. These requirements are generally related to properties that are not part of the classification criteria.

To help identify substances subject to additional requirements, each impacted DGL entry has been divided into multiple line items. The proper shipping name for each line item is supplemented with descriptive text, enabling identification of the relevant properties. The impacted entries generally fall into one of the following groups:

- special provision SP 341 – use of bulk containers
- substances in refrigerated liquid nitrogen
- vapour pressure (provision 4.1.1.10)
- viscous substances
- identifying correct packing instruction for UN 1790
- entries requiring further investigation

Each of these groups is discussed below. A full list of draft DGL entries for the impacted UN numbers is contained in Appendix D.

4.2.1 Special provision SP 341 – use of bulk containers

SP 341 Bulk transport of infectious substances in BK1 and BK2 bulk containers is only permitted for infectious substances contained in animal material as defined in 1.2.1 (See 4.3.2.4.1).

There are three entries in the DGL that currently have SP 341 assigned to them.

Impacted UN Numbers

UN No.	Proper Shipping Name
2814	INFECTIOUS SUBSTANCE, AFFECTING HUMANS
2900	INFECTIOUS SUBSTANCE, AFFECTING ANIMALS only
3373	BIOLOGICAL SUBSTANCE, CATEGORY B

Problem with current code

The proper shipping names in the DGL for these entries do not enable ready identification that the substance being transported is contained in animal material. Nor do they guide the consignor to identify and communicate this information to the transporter. This makes it difficult for duty holders to determine if transport in a bulk container is permitted. This can lead to incorrect application by duty holders and misunderstandings between duty holders and regulatory enforcement officers.

Draft code

An additional line item has been added in the DGL for each of these UN numbers. The proper shipping name for the new line items is supplemented with the description (animal material only), as per the following example.

UN No.	Proper Shipping Name
2814	INFECTIOUS SUBSTANCE, AFFECTING HUMANS (animal material only)

Bulk container instruction BK 1 and BK 2 are assigned only to this new line item for each of these UN numbers. Bulk containers instructions are not assigned to other line items for this UN number. This provides clarity to duty holders, facilitates the use of bulk containers, where permitted and reduces the likelihood of unintended non-compliance. Special provision SP 341 is no longer required and will be deleted.

4.2.2 Identification of hazards associated with refrigerated liquid nitrogen

Some substances are often transported packed in refrigerated liquid nitrogen to maintain their viability. Refrigerated liquid nitrogen poses a risk of asphyxiation. When used as a coolant for packaging, it is subject to the requirements of 5.5.3, but not when transported as cargo.

Additional packing requirements are specified for substances consigned in refrigerated liquid nitrogen.

Impacted UN Numbers

UN No.	Proper Shipping Name
2814	INFECTIOUS SUBSTANCE, AFFECTING HUMANS
2900	INFECTIOUS SUBSTANCE, AFFECTING ANIMALS only
3245	GENETICALLY MODIFIED MICROORGANISMS or GENETICALLY MODIFIED ORGANISMS
3291	CLINICAL WASTE, UNSPECIFIED, N.O.S. or (BIO) MEDICAL WASTE, N.O.S. or REGULATED MEDICAL WASTE, N.O.S.
3373	BIOLOGICAL SUBSTANCE, CATEGORY B

Problem with current code

The proper shipping names in the DGL for these entries do not enable ready identification of substances being transported in refrigerated liquid nitrogen. Nor do they guide the consignor to identify or communicate this information to the transporter. The risk of asphyxiation is not required to be identified on the packaging, placarding or dangerous goods transport document.

Draft code

An additional line item has been added to the DGL entries for each relevant UN number. The proper shipping name for the new line items is supplemented with the description (in refrigerated liquid nitrogen), as per the following example.

UN No.	Proper Shipping Name
3245	GENETICALLY MODIFIED MICROORGANISMS or GENETICALLY MODIFIED ORGANISMS, in refrigerated liquid nitrogen

In addition to the relevant Class label for the assigned Class, packages containing substances of UN 2814, UN 2900, UN 3245 or UN 3373 in refrigerated liquid nitrogen are required to display a Class 2.2 label. This information is also required to be included in the dangerous goods transport document.

4.2.3 Vapour pressure (provision 4.1.1.10)

Provision 4.1.1.10 of the UN MR prohibits the transport of liquids in Intermediate Bulk Containers (IBC) if the liquid has a vapour pressure of more than 110 kPa (1.1 bar) at 50 °C. Provision 4.1.1.10 of the current code replicates the provision in the UN MR.

Impacted UN Numbers

UN No.	Proper Shipping Name
1133	ADHESIVES containing flammable liquid
1139	COATING SOLUTION (includes surface treatments or coatings used for industrial or other purposes such as vehicle under coating, drum or barrel lining)
1197	EXTRACTS, LIQUID, for flavour or aroma
1210	PRINTING INK, flammable or PRINTING INK RELATED MATERIAL (including printing ink thinning or reducing compound), flammable
1224	KETONES, LIQUID, N.O.S.
1263	PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning and reducing compound)
1266	PERFUMERY PRODUCTS with flammable solvents
1267	PETROLEUM CRUDE OIL

1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S.
1286	ROSIN OIL
1287	RUBBER SOLUTION
1306	WOOD PRESERVATIVES, LIQUID
1308	ZIRCONIUM SUSPENDED IN A FLAMMABLE LIQUID
1863	FUEL, AVIATION, TURBINE ENGINE
1866	RESIN SOLUTION, flammable
1987	ALCOHOLS, N.O.S.
1989	ALDEHYDES, N.O.S.
1993	FLAMMABLE LIQUID, N.O.S.
1999	TARS, LIQUID, including road oils, and cutback bitumens
2059	NITROCELLULOSE SOLUTION, FLAMMABLE with not more than 12.6 % nitrogen, by dry mass, and not more than 55 % nitrocellulose
3295	HYDROCARBONS, LIQUID, N.O.S.
3336	MERCAPTANS, LIQUID, FLAMMABLE, N.O.S. or MERCAPTAN MIXTURE, LIQUID, FLAMMABLE, N.O.S.

Problem with the current code

All of the impacted UN numbers listed above are assigned IBC packing instructions, indicating that they can be transported in IBC's. To determine whether a specific liquid meeting the UN number can be transported in an IBC, each duty holder in the transport chain needs to know the vapour pressure of the liquid. Many parties in the chain, particularly transporters, will not have this information. Usually, transport operators are transporting on behalf of other parties and have no ownership of the product.

Improvements could be made to the code to facilitate the application of provision 4.1.1.10.

Draft code

Additional line items have been added to the DGL entries for each of the relevant UN numbers. The proper shipping name for each new line item is supplemented with descriptive text identifying them as having a vapour pressure at 50 °C of more than 110 kPa, or as having a vapour pressure at 50 °C of not more than 110 kPa, as per the following example.

UN No.	Proper Shipping Name
1197	EXTRACTS, LIQUID, for flavour or aroma (vapour pressure at 50 °C more than 110 kPa)
1197	EXTRACTS, LIQUID, for flavour or aroma (vapour pressure at 50 °C not more than 110 kPa)

Where multiple packing groups are assigned to the UN number, additional line items are provided for each packing group, as relevant.

This approach in the draft code places the responsibility for assessing the vapour pressure of the liquid on the owner (manufacturer, importer or consignor) of the liquid. Once the vapour pressure is assessed, it can be assigned to the appropriate description for that UN Number in the DGL. By assigning the appropriate entry, the relevant information is communicated to all other parties in the transport chain.

Issue to be resolved

Both the UN MR and current code apply the restriction on the use of IBCs in provision 4.1.1.10 to all IBC types. The ADR applies this restriction only to metal IBCs. Our attempts to identify the rationale for this difference have not been successful. Publicly available records for the ADR only extend back to 2001 and the decision to restrict provision 4.1.1.10 in the ADR to metal IBCs only, predates this.

We are seeking your input to better understand the risks associated with the use of metal IBCs compared to non-metal IBCs, when used for high vapour pressure liquids.

Question 9: Do you support limiting the restrictions in 4.1.1.10 to metal IBCs only? Please provide your reasons.

Question 10: Do you have any evidence that the risk of transporting liquids with a vapor pressure at 50 °C more than 110 kPa in metal IBCs is greater than in non-metal IBCs? Please provide your data.

4.2.4 Viscous substances

The UN MR provides several concessions for liquids defined as viscous in accordance with provision 2.3.2.2. These concessions range from the assignment to a lower packing group, e.g., provision 2.3.2.2, to full exemption from transport requirements, e.g. provision 2.3.2.5. There are also tank related requirements specific to viscous substances, e.g., 6.7.2.6.2.

Liquids with a viscosity above 2,680mm²/s are also exempted from the ullage rules when transported in a tank.

Impacted UN Numbers

UN No.	Proper Shipping Name
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1133	ADHESIVES containing flammable liquid
1139	COATING SOLUTION (includes surface treatments or coatings used for industrial or other purposes such as vehicle under coating, drum or barrel lining)
1197	EXTRACTS, LIQUID, for flavour or aroma
1210	PRINTING INK, flammable or PRINTING INK RELATED MATERIAL (including printing ink thinning or reducing compound), flammable
1263	PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning and reducing compound)
1266	PERFUMERY PRODUCTS with flammable solvents
1286	ROSIN OIL
1287	RUBBER SOLUTION
1306	WOOD PRESERVATIVES, LIQUID
1866	RESIN SOLUTION, flammable
1993	FLAMMABLE LIQUID, N.O.S.
1999	TARS, LIQUID, including road oils, and cutback bitumens
3375	AMMONIUM NITRATE EMULSION or SUSPENSION or GEL, intermediate for blasting explosives

Problem with the current code

Each of the UN numbers listed above may have substances that are considered viscous and those that are not. There is no way of identifying from the UN number and proper shipping name in the current DGL if a particular substance is viscous. This makes it difficult to identify concessions and requirements that might apply. It also increases the risk of miscommunication or differing interpretation as the substance moves through the transport chain.

The lack of identification of substances as viscous creates problems for tank operators. This has been a particular issue with the application of ullage rules for UN 3375. Drivers using the ullage exemption are often advised to carry a letter stating that the emulsion being transported has a viscosity above 2,680mm²/s, to assist when the vehicle is subjected to a roadside inspection. Liquids with a viscosity above 2,680mm²/s meet the definition of a solid in the code.

Draft code

Additional line items have been added to the DGL entries for each of the relevant UN numbers. The proper shipping name for each new line item is supplemented with descriptive text identifying the substance as viscous according to the criteria specified in provision 2.2.3.1.4 of the draft Part 2 of the code. The criteria in 2.2.3.1.4 of the draft Part 2 replicate the criteria specified in 2.3.2.2 of the current code.

Each of the UN numbers listed above (except for UN 3375) may also include substances that do or do not have a vapour pressure at 50 °C of more than 110 kPa. For these entries, the additional descriptive text contains relevant information to identify both viscosity and vapour pressure, as per the following example.

UN No.	Proper Shipping Name
1197	EXTRACTS, LIQUID, for flavour or aroma (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C more than 110 kPa)
1197	EXTRACTS, LIQUID, for flavour or aroma (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C not more than 110 kPa)

The entry for UN 3375 has been amended to allow assignment as either a liquid or a solid, as follows:

UN No.	Proper Shipping Name
3375	AMMONIUM NITRATE EMULSION or SUSPENSION or GEL, intermediate for blasting explosives, liquid
3375	AMMONIUM NITRATE EMULSION or SUSPENSION or GEL, intermediate for blasting explosives, solid

4.2.5 Selection of correct packing instructions for UN 1790

The packing instruction assigned to UN 1790 HYDROFLUORIC ACID in the UN MR is dependent on the percentage of hydrogen fluoride in the substance. Substances with not more than 60% hydrogen fluoride are assigned packing instruction P001 and IBC02, Substances with more than 60% hydrogen fluoride are assigned to P802 and special packing provisions PP79 and PP81. Substances with more than 60% hydrogen fluoride are not permitted to be transported in IBCs, so no IBC instruction is assigned to this entry.

Special packing provision PP79 states:

PP79 For UN 1790 with more than 60% but not more than 85% hydrogen fluoride, see P001.

Special packing provision PP81 forms part of packing instruction P001 but not P802.

Problem with the current code

The current code replicates the UN MR. The DGL contains the following two entries for UN 1790.

UN No.	Proper Shipping Name
1790	HYDROFLUORIC ACID, with more than 60% hydrogen fluoride
1790	HYDROFLUORIC ACID, with not more than 60% hydrogen fluoride

There is a single entry for HYDROFLUORIC ACID, with more than 60% hydrogen fluoride, which is assigned packing instruction P802. There are actually two different packing instructions applicable for this entry, depending on the hydrogen fluoride content. This is not readily ascertainable from the assigned packing instruction in the DGL

Ensuring the correct packing instruction is used relies on the duty holder knowing the percentage of hydrogen fluoride in the specific substance to be transported and then correctly interpreting and applying PP79 in P802.

The packing instructions in P802 are more stringent than those in P001. Using P802 when P001 is permitted is unlikely to increase the risk in transport but it does add unnecessary costs.

Draft code

UN 1790 in the DGL has been divided into three entries. This enables assignment of the appropriate packing instruction to each entry.

UN No.	Proper Shipping Name
1790	HYDROFLUORIC ACID, with more than 85% hydrogen fluoride
1790	HYDROFLUORIC ACID, with more than 60% but not more than 85% hydrogen fluoride
1790	HYDROFLUORIC ACID, with not more than 60% hydrogen fluoride

4.2.6 Entries requiring further investigation

There are three further UN numbers that the ADR divides into multiple line items, each with descriptive text added to the proper shipping name. Each of these entries requires further investigation to understand if the ADR entries should be incorporated into the code.

ADR entries for UN 2015

The division of entries for UN 2015 identifies substances that have more than 70 % hydrogen peroxide. This distinction enables the assignment of different ADR tanks to each entry. The subject of ADR tanks will be examined by the tank working group. The additional entries are included in this paper for information only.

UN No.	Proper Shipping Name
2015	HYDROGEN PEROXIDE, STABILIZED or HYDROGEN PEROXIDE, AQUEOUS SOLUTION, STABILIZED with more than 70 % hydrogen peroxide
2015	HYDROGEN PEROXIDE, AQUEOUS SOLUTION, STABILIZED with more than 60 % hydrogen peroxide and not more than 70 % hydrogen peroxide

DGL entries for UN 3256 and UN 3257

The DGL in the current code contains the following entries for UN 3256 and UN 3257.

UN No.	Proper Shipping Name
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flashpoint above 60° C, at or above its flashpoint
3257	ELEVATED TEMPERATURE LIQUID, N.O.S., at or above 100 °C and below its flash-point (including molten metals, molten salts, etc.)

The ADR contains two entries for each of these UN numbers. For UN 3256, the correct entry depends on whether the substance is below 100° C, or at or above 100° C. For UN 3257, it is based on the temperature at which the substance is filled. Further research is required to understand the significance of these temperatures.

DGL entries in the ADR

UN No.	Proper Shipping Name
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3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flashpoint above 60° C, at or above its flashpoint and below 100° C
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flashpoint above 60° C, at or above its flashpoint and at or above 100° C
3257	ELEVATED TEMPERATURE LIQUID, N.O.S., at or above 100 °C and below its flash-point (including molten metals, molten salts, etc.), filled at a temperature higher than 190 °C
3257	ELEVATED TEMPERATURE LIQUID, N.O.S., at or above 100 °C and below its flash-point (including molten metals, molten salts, etc.), filled at or below 190 °C

Question 11: Do you have information that would help us understand the significance of these temperatures?

5 Expected impacts of changes proper shipping names in the DGL

Key points

- The additional detail added to the proper shipping name in DGL entries is expected to make identifying, understanding and applying associated requirements easier for duty holders.
- There are no anticipated costs associated with the proposed changes to part 2 of the code.

Benefits of the proposed changes

For the most part, the draft changes discussed in this paper represent no real change to requirements. Instead, they provide clarity and improve the readability of the code, which has been a key concern raised by stakeholders during previous consultations. Stakeholders have also raised issues with understanding which requirements apply in their circumstance. The proposed changes are aimed at improving both the readability of the code and the identification of requirements.

Deleting the irrelevant information in the DGL for substances that are not regulated for land transport and replacing them with a clear statement 'NOT SUBJECT TO THE CODE' removes ambiguity. It also removes the possibility of differing interpretations and miscommunication.

This removal of ambiguity and clear instruction also applies for substances that are prohibited for transport, even if they are assigned a UN number and proper shipping name. It's possible that the prohibition of transport of these substances may result in increased burden for some duty holders. We expect this to be minimal as it's unlikely there is a need to transport these substances. If there is a need to transport a prohibited substance, the duty holder can apply for an exemption. This enables the competent authority(ies) to specify appropriate controls for the transport. Any increased burden imposed by the need for an exemption would be offset by the reduced risk to society.

The changes to special provision SP223 provide clarity that substances that do not meet the criteria for any class of dangerous goods are not dangerous goods. This removes the potential for incorrect classification of substances where SP223 is not assigned to a specific UN number.

Breaking down relevant entries in the DGL, each with the addition of an appropriate description, simplifies the code and aids correct identification, interpretation and application of requirements. Particularly where concessions or restrictions apply only to some substances within a single UN number. It removes ambiguity and reduces the potential for misinterpretation or misapplication of requirements.

The correct identification and application of requirements will help ensure that appropriate controls are implemented to reduce risks associated with the transport of dangerous goods.

The requirements for Class 2.2 label for certain substances in refrigerated liquid nitrogen, communicates the associated hazards and reduces the risk to workers and emergency responders.

Consignors and other duty holders will be able to readily identify if other requirements such as concessions for viscous substances or restrictions on the use of IBCs are applicable to their specific substance. We expect this to have a positive impact on compliance.

Consequential amendments

The proposed changes discussed in section 3 of this paper result from the draft Part 2 of the proposed code. The improved structure and flow of Part 2 is discussed in greater detail in the *NTC Discussion paper #1 – Classification of dangerous goods*.

Consequential amendments will be required to other columns in the DGL, to separate and assign the appropriate special provisions, packing instructions, etc. for each separate line item.

Redundant special provision in Chapter 3.3 of the code will be marked as 'deleted' or 'reserved'.

Anticipated costs

Except for certain substances in refrigerated liquid nitrogen, the proposed changes do not introduce any new requirements. Therefore, we do not foresee any increase in costs.

We anticipate the cost of affixing Class 2.2 diamonds to substances in refrigerated liquid nitrogen to be minimal. These substances are highly specialised and not transported in large volumes.

The easier identification of available concessions is expected to increase the use of these concessions, reducing costs to duty holders.

The deregulation of UN 1327 Hay, straw or bhusa is expected to deliver significant cost savings to the farming sector. These costs have not yet been calculated.

Question 12: Are there any impacts you believe have not been identified? Please provide details.

Question 13: Do you have data that could help us calculate the costs savings from the deregulation of UN 1327?

6 Next steps

Consultation on this paper will end at 5:00 pm 24 March 2023.

Submissions received will help inform the final draft of the list of entries in the dangerous goods list in Part 3 of the code.

Opportunities to comment on other provisions in the code will be provided over the next 12 months. A complete draft code will be released for public comment in early 2024.

Appendix A Requirements of 5.5.3

The following requirements are an excerpt from ADR 2021. They form the draft requirements proposed for the code, amended as shown in strikethrough.

5.5.3 Special provisions applicable to the carriage of dry ice (UN 1845) and to packages and vehicles and containers containing substances presenting a risk of asphyxiation when used for cooling or conditioning purposes (such as dry ice (UN 1845) or nitrogen, refrigerated liquid (UN 1977) or argon, refrigerated liquid (UN 1951) or nitrogen)

NOTE: In the context of this section the term “conditioning” may be used in a broader scope and includes protection.

5.5.3.1 Scope

5.5.3.1.1 This section is not applicable to substances which may be used for cooling or conditioning purposes when carried as a consignment of dangerous goods, except for the carriage of dry ice (UN No. 1845). When they are carried as a consignment, these substances shall be carried under the relevant entry of Table A of Chapter 3.2 in accordance with the associated conditions of carriage.

For UN No. 1845, the conditions of carriage specified in this section, except 5.5.3.3.1, apply for all kinds of carriage, as a coolant, conditioner, or as a consignment. For the carriage of UN No. 1845, no other provisions of ADR apply.

5.5.3.1.2 This section is not applicable to gases in cooling cycles.

5.5.3.1.3 Dangerous goods used for cooling or conditioning tanks or MEGCs during carriage are not subject to this section.

5.5.3.1.4 Vehicles and containers containing substances used for cooling or conditioning purposes include vehicles and containers containing substances used for cooling or conditioning purposes inside packages as well as vehicles and containers with unpackaged substances used for cooling or conditioning purposes.

5.5.3.1.5 Sub-sections 5.5.3.6 and 5.5.3.7 only apply when there is an actual risk of asphyxiation in the vehicle or container. It is for the participants concerned to assess this risk, taking into consideration the hazards presented by the substances being used for cooling or conditioning, the amount of substance to be carried, the duration of the journey, the types of containment to be used and the gas concentration limits given in the note to 5.5.3.3.3.

5.5.3.2 General

5.5.3.2.1 Vehicles and containers in which dry ice (UN 1845) is carried or containing substances used for cooling or conditioning purposes (other than fumigation) during carriage are not subject to any provisions of ADR other than those of this section.

5.5.3.2.2 When dangerous goods are loaded in vehicles or containers containing substances used for cooling or conditioning purposes any provisions of ADR relevant to these dangerous goods apply in addition to the provisions of this section.

5.5.3.2.3 *(Reserved)*

5.5.3.2.4 Persons engaged in the handling or carriage of vehicles and containers in which dry ice (UN 1845) is carried or containing substances used for cooling or conditioning purposes shall be trained commensurate with their responsibilities.

5.5.3.3 Packages containing dry ice (UN 1845) or a coolant or conditioner

5.5.3.3.1 Packaged dangerous goods requiring cooling or conditioning assigned to packing instructions P203, P620, P650, P800, P901 or P904 of 4.1.4.1 shall meet the appropriate requirements of that packing instruction.

5.5.3.3.2 For packaged dangerous goods requiring cooling or conditioning assigned to other packing instructions, the packages shall be capable of withstanding very low temperatures and shall not be affected or significantly weakened by the coolant or conditioner. Packages shall be designed and constructed to permit the release of gas to prevent a build-up of pressure that could rupture the packaging. The dangerous goods shall be packed in such a way as to prevent movement after the dissipation of any coolant or conditioner.

5.5.3.3.3 Packages containing dry ice (UN 1845) or a coolant or conditioner shall be carried in well ventilated vehicles and containers. Marking according to 5.5.3.6 is not required in this case.

Ventilation is not required, and marking according to 5.5.3.6 is required, if:

- gas exchange between the load compartment and the driver's cab is prevented; or
- the load compartment is insulated, refrigerated or mechanically refrigerated equipment, for example as defined in the Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP) and separated from the driver's cab.

NOTE: In this context "well ventilated" means there is an atmosphere where the carbon dioxide concentration is below 0.5 % by volume and the oxygen concentration is above 19.5 % by volume.

5.5.3.4 Marking of packages containing a coolant or conditioner

5.5.3.4.1 Packages containing dry ice (UN 1845) as a consignment shall be marked "CARBON DIOXIDE, SOLID" or "DRY ICE"; packages containing dangerous goods used for cooling or conditioning shall be marked with the name indicated in Column (2) of Table A of Chapter 3.2 of these dangerous goods followed by the words "AS COOLANT" or "AS CONDITIONER" as appropriate in an official language of the country of origin and also, if that language is not English, French or German, in English, French or German, unless agreements concluded between the countries concerned in the transport operation provide otherwise.

5.5.3.4.2 The marks shall be durable, legible and placed in such a location and of such a size relative to the package as to be readily visible.

5.5.3.5 Cargo transport units containing unpackaged dry ice

5.5.3.5.1 If dry ice in unpackaged form is used, it shall not come into direct contact with the metal structure of a vehicle or container to avoid embrittlement of the metal. Measures shall be taken to provide adequate insulation between the dry ice and the vehicle or container by providing a minimum of 30 mm separation (e.g. by using suitable low heat conducting materials such as timber planks, pallets etc).

5.5.3.5.2 Where dry ice is placed around packages, measures shall be taken to ensure that packages remain in the original position during carriage after the dry ice has dissipated.

5.5.3.6 Marking of cargo transport units

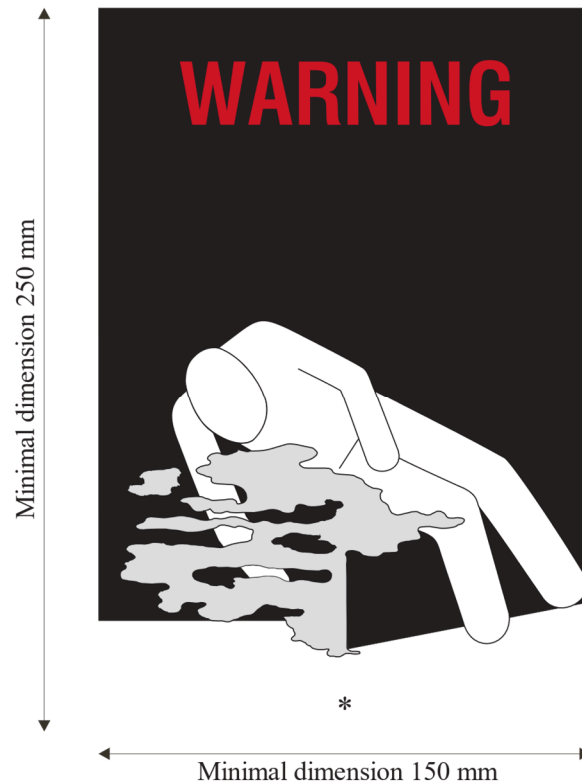
5.5.3.6.1 Vehicles and containers containing dry ice (UN 1845) or dangerous goods used for cooling or conditioning purposes that are not well ventilated shall be marked with a warning mark, as specified in 5.5.3.6.2, affixed at each access point in a location where it will be easily seen by persons opening or entering the vehicle or container. This mark shall remain on the vehicle or container until the following provisions are met:

- (a) The vehicle or container has been well ventilated to remove harmful concentrations of dry ice (UN 1845) or coolant or conditioner; and
- (b) The dry ice (UN 1845) or cooled or conditioned goods have been unloaded.

As long as the vehicle or container is marked, the necessary precautions have to be taken before entering it. The necessity of ventilating through the cargo doors or other means (e.g. forced ventilation) has to be evaluated and included in training of the involved persons.

5.5.3.6.2 The warning mark shall be as shown in Figure 5.5.3.6.2.

Figure 5.5.3.6.2



Asphyxiation warning mark for vehicles and containers

* Insert the name indicated in Column (2) of Table A of Chapter 3.2 or the name of the asphyxiant gas used as the coolant/conditioner. The lettering shall be in capitals, all be on one line and shall be at least 25 mm high. If the length of the proper shipping name is too long to fit in the space provided, the lettering may be reduced to the maximum size possible to fit. For example: "CARBON DIOXIDE, SOLID". Additional information such as "AS COOLANT" or "AS CONDITIONER" may be added.

The mark shall be a rectangle. The minimum dimensions shall be 150 mm wide × 250 mm high. The word "WARNING" shall be in red or white and be at least 25 mm high. Where dimensions are not specified, all features shall be in approximate proportion to those shown.

The word "WARNING" and the words "AS COOLANT" or "AS CONDITIONER", as appropriate, shall be in an official language of the country of origin and also, if that language is not English, French or German, in English, French or German, unless agreements concluded between the countries concerned in the transport operation provide otherwise.

5.5.3.7 Documentation

5.5.3.7.1 Documents (such as a bill of lading, cargo manifest or CMR/CIM consignment note) associated with the carriage of vehicles or containers containing or having contained dry ice (UN 1845) or substances used for cooling or conditioning purposes and have not been completely ventilated before carriage shall include the following information:

- (a) The UN number preceded by the letters "UN"; and
- (b) The name indicated in Column (2) of Table A of Chapter 3.2 followed, where appropriate, by the words "AS COOLANT" or "AS

~~CONDITIONER" in an official language of the country of origin and also, if that language is not English, French or German, in English, French or German, unless agreements, if any, concluded between the countries concerned in the transport operation provide otherwise.~~

For example: UN 1845, CARBON DIOXIDE, SOLID, AS COOLANT.

- 5.5.3.7.2 The transport document may be in any form, provided it contains the information required in 5.5.3.7.1. This information shall be easy to identify, legible and durable.

Appendix B Excerpts of 2.2.x.2 of Part 2 of the draft code (prohibited substances)

Class 1 Explosive substances and articles

2.2.1.2 *Substances and articles not accepted for carriage*

- 2.2.1.2.1 Explosive substances which are unduly sensitive according to the criteria of the Manual of Tests and Criteria, Part I, or are liable to spontaneous reaction, as well as explosive substances and articles which cannot be assigned to a name or n.o.s. entry listed in Table A of Chapter 3.2, shall not be accepted for carriage.
- 2.2.1.2.2 Articles of compatibility group K shall not be accepted for carriage (1.2K, UN No. 0020 and 1.3K, UN No. 0021).

Class 2 Gases

2.2.2.2 *Gases not accepted for carriage*

- 2.2.2.2.1 Chemically unstable gases of Class 2 shall not be accepted for carriage unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of carriage or unless carried in accordance with special packing provision (r) of packing instruction P200 (10) of 4.1.4.1, as applicable. For the precautions necessary to prevent polymerization, see special provision 386 of Chapter 3.3. To this end particular care shall be taken to ensure that receptacles and tanks do not contain any substances liable to promote these reactions.
- 2.2.2.2.2 The following substances and mixtures shall not be accepted for carriage:
- UN No. 2186 HYDROGEN CHLORIDE, REFRIGERATED LIQUID;
 - UN No. 2421 NITROGEN TRIOXIDE;
 - UN No. 2455 METHYL NITRITE;
 - Refrigerated liquefied gases which cannot be assigned to classification codes 3A, 3O or 3F;
 - Dissolved gases which cannot be classified under UN Nos. 1001, 2073 or 3318;
 - Aerosols where gases which are toxic according to 2.2.2.1.5 or pyrophoric according to packing instruction P200 in 4.1.4.1 are used as propellants;
 - Aerosols with contents meeting the criteria for packing group I for toxicity or corrosivity (see 2.2.61 and 2.2.8);
 - Receptacles, small, containing gases which are very toxic (LC₅₀ lower than 200 ppm) or pyrophoric according to packing instruction P200 in 4.1.4.1.

Class 3 Flammable Liquids

2.2.3.2 Substances not accepted for carriage

- 2.2.3.2.1 Substances of Class 3 which are liable to form peroxides easily (as happens with ethers or with certain heterocyclic oxygenated substances) shall not be accepted for carriage if their peroxide content, calculated as hydrogen peroxide (H₂O₂), exceeds 0.3 %. The peroxide content shall be determined as indicated in 2.3.3.3.
- 2.2.3.2.2 Chemically unstable substances of Class 3 shall not be accepted for carriage unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of carriage. For the precautions necessary to prevent polymerization, see special provision 386 of Chapter 3.3. To this end particular care shall be taken to ensure that receptacles and tanks do not contain any substances liable to promote these reactions.
- 2.2.3.2.3 Liquid desensitized explosives other than those listed in Table A of Chapter 3.2 shall not be accepted for carriage as substances of Class 3.

Class 4.1 Flammable solids, self-reactive substances, polymerizing substances and solid desensitized explosives

2.2.41.2 Substances not accepted for carriage

- 2.2.41.2.1 The chemically unstable substances of Class 4.1 shall not be accepted for carriage unless the necessary steps have been taken to prevent their dangerous decomposition or polymerization during carriage. To this end, it shall in particular be ensured that receptacles and tanks do not contain any substance liable to promote these reactions.
- 2.2.41.2.2 Flammable solids, oxidizing, assigned to UN No. 3097 shall not be accepted for carriage unless they meet the requirements for Class 1 (see also 2.1.3.7).
- 2.2.41.2.3 The following substances shall not be accepted for carriage:
- Self-reactive substances of type A (see Manual of Tests and Criteria, Part II, paragraph 20.4.2 (a));
 - Phosphorus sulphides which are not free from yellow and white phosphorus;
 - Solid desensitized explosives other than those listed in Table A of Chapter 3.2;
 - Inorganic flammable substances in the molten form other than UN No. 2448 SULPHUR, MOLTEN.

Class 4.2 Substances liable to spontaneous combustion

2.2.42.2 Substances not accepted for carriage

The following substances shall not be accepted for carriage:

- UN No. 3255 tert-BUTYL HYPOCHLORITE; and

- Self-heating solids, oxidizing, assigned to UN No. 3127 unless they meet the requirements for Class 1 (see 2.1.3.7).

Class 4.3 Substances which, in contact with water, emit flammable gases

2.2.43.2 Substances not accepted for carriage

Water-reactive solids, oxidizing, assigned to UN No. 3133 shall not be accepted for carriage unless they meet the requirements for Class 1 (see also 2.1.3.7).

Class 5.1 Oxidizing substances

2.2.51.2 Substances not accepted for carriage

2.2.51.2.1 The chemically unstable substances of Class 5.1 shall not be accepted for carriage unless the necessary steps have been taken to prevent their dangerous decomposition or polymerization during carriage. To this end it shall in particular be ensured that receptacles and tanks do not contain any material liable to promote these reactions.

2.2.51.2.2 The following substances and mixtures shall not be accepted for carriage:

- oxidizing solids, self-heating, assigned to UN No. 3100, oxidizing solids, water-reactive, assigned to UN No. 3121 and oxidizing solids, flammable, assigned to UN No. 3137, unless they meet the requirements for Class 1 (see also 2.1.3.7);
- hydrogen peroxide, not stabilized or hydrogen peroxide, aqueous solutions, not stabilized containing more than 60 % hydrogen peroxide;
- tetranitromethane not free from combustible impurities;
- perchloric acid solutions containing more than 72 % (mass) acid, or mixtures of perchloric acid with any liquid other than water;
- chloric acid solution containing more than 10 % chloric acid or mixtures of chloric acid with any liquid other than water;
- halogenated fluor compounds other than UN Nos. 1745 BROMINE PENTAFLUORIDE; 1746 BROMINE TRIFLUORIDE and 2495 IODINE PENTAFLUORIDE of Class 5.1 as well as UN Nos. 1749 CHLORINE TRIFLUORIDE and 2548 CHLORINE PENTAFLUORIDE of Class 2;
- ammonium chlorate and its aqueous solutions and mixtures of a chlorate with an ammonium salt;
- ammonium chlorite and its aqueous solutions and mixtures of a chlorite with an ammonium salt;
- mixtures of a hypochlorite with an ammonium salt;
- ammonium bromate and its aqueous solutions and mixtures of a bromate with an ammonium salt;
- ammonium permanganate and its aqueous solutions and mixtures of a permanganate with an ammonium salt;
- 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;

- ammonium nitrate based fertilizers with compositions that lead to exit boxes 4, 6, 8, 15, 31, or 33 of the flowchart of paragraph 39.5.1 of the Manual of Tests and Criteria, Part III, Section 39, unless they have been assigned a suitable UN number in Class 1;
- ammonium nitrate based fertilizers with compositions that lead to exit boxes 20, 23 or 39 of the flowchart of paragraph 39.5.1 of the Manual of Tests and Criteria, Part III, Section 39, unless they have been assigned a suitable UN number in Class 1 or, provided that the suitability for carriage has been demonstrated and that this has been approved by the competent authority, in Class 5.1 other than UN No. 2067;

NOTE: The term “competent authority” means the competent authority of the country of origin. If the country of origin is not a Contracting Party to ADR, the classification and conditions of carriage shall be recognized by the competent authority of the first country Contracting Party to ADR reached by the consignment.

- ammonium nitrite and its aqueous solutions and mixtures of an inorganic nitrite with an ammonium salt;
- mixtures of potassium nitrate, sodium nitrite and an ammonium salt.

Class 5.2 Organic peroxides

2.2.52.2 Substances not accepted for carriage

Organic peroxides, type A, shall not be accepted for carriage under the provisions of Class 5.2 (see Manual of Tests and Criteria, Part II, paragraph 20.4.3 (a)).

Class 6.1 Toxic substances

2.2.61.2 Substances not accepted for carriage

2.2.61.2.1 Chemically unstable substances of Class 6.1 shall not be accepted for carriage unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of carriage. For the precautions necessary to prevent polymerization, see special provision 386 of Chapter 3.3. To this end particular care shall be taken to ensure that receptacles and tanks do not contain any substances liable to promote these reactions.

2.2.61.2.2 The following substances and mixtures shall not be accepted for carriage:

- Hydrogen cyanide, anhydrous or in solution, which do not meet the descriptions of UN Nos. 1051, 1613, 1614 and 3294;
- metal carbonyls, having a flash-point below 23 °C, other than UN Nos. 1259 NICKEL CARBONYL and 1994 IRON PENTACARBONYL;
- 2,3,7,8-TETRACHLORODIBENZO-P-DIOXINE (TCDD) in concentrations considered highly toxic in accordance with the criteria in 2.2.61.1.7;
- UN No. 2249 DICHLORODIMETHYL ETHER, SYMMETRICAL;

- Preparations of phosphides without additives inhibiting the emission of toxic flammable gases.

Class 6.2 Infectious substances

2.2.62.2 Substances not accepted for carriage

Live vertebrate or invertebrate animals shall not be used to carry an infectious agent unless the agent cannot be carried by other means or unless this carriage has been approved by the competent authority (see 2.2.62.1.12.1).

Class 8 Corrosive substances

2.2.8.2 Substances not accepted for carriage

2.2.8.2.1 Chemically unstable substances of Class 8 shall not be accepted for carriage unless the necessary precautions have been taken to prevent the possibility of a dangerous decomposition or polymerization under normal conditions of carriage. For the precautions necessary to prevent polymerization, see special provision 386 of Chapter 3.3. To this end particular care shall be taken to ensure that receptacles and tanks do not contain any substances liable to promote these reactions.

2.2.8.2.2 The following substances shall not be accepted for carriage:

- UN No. 1798 NITROHYDROCHLORIC ACID;
- chemically unstable mixtures of spent sulphuric acid;
- chemically unstable mixtures of nitrating acid or mixtures of residual sulphuric and nitric acids, not denitrated;
- perchloric acid aqueous solution with more than 72 % pure acid, by mass, or mixtures of perchloric acid with any liquid other than water.

Class 9 Miscellaneous dangerous substances and articles

2.2.9.2 Substances and articles not accepted for carriage

The following substances and articles shall not be accepted for carriage:

- Lithium batteries which do not meet the relevant conditions of special provisions 188, 230, 310, 636 or 670 of Chapter 3.3;
- Uncleaned empty containment vessels for apparatus such as transformers, condensers and hydraulic apparatus containing substances assigned to UN Nos. 2315, 3151, 3152 or 3432.

Appendix C Excerpts of 2.2.x.1 of Part 2 of the draft code (SP 223)

- 2.2.3.1.7 On the basis of the test procedures in accordance with 2.3.3.1 and 2.3.4, and the criteria set out in 2.2.3.1.1, it may also be determined whether the nature of a solution or a mixture mentioned by name or containing a substance mentioned by name is such that the solution or mixture is not subject to the provisions for this Class (see also 2.1.3). (Class 4.1)
- 2.2.41.1.6 On the basis of the test procedure in accordance with the Manual of Tests and Criteria, Part III, Section 33.2 and the criteria set out in 2.2.41.1.4 and 2.2.41.1.5, it may also be determined whether the nature of a substance mentioned by name is such that the substance is not subject to the provisions for this Class. (Class 4.1)
- 2.2.42.1.7 On the basis of the test procedure in the Manual of Tests and Criteria, Part III, section 33.4 and the criteria set out in 2.2.42.1.5, it may also be determined whether the nature of a substance mentioned by name is such that the substance is not subject to the provisions for this Class. (Class 4.2)
- 2.2.43.1.7 On the basis of the test procedures in accordance with the Manual of Tests and Criteria, Part III, Section 33.5, and the criteria set out in paragraph 2.2.43.1.5, it may also be determined whether the nature of a substance mentioned by name is such that the substance is not subject to the provisions for this Class. (Class 4.3)
- 2.2.51.1.5 On the basis of the test procedures in the Manual of Tests and Criteria, Part III, Section 34.4 and the criteria set out in 2.2.51.1.6 to 2.2.51.1.10 it may also be determined whether the nature of a substance mentioned by name in Table A of Chapter 3.2 is such that the substance is not subject to the provisions for this class. (Class 5.1)
- 2.2.61.1.13 On the basis of the criteria of 2.2.61.1.6 to 2.2.61.1.11, it may also be determined whether the nature of a solution or mixture mentioned by name or containing a substance mentioned by name is such that the solution or mixture is not subject to the requirements for this Class. (Class 6.1)
- 2.2.8.1.8 On the basis of the criteria set out in paragraph 2.2.8.1.6, it may also be determined whether the nature of a solution or mixture mentioned by name or containing a substance mentioned by name is such that the solution or mixture is not subject to the provisions for this class. (Class 8)

NOTE: UN No. 1910 calcium oxide and UN No. 2812 sodium aluminate, listed in the UN Model Regulations, are not subject to the provisions of ADR.

Appendix D Draft DGL entries

The following table is an excerpt of entries from the dangerous goods list in Part 3 of the Code. It contains only those entries discussed in section 4.2 of this discussion paper. The table does not include entries that are further divided based on additional classification criteria. These were discussed in *Discussion Paper #1 - Classification of dangerous goods*, published by the National Transport Commission.

UN No.	Proper Shipping Name	PG	Refer section of this paper
1133	ADHESIVES containing flammable liquid	I	4.2.3
1133	ADHESIVES containing flammable liquid (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1133	ADHESIVES containing flammable liquid (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1133	ADHESIVES containing flammable liquid	III	4.2.3
1133	ADHESIVES containing flammable liquid (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C more than 110 kPa)	III	4.2.3 and 4.2.4
1133	ADHESIVES containing flammable liquid (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C not more than 110 kPa)	III	4.2.3 and 4.2.4
1139	COATING SOLUTION (includes surface treatments or coatings used for industrial or other purposes such as vehicle under coating, drum or barrel lining)	I	4.2.3 and 4.2.4
1139	COATING SOLUTION (includes surface treatments or coatings used for industrial or other purposes such as vehicle under coating, drum or barrel lining) (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1139	COATING SOLUTION (includes surface treatments or coatings used for industrial or other purposes such as vehicle under coating, drum or barrel lining) (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3

1139	COATING SOLUTION (includes surface treatments or coatings used for industrial or other purposes such as vehicle under coating, drum or barrel lining)	III	4.2.3 and 4.2.4
1139	COATING SOLUTION (includes surface treatments or coatings used for industrial or other purposes such as vehicle under coating, drum or barrel lining) (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C more than 110 kPa)	III	4.2.3 and 4.2.4
1139	COATING SOLUTION (includes surface treatments or coatings used for industrial or other purposes such as vehicle under coating, drum or barrel lining) (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C not more than 110 kPa)	III	4.2.3 and 4.2.4
1197	EXTRACTS, LIQUID, for flavour or aroma (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1197	EXTRACTS, LIQUID, for flavour or aroma (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1197	EXTRACTS, LIQUID, for flavour or aroma	III	4.2.3
1197	EXTRACTS, LIQUID, for flavour or aroma (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C more than 110 kPa)	III	4.2.3 and 4.2.4
1197	EXTRACTS, LIQUID, for flavour or aroma (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C not more than 110 kPa)	III	4.2.3 and 4.2.4
1210	PRINTING INK, flammable or PRINTING INK RELATED MATERIAL (including printing ink thinning or reducing compound), flammable	I	4.2.3 and 4.2.4
1210	PRINTING INK, flammable or PRINTING INK RELATED MATERIAL (including printing ink thinning or reducing compound), flammable (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1210	PRINTING INK, flammable or PRINTING INK RELATED MATERIAL (including printing ink thinning or reducing compound), flammable (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3

1210	PRINTING INK, flammable or PRINTING INK RELATED MATERIAL (including printing ink thinning or reducing compound), flammable	III	4.2.3 and 4.2.4
1210	PRINTING INK, flammable or PRINTING INK RELATED MATERIAL (including printing ink thinning or reducing compound), flammable (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C more than 110 kPa)	III	4.2.3 and 4.2.4
1210	PRINTING INK, flammable or PRINTING INK RELATED MATERIAL (including printing ink thinning or reducing compound), flammable (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C not more than 110 kPa)	III	4.2.3 and 4.2.4
1224	KETONES, LIQUID, N.O.S. (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1224	KETONES, LIQUID, N.O.S. (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1263	PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning and reducing compound)	I	4.2.3 and 4.2.4
1263	PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning and reducing compound) (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1263	PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning and reducing compound) (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1263	PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning and reducing compound)	III	4.2.3 and 4.2.4
1263	PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning and reducing compound) (having a flash-point below 23 °C and viscous	III	4.2.3 and 4.2.4

	according to 2.2.3.1.4) (vapour pressure at 50 °C more than 110 kPa)		
1263	PAINT (including paint, lacquer, enamel, stain, shellac, varnish, polish, liquid filler and liquid lacquer base) or PAINT RELATED MATERIAL (including paint thinning and reducing compound) (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C not more than 110 kPa)	III	4.2.3 and 4.2.4
1266	PERFUMERY PRODUCTS with flammable solvents (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1266	PERFUMERY PRODUCTS with flammable solvents (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1266	PERFUMERY PRODUCTS with flammable solvents	III	4.2.3 and 4.2.4
1266	PERFUMERY PRODUCTS with flammable solvents (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C more than 110 kPa)	III	4.2.3 and 4.2.4
1266	PERFUMERY PRODUCTS with flammable solvents (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C not more than 110 kPa)	III	4.2.3 and 4.2.4
1267	PETROLEUM CRUDE OIL	I	4.2.3
1267	PETROLEUM CRUDE OIL (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1267	PETROLEUM CRUDE OIL (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1267	PETROLEUM CRUDE OIL	III	4.2.3
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S.	I	4.2.3
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S. (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3

1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S. (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1268	PETROLEUM DISTILLATES, N.O.S. or PETROLEUM PRODUCTS, N.O.S.	III	4.2.3
1286	ROSIN OIL (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1286	ROSIN OIL (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1286	ROSIN OIL	III	4.2.3 and 4.2.4
1286	ROSIN OIL (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C more than 110 kPa)	III	4.2.3 and 4.2.4
1286	ROSIN OIL (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C not more than 110 kPa)	III	4.2.3 and 4.2.4
1287	RUBBER SOLUTION (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1287	RUBBER SOLUTION (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1287	RUBBER SOLUTION	III	4.2.3 and 4.2.4
1287	RUBBER SOLUTION (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C more than 110 kPa)	III	4.2.3 and 4.2.4
1287	RUBBER SOLUTION (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C not more than 110 kPa)	III	4.2.3 and 4.2.4
1306	WOOD PRESERVATIVES, LIQUID (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1306	WOOD PRESERVATIVES, LIQUID (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1306	WOOD PRESERVATIVES, LIQUID	III	4.2.3 and 4.2.4
1306	WOOD PRESERVATIVES, LIQUID (having a flash-point below 23 °C and viscous according to	III	4.2.3 and 4.2.4

	2.2.3.1.4) (vapour pressure at 50 °C more than 110 kPa)		
1306	WOOD PRESERVATIVES, LIQUID (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C not more than 110 kPa)	III	4.2.3 and 4.2.4
1308	ZIRCONIUM SUSPENDED IN A FLAMMABLE LIQUID	I	4.2.3
1308	ZIRCONIUM SUSPENDED IN A FLAMMABLE LIQUID (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1308	ZIRCONIUM SUSPENDED IN A FLAMMABLE LIQUID (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1308	ZIRCONIUM SUSPENDED IN A FLAMMABLE LIQUID	III	4.2.3
1790	HYDROFLUORIC ACID with more than 85 % hydrogen fluoride	I	4.2.6
1790	HYDROFLUORIC ACID with more than 60 % but not more than 85 % hydrogen fluoride	I	4.2.6
1790	HYDROFLUORIC ACID with not more than 60 % hydrogen fluoride	II	4.2.6
1863	FUEL, AVIATION, TURBINE ENGINE	I	4.2.3
1863	FUEL, AVIATION, TURBINE ENGINE (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1863	FUEL, AVIATION, TURBINE ENGINE (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1863	FUEL, AVIATION, TURBINE ENGINE	III	4.2.3
1866	RESIN SOLUTION, flammable	I	4.2.3 and 4.2.4
1866	RESIN SOLUTION, flammable (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1866	RESIN SOLUTION, flammable (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3

1866	RESIN SOLUTION, flammable	III	4.2.3 and 4.2.4
1866	RESIN SOLUTION, flammable (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C more than 110 kPa)	III	4.2.3 and 4.2.4
1866	RESIN SOLUTION, flammable (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C not more than 110 kPa)	III	4.2.3 and 4.2.4
1987	ALCOHOLS, N.O.S. (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1987	ALCOHOLS, N.O.S. (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1987	ALCOHOLS, N.O.S.	III	4.2.3
1989	ALDEHYDES, N.O.S.	I	4.2.3
1989	ALDEHYDES, N.O.S. (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1989	ALDEHYDES, N.O.S. (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1989	ALDEHYDES, N.O.S.	III	4.2.3
1993	FLAMMABLE LIQUID, N.O.S.	I	4.2.3 and 4.2.4
1993	FLAMMABLE LIQUID, N.O.S. (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1993	FLAMMABLE LIQUID, N.O.S. (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1993	FLAMMABLE LIQUID, N.O.S.	III	4.2.3 and 4.2.4
1993	FLAMMABLE LIQUID, N.O.S. (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C more than 110 kPa)	III	4.2.3 and 4.2.4
1993	FLAMMABLE LIQUID, N.O.S. (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C not more than 110 kPa)	III	4.2.3 and 4.2.4

1999	TARS, LIQUID, including road oils, and cutback bitumens (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
1999	TARS, LIQUID, including road oils, and cutback bitumens (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
1999	TARS, LIQUID, including road oils, and cutback bitumens	III	4.2.3 and 4.2.4
1999	TARS, LIQUID, including road oils, and cutback bitumens (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C more than 110 kPa)	III	4.2.3 and 4.2.4
1999	TARS, LIQUID, including road oils, and cutback bitumens (having a flash-point below 23 °C and viscous according to 2.2.3.1.4) (vapour pressure at 50 °C not more than 110 kPa)	III	4.2.3 and 4.2.4
2015	HYDROGEN PEROXIDE, STABILIZED or HYDROGEN PEROXIDE, AQUEOUS SOLUTION, STABILIZED with more than 70 % hydrogen peroxide	I	4.2.5
2015	HYDROGEN PEROXIDE, AQUEOUS SOLUTION, STABILIZED with more than 60 % hydrogen peroxide and not more than 70 % hydrogen peroxide	I	4.2.5
2059	NITROCELLULOSE SOLUTION, FLAMMABLE with not more than 12.6 % nitrogen, by dry mass, and not more than 55 % nitrocellulose	I	4.2.3
2059	NITROCELLULOSE SOLUTION, FLAMMABLE with not more than 12.6 % nitrogen, by dry mass, and not more than 55 % nitrocellulose (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
2059	NITROCELLULOSE SOLUTION, FLAMMABLE with not more than 12.6 % nitrogen, by dry mass, and not more than 55 % nitrocellulose (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
2059	NITROCELLULOSE SOLUTION, FLAMMABLE with not more than 12.6 % nitrogen, by dry mass, and not more than 55 % nitrocellulose	III	4.2.3

2814	INFECTIOUS SUBSTANCE, AFFECTING HUMANS	N/A	4.2.1 and 4.2.2
2814	INFECTIOUS SUBSTANCE, AFFECTING HUMANS, in refrigerated liquid nitrogen	N/A	4.2.2
2814	INFECTIOUS SUBSTANCE, AFFECTING HUMANS (animal material only)	N/A	4.2.1
2900	INFECTIOUS SUBSTANCE, AFFECTING ANIMALS only	N/A	4.2.1 and 4.2.2
2900	INFECTIOUS SUBSTANCE, AFFECTING ANIMALS only, in refrigerated liquid nitrogen	N/A	4.2.2
2900	INFECTIOUS SUBSTANCE, AFFECTING ANIMALS only (animal material only)	N/A	4.2.1
3245	GENETICALLY MODIFIED MICROORGANISMS or GENETICALLY MODIFIED ORGANISMS	N/A	4.2.2
3245	GENETICALLY MODIFIED MICROORGANISMS or GENETICALLY MODIFIED ORGANISMS, in refrigerated liquid nitrogen	N/A	4.2.2
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flashpoint above 60° C, at or above its flashpoint and below 100° C	III	4.2.7
3256	ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. with flashpoint above 60° C, at or above its flashpoint and at or above 100° C	III	4.2.7
3257	ELEVATED TEMPERATURE LIQUID, N.O.S., at or above 100 °C and below its flash-point (including molten metals, molten salts, etc.), filled at a temperature higher than 190 °C	III	4.2.7
3257	ELEVATED TEMPERATURE LIQUID, N.O.S., at or above 100 °C and below its flash-point (including molten metals, molten salts, etc.), filled at or below 190 °C	III	4.2.7
3291	CLINICAL WASTE, UNSPECIFIED, N.O.S. or (BIO) MEDICAL WASTE, N.O.S. or REGULATED MEDICAL WASTE, N.O.S.	N/A	4.2.1 and 4.2.2
3291	CLINICAL WASTE, UNSPECIFIED, N.O.S. or (BIO) MEDICAL WASTE, N.O.S. or REGULATED	N/A	4.2.2

	MEDICAL WASTE, N.O.S., in refrigerated liquid nitrogen		
3295	HYDROCARBONS, LIQUID, N.O.S.	I	4.2.3
3295	HYDROCARBONS, LIQUID, N.O.S. (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
3295	HYDROCARBONS, LIQUID, N.O.S. (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
3295	HYDROCARBONS, LIQUID, N.O.S.	III	4.2.3
3336	MERCAPTANS, LIQUID, FLAMMABLE, N.O.S. or MERCAPTAN MIXTURE, LIQUID, FLAMMABLE, N.O.S.	I	4.2.3
3336	MERCAPTANS, LIQUID, FLAMMABLE, N.O.S. or MERCAPTAN MIXTURE, LIQUID, FLAMMABLE, N.O.S. (vapour pressure at 50 °C more than 110 kPa)	II	4.2.3
3336	MERCAPTANS, LIQUID, FLAMMABLE, N.O.S. or MERCAPTAN MIXTURE, LIQUID, FLAMMABLE, N.O.S. (vapour pressure at 50 °C not more than 110 kPa)	II	4.2.3
3336	MERCAPTANS, LIQUID, FLAMMABLE, N.O.S. or MERCAPTAN MIXTURE, LIQUID, FLAMMABLE, N.O.S.	III	4.2.3
3373	BIOLOGICAL SUBSTANCE, CATEGORY B	N/A	4.2.1 and 4.2.2
3373	BIOLOGICAL SUBSTANCE, CATEGORY B (animal material only)	N/A	4.2.1
3375	AMMONIUM NITRATE EMULSION or SUSPENSION or GEL, intermediate for blasting explosives, liquid	II	4.2.5
3375	AMMONIUM NITRATE EMULSION or SUSPENSION or GEL, intermediate for blasting explosives, solid	II	4.2.5

Appendix E Glossary

Term	Definition
the Code	Refers to the Australian Code for the Transport of Dangerous Goods by Road and Rail – no specific version
current code	Refers to edition 7.8 of the Code
draft code	Refers to the draft of the revised Code
ADR	Agreement Concerning the International Carriage of Dangerous Goods by Road
RID	Convention concerning International Carriage by Rail (COTIF) Appendix C – Regulations concerning the International Carriage of Dangerous Goods by Rail
DGL	Dangerous Goods List in Part 3 of the Code

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