



Government of **Western Australia**  
Department of **Mines, Industry Regulation and Safety**

# Dangerous Goods Safety Guidance Note

## Handling of explosion risk goods (ERGs) at a special berth (non-explosives)

May 2018

## Table of contents

Introduction .....	3
Berth operator's special berth obligations.....	3
Special berth declaration.....	3
Requirements for explosion risk goods.....	3
Berth operator duties.....	4
Emergency plan .....	4
Other requirements .....	5
Written evidence of testing required for each shipment of solid ammonium nitrate of UN 1942 and UN 2067.....	5
Alternative tests approved by the Chief Officer for the category B test .....	6
Master of the vessel special berth obligations .....	7
Further information.....	7
Appendix 1 – Details of explosion risk goods .....	8
Appendix 2 – Risk assessment .....	13
Appendix 3 – Sample audit template.....	18
Appendix 4 – Items in clause 6.5.2 – “Selection of a special berth” of AS 3846 that need to be addressed in the risk assessment .....	22

## Introduction

This guidance note assists berth operators, in particular, and consignors and importers to understand their regulatory duties when handling explosion risk goods (ERGs) at a special berth (non-explosives).

The term “explosion risk goods” is defined by regulation 135B of the Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007 (the Regulations). ERGs are substances known to be capable of accidental explosion under certain conditions, such as fire or heat. They require special precautions when being unloaded or loaded at a berth.

As listed in Appendix 1, ERGs comprise seven discrete ammonium nitrate or calcium hypochlorite-containing substances of Division 5.1 under the United Nations (UN) classification system for dangerous goods. This appendix also lists the special provisions from their UN entries, as well as the test criteria for analysis and other classification tests.

## Berth operator’s special berth obligations

### Special berth declaration

Before handling any explosion risk goods, the berth operator must obtain a special berth declaration. As part of that process, regulations 135I and 135J require the berth operator to develop a risk assessment in order to identify all hazards and the corresponding safety control measures necessary to minimise the risk to as low as reasonably practicable. Appendix 2 provides guidance on factors to consider in the site-specific risk assessment.

The risk assessment must also address the items listed in clause 6.5.2 of AS 3846 (see Appendix 4 for details). Regulations 135I and 135J also require an implementation plan for all the safety control measures that were identified as part to the risk assessment. The special berth declaration may include additional safety conditions as required by the Chief Officer.

The berth operator must comply with any additional Chief Officer safety conditions and work within the constraints of the special berth declaration, including the types of allowable ERGs and potential quantity restrictions — see regulation 135K (8)(a).

*Note: Guidance on how berth operators and harbour masters may apply to the Chief Dangerous Goods Officer for a special berth declaration in accordance with regulation 135I is provided in the application form for a special berth (non-explosives) declaration, available in the forms section on the Department’s website ([Special berth declaration - application form](#)).*

### Requirements for explosion risk goods

Specific requirements for ERGs in ports are given in Part 8A *Dangerous goods in ports* of the Regulations. The port-specific regulations should be viewed in the broader context of the Regulations, noting that risk-based performance standards, emergency management duties and dangerous goods site licensing also apply to berth operators. To support the regulations and this guidance note, Australian Standard AS 3846 *The handling and transport of dangerous cargoes in port areas* has been approved by the Minister as a non-mandatory code of practice under section 20 of the *Dangerous Goods Safety Act 2004* (the Act).

## Berth operator duties

Regulation 135O outlines mandatory minimum safety precautions that must be observed by the berth operator at a special berth during the handling of 30 tonnes or more of explosion risk goods.

The following regulatory duties apply:

- The berth operator's safety management plan must
  - include a written procedure for controlling and managing the efficient, safe and timely movement of road and rail vehicles on the berth [sub regulation (7)]
  - state the maximum quantity of the ERGs that can be on the berth at any one time [sub regulation (8)].
- The berth operator must ensure
  - any handling of the ERGs is completed as soon as practicable after the vessel berths or the ERGs arrive on the berth [sub regulation (5)]
  - the vessel does not remain at the berth for any longer than is reasonably necessary [sub regulation (6)].
- The berth operator must set up an exclusion zone around the berth and the vessel to keep unauthorised people and vehicles out [sub regulation (9)].
- The berth operator must ensure that within a clearly marked exclusion zone on the berth
  - signs are prominently displayed to prohibit hot work, smoking and open flames, and must prevent such occurrences [sub regulations (10) and (11a)]
  - other dangerous goods are not present [sub regulation (11b)]
  - the berth is clean and free of any combustible material or any material that could contaminate the ERGs [sub regulation (11c)]
  - any damaged container is removed from the berth and repackaged so that further handling and transport will not lead to spillages on the berth, ship or road [sub regulations (11d) and (11e)]
  - any spillage of the ERGs is cleaned up immediately [sub regulation (11f)]
  - all ERGs are removed from the berth on completion of the loading and unloading operations [sub regulation (11g)].

*Note: Most of these precautions also apply to a ship that is moored at the berth and carrying more than 1,030 tonnes of explosion risk goods, even if they are not being unloaded or loaded.*

Standard operating procedures must be written to include the above regulatory duties as well as the additional safety control measures identified by the berth operator's site-specific risk assessment and implementation plan.

## Emergency plan

The berth operator's safety management plan must also include an emergency plan in accordance with regulation 75.

Emergency procedures must be developed in conjunction with the port authority and emergency services before ERGs or any other dangerous goods are handled at a berth.

Under regulation 76B, if more than ten times the manifest quantity is handled at a berth (e.g. more than 100 tonnes of ammonium nitrate), then a summary information document called a FES emergency response guide in the form of an approved template must be agreed with the Department of Fire and Emergency Services (DFES).

When developing the emergency plan, guidance is provided by two approved codes of practice under the Act:

- AS 3745 *Planning for emergencies in facilities*
- AS 3846 *The handling and transport of dangerous cargoes in port areas* – see section 10 on firefighting resources.

Adequate fire-fighting facilities, including water supplies, must be immediately available at the special berth when handling explosion risk goods.

The ship–shore checklist should address the following:

- the ship's engines and ancillary equipment are ready at all times so the ship can leave the berth at short notice
- the ship is oriented in the direction that will enable the quickest departure
- fuel is not bunkered unless permitted by the port authority
- lighting and electrical cables and equipment are protected from the explosion risk goods
- in the event of a fire, the ship's master does not batten down the hatches or use steam, foam or dry chemicals to extinguish the fire.

## Other requirements

The regulations in Part 8A include three general requirements:

- Regulation 135H sets the threshold quantity for ERGs at 30 tonnes.
- Regulation 135L prohibits the handling of uncontained liquids or bulk solids of explosion risk goods. This prohibition recognises:
  - there have been no bulk shipments of ERGs in Australia for many year
  - the higher hazard that these types of cargoes pose in a port.
- As described in regulation 135P, the audit requirements of the berth operator after handling ERGs at a special berth are to only report non-conformances with either:
  - Part 8A of the Regulations, or
  - the operator's management plans and procedures.

These reports must be submitted to the Chief Officer within 14 days of the handling of ERGs at a special berth. A sample audit template is provided in Appendix 3.

## Written evidence of testing required for each shipment of solid ammonium nitrate of UN 1942 and UN 2067

Regulation 135M requires importers, consignors and berth operators to ensure that each shipment of ammonium nitrate classified under UN 1942 or 2067 is accompanied by written evidence of the testing done on the goods to support the dangerous goods classification.

The testing must be carried out prior to arrival at the port since testing after arrival defeats the safety benefits of the testing.

The testing documents must demonstrate that the correct testing has been done, clearly showing the results of the testing and a conclusion that the test substances have the correct classification and the correct UN number.

Written evidence is needed for two categories of testing:

- A** A chemical analysis of ammonium nitrate stating the percentages of each constituent, including the percentage of organic carbon.
- It is important that product with more than 90% of ammonium nitrate contains not more than 0.2% organic carbon, and product with 70 to 90% of ammonium nitrate contains less than 0.4% organic carbon.
  - More detail of the above carbon percentage criteria are contained in the special provisions applying to ammonium nitrate (see Appendix 1).
- B** A UN gap test, being test Type 2(a) in Test Series 2 described in the 5th edition of the *United Nations Manual for Tests and Criteria* (Manual for Tests and Criteria).

## **Alternative tests approved by the Chief Officer for the category B test**

The Chief Officer has approved two alternative methods to the Category B test. The UN gap test may be replaced with either:

- a test of resistance to detonation, or
- the chemical and physical analysis criteria.

### **Test of resistance to detonation**

This test is commonly used in Europe and applies a detonation shock to the ammonium nitrate to test its shock sensitivity, just like the UN gap test. It uses a test apparatus consisting of a horizontal steel pipe resting on six lead (Pb) cylinders. After the test-detonation, the degree of compression of the lead cylinders is determined. The ammonium nitrate passes the test as long as at least one of the cylinders is crushed by less than 5%. Before being tested, the whole of the sample must be thermally cycled five times between 25 and 50°C

### **Chemical and physical analysis criteria**

The shock sensitivity of pure, low carbon, high bulk density fertiliser ammonium nitrate is usually low. The two shock sensitivity tests described above may be omitted as long as the bulk density of the loose material is greater than 0.85 g/cm<sup>3</sup> and the following criteria and test methods from *European Union Regulation (EC) No. 2003/2003 of 13 October 2003 relating to fertilizers* (see annex III) apply:

- pH of solution (10 g in 100 mL water)  $\geq 4.5$
- maximum chlorine content  $\leq 0.02\%$  by weight
- copper content  $\leq 10$  mg/kg by weight
- not more than 5% by mass of the fertiliser can pass through a 1 mm mesh sieve and not more than 3% by mass pass through a 0.5 mm mesh sieve
- low porosity is established with an oil retention of less than 4% by mass.

### **Use of representative samples for testing**

Meaningful testing can only be achieved with representative test samples collected prior to consigning the shipment. Sampling should only be conducted by persons who have been suitably trained in sampling procedures.

*Note: Guidance on how to obtain representative samples is provided in annex IV part A of European Union Regulation (EC) No. 2003/2003 of 13 October 2003 relating to fertilizers.*

## Master of the vessel special berth obligations

Regulation 135N requires the master of a vessel to comply with following requirements of AS 3846 and the *International Maritime Dangerous Goods Code* (IMDG Code) when loading or unloading ERGs of 30 tonnes or more, as far as the requirements deal with issues on board the vessel:

1. Clauses 6.6.1 (i), 6.6.1 (b), (e), (f), (g), (j), (k) and (l) and 6.6.2 of AS 3846.
2. Chapters 7.1 and 7.2 and clause 5.4.3 of the IMDG Code.

## Further information

Contact Safety Regulation – Dangerous Goods Branch

Phone 08 9358 8001

Email [dgsb@dmirs.wa.gov.au](mailto:dgsb@dmirs.wa.gov.au)

Web [www.dmirs.wa.gov.au](http://www.dmirs.wa.gov.au)

## Appendix 1 – Details of explosion risk goods

The following information is extracted from the IMDG Code, except for the test criteria for UN 1942 and UN 2067, which are derived from regulation 135M.

UN number & proper shipping name	IMDG Code special provisions (SP)	Test criteria for safe transport
<p><b>UN 1942 – AMMONIUM NITRATE</b> with not more than 0.2% total combustible material, including any organic substance, calculated as carbon to the exclusion of any other substance</p>	<p><b>SP 306</b> – This entry may only be used for substances that do not exhibit explosive properties of Class 1 when tested in accordance to Test Series 2 of Class 1 (see Manual of Tests and Criteria, Part I).</p> <p><b>SP 900</b> – The transport of ammonium nitrate liable to self-heating sufficient to initiate decomposition is prohibited.</p> <p><b>SP 952</b> – May be transported in bulk container if approved by the competent authority. <b>SP 967</b> – Flexible bulk containers (BK3) are only permitted in accordance with 4.3.4.</p>	<ul style="list-style-type: none"> <li>• A chemical analysis giving the percentage composition of all constituents including an elemental analysis for organic carbon and</li> <li>• A negative result in either:               <ul style="list-style-type: none"> <li>– the UN Test Series 2(a) gap test (see Manual of Tests and Criteria, Part 1) or</li> <li>– the resistance to detonation test (see Solid Bulk Cargoes Code, Appendix 2, Section 5)</li> </ul> </li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>• The following physical and chemical analyses:               <ul style="list-style-type: none"> <li>– pH of solution (10 g in 100 mL water) <math>\geq 4.5</math></li> <li>– maximum chlorine content <math>\leq 0.02\%</math> by weight</li> <li>– copper content <math>\leq 10\text{mg/kg}</math> by weight</li> <li>– bulk density (loose) <math>&gt; 0.85 \text{ g/cm}^3</math></li> <li>– not more than 5% by mass of the fertilizer must pass through a 1 mm mesh sieve and not more than 3% by mass pass through a 0.5mm mesh sieve</li> <li>– low porosity is established with an oil retention of less than 4% by mass.</li> </ul> </li> </ul>
<p><b>UN 2067 – AMMONIUM NITRATE BASED FERTILIZER</b></p>	<p><b>SP 186</b> – In determining the ammonium nitrate content, all nitrate ions for which a molecular equivalent of ammonium ions is present in the mixture are calculated as ammonium nitrate.</p>	<ul style="list-style-type: none"> <li>• A chemical analysis giving the percentage composition of all constituents including an elemental analysis for organic carbon and either</li> <li>• A negative result in either:</li> </ul>



UN number & proper shipping name	IMDG Code special provisions (SP)	Test criteria for safe transport
	<p><b>SP 306</b> – This entry may only be used for substances that do not exhibit explosive properties of Class 1 when tested in accordance to Test Series 2 of Class 1 (see Manual of Tests and Criteria, Part I).</p> <p><b>SP 307</b> – This entry may only be used for uniform mixtures containing ammonium nitrate as the main ingredient within the following composition limits:</p> <p>(a) Not less than 90% ammonium nitrate with not more than 0.2% total combustible/organic material calculated as carbon and with added matter, if any, which is inorganic and inert towards ammonium nitrate, or</p> <p>(b) Less than 90% but more than 70% ammonium nitrate with other inorganic materials or more than 80% but less than 90% ammonium nitrate mixed with calcium carbonate and/or dolomite and/or mineral calcium sulphate and not more than 0.4% total combustible/organic material calculated as carbon, or</p> <p>(c) Nitrogen-type ammonium nitrate based fertilizers containing mixtures of ammonium nitrate and ammonium sulphate with more than 45% but less than 70% ammonium nitrate and not more than 0.4% total combustible/organic material calculated as carbon such that the sum of the percentage composition of ammonium nitrate and ammonium sulphate exceeds 70%.</p> <p><b>SP 900</b> – See above</p> <p><b>SP 967</b> – See above</p>	<ul style="list-style-type: none"> <li>– the Test Series 2(a) UN gap test (see Manual of Tests and Criteria, Part 1) or</li> <li>– the resistance to detonation test (see Solid Bulk Cargoes Code, Appendix 2, Section 5)</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>• The following physical and chemical analyses: <ul style="list-style-type: none"> <li>– pH of solution (10 g in 100 mL water) <math>\geq 4.5</math></li> <li>– maximum chlorine content <math>\leq 0.02\%</math> by weight</li> <li>– copper content <math>\leq 10</math> mg/kg by weight</li> <li>– bulk density (loose) <math>&gt; 0.85</math> g/cm<sup>3</sup></li> <li>– not more than 5% by mass of the fertilizer must pass through a 1mm mesh sieve and not more than 3% by mass pass through a 0.5mm mesh sieve</li> <li>– low porosity is established with an oil retention of less than 4% by mass</li> </ul> </li> </ul>
<p><b>UN 2426 – AMMONIUM NITRATE, LIQUID (hot concentrated solution)</b></p>	<p><b>SP 252</b> – Provided the ammonium nitrate remains in solution under all conditions of transport, aqueous solutions of ammonium nitrate, with not more than 0.2% combustible material, in a concentration not exceeding 80%, are not subject to the IMDG Code.</p>	<p>The concentration and temperature at the time of loading, its percentage of combustible material and of chlorides as well as the contents of free acid are certified.</p> <p>The following criteria apply:</p>

UN number & proper shipping name	IMDG Code special provisions (SP)	Test criteria for safe transport
	<p><b>SP 942</b> – The concentration and temperature at the time of loading, its percentage of combustible material and of chlorides as well as the contents of free acid are certified.</p>	<ul style="list-style-type: none"> <li>• ammonium nitrate concentration not more than 93%</li> <li>• not more than 0.2% of organic carbon</li> <li>• maximum temperature of 140°C indicated on portable tank</li> <li>• pH between 5.0 and 7.0 for a diluted solution of 10% ammonium nitrate</li> <li>• maximum chloride content not to exceed 0.02%.</li> </ul>
<p><b>UN 3375 – AMMONIUM NITRATE EMULSION or SUSPENSION or GEL, intermediate for blasting explosives</b></p>	<p><b>SP 309</b> – This entry applies to non-sensitised emulsions, suspensions and gels consisting primarily of a mixture of ammonium nitrate and fuel, intended to produce a Type E blasting explosive only after further processing prior to use.</p> <p>The mixture for emulsions typically has the following composition: 60-85% ammonium nitrate; 5-30% water; 2-8% fuel; 0.5-4 % emulsifier agent; 0-10% soluble flame suppressants and trace additives. Other inorganic nitrate salts may replace part of the ammonium nitrate.</p> <p>The mixture for suspensions and gels typically has the following composition: 60-85% ammonium nitrate, 0-5% sodium or potassium perchlorate, 0-17% hexamine nitrate or monomethylamine nitrate, 5-30% water, 2-15% fuel, 0.5-4% thickening agent, 0-10% soluble flame suppressants, and trace additives. Other inorganic nitrate salts may replace part of the ammonium nitrate.</p> <p>Substances must satisfactorily pass Test Series 8 (a), (b) and (c) of the Manual of Tests and Criteria, Part I, Section 18 and be approved by the competent authority.</p> <p><i>Note for WA: These substances do not require approval.</i></p>	
<p><b>UN 3485 – CALCIUM HYPOCHLORITE, DRY, CORROSIVE or CALCIUM HYPOCHLORITE MIXTURE, DRY, CORROSIVE with</b></p>	<p><b>SP 314</b> –</p> <p>(a) These substances are liable to exothermic decomposition at elevated temperatures. Decomposition</p>	

UN number & proper shipping name	IMDG Code special provisions (SP)	Test criteria for safe transport
<p>more than 39% available chlorine (8.8% available oxygen) Division 5.1 with subrisk 8, PG II</p> <p><i>Superseded/old UN entry</i></p> <p><b>UN 1748 – CALCIUM HYPOCHLORITE, DRY or CALCIUM HYPOCHLORITE MIXTURE, DRY</b> with more than 39% available chlorine (8.8% available oxygen)</p>	<p>can be initiated by heat or by impurities [e.g. powdered metals (iron, manganese, cobalt, magnesium) and their compounds].</p> <p>(b) During the course of transport, these substances must be shaded from direct sunlight and all sources of heat and be placed in adequately ventilated areas.</p>	
<p><b>UN 3486 –CALCIUM HYPOCHLORITE MIXTURE, DRY, CORROSIVE</b> with more than 10% but not more than 39% available chlorine Division 5.1 with subrisk 8, PG III</p> <p><i>Superseded/old UN entry</i></p> <p><b>UN 2208 – CALCIUM HYPOCHLORITE MIXTURE, DRY</b> with more than 10%, but not more than 39% available chlorine Division 5.1 PG III</p>	<p><b>SP 314 –</b></p> <p>(a) These substances are liable to exothermic decomposition at elevated temperatures. Decomposition can be initiated by heat or by impurities [e.g. powdered metals (iron, manganese, cobalt, magnesium) and their compounds].</p> <p>(b) During the course of transport, these substances must be shaded from direct sunlight and all sources of heat and be placed in adequately ventilated areas.</p>	
<p><b>UN 3487 - CALCIUM HYPOCHLORITE, HYDRATED, CORROSIVE or CALCIUM HYPOCHLORITE HYDRATED MIXTURE, CORROSIVE</b> with not less than 5.5% but not more than 16% water Division 5.1 and subrisk 8, PG II or III</p>	<p>SP 314 –</p> <p>(a) These substances are liable to exothermic decomposition at elevated temperatures. Decomposition can be initiated by heat or by impurities [e.g. powdered metals (iron, manganese, cobalt, magnesium) and their compounds].</p>	

UN number & proper shipping name	IMDG Code special provisions (SP)	Test criteria for safe transport
<p><i>Superseded/old UN entry</i></p> <p><b>UN 2880 - CALCIUM HYPOCHLORITE, HYDRATED or CALCIUM HYPOCHLORITE HYDRATED MIXTURE</b>, with not less than 5.5% but not more than 16% water</p>	<p>(b) During the course of transport, these substances must be shaded from direct sunlight and all sources of heat and be placed in adequately ventilated areas;</p> <p><b>SP 322 for PG II only</b> – When transported in non-friable tablet form, these goods are assigned to PG III.</p> <p><b>SP 322 for PG III only</b> – 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 the IMDG Code.</p>	

## Appendix 2 – Risk assessment

Regulation 135I requires a special berth application to be accompanied by a risk assessment. Regulation 135J explains the information that makes up the risk assessment. The purpose and focus of the risk assessment obligation should be the identification of effective safety control measures — quantitative risk assessment is not necessary.

The table below will help to identify potential hazards for explosion risk goods (ERGs). It also proposes simple control measures that should be effective in eliminating or minimising the risks. The main hazard is an explosion initiated by a fire, heat or contamination arising either on the ship or on the berth. Another potential hazard in a fire situation near ERGs is the emission of toxic gases.

*Note: The list of hazards is not comprehensive and the proposed control measures may not be optimal or sufficient in isolation. Berth operators should develop their own site-specific risk assessment tools.*

*ADG = The Australian Code for the Transport of Dangerous Goods by Road and Rail*

*FIBC = flexible intermediate bulk container*

*SOP = standard operating procedure*

Sources of hazard	Assessment Criteria	Controls	Document or evidence
Contamination in product as supplied by manufacturer	Chemical analysis and shock sensitivity test	Refer to Appendix 1	Test results for UN 1942 and UN 2067 Sampling methods
Contaminated trucks	SOP for clean trucks	Vehicles to comply with ADG7 Code, clause 4.4.1 SOP includes thorough inspection of vehicles for cleanliness and residual petroleum products prior to use	SOP checklist for clean trucks
Contamination of product with combustible, organic or sensitising materials such as chromates, chlorides and metals such as zinc and copper and their salts	Physical location	Loading or unloading – exclusion zone of 25 m from the ship in all directions 25 m exclusion around the stockpile at berth	Berth operator's SOP checklist for handling at a special berth
Contamination in container	Container design	No wooden floors for containers containing loose bulk Container design for loose bulk in containers – epoxy-lined steel or liner bags	Loader's or consigner's checklist

Sources of hazard	Assessment Criteria	Controls	Document or evidence
		<p>Complies with the IMDG Code BK2</p> <p>Complies with the <i>International Convention for Safe Containers</i>, adopted by the International Maritime Organization and UN in 1972</p>	
Contamination on berth	Cleanliness of berth area	Before ERGs are handled, the berth is thoroughly cleaned of any substances that could lead to contamination, including combustible dusts and debris	Berth operator's SOP checklist for handling at a special berth
Contamination from dirty or split bags	Quarantine of dirty or split bags	<p><b>General</b></p> <p>Provide for temporary storage (and cleaning) of damaged or soiled packages and disposal or recycling of ERGs — can include a forklift or bobcat (for split or leaking packages) for lifting packages, and receptacles for packages or spilled product (e.g. lidded skip bins or drums)</p> <p>Provide for clean-up and disposal of spilled ERGs — can include brooms, shovels, bobcats, sweepers and containers <i>Note: Hosing or brushing of ERGs into the port waters is not acceptable except as fire-fighting measure</i></p> <p>Provide for inspection and, if necessary, clean-up of spilled ERGs and associated dirt or hydrocarbons from ship hulls — this potentially flammable and explosive material must be rendered safe and disposed of appropriately</p> <p><b>Damaged packages</b></p> <p>Need to be either emptied and disposed of or placed in secondary containment (e.g. another bag, bin, FIBC overpacks) before removal of the ERGs as product or disposal as waste</p> <p><b>Contaminated packages</b> (i.e. soiled with dirt or hydrocarbons)</p> <p>Segregate from clean bags and keep in secure area well separated from other ERGs storage</p> <p>Provide for bags to be cleaned or ERGs to be repackaged into clean bags or other receptacle</p>	

Sources of hazard	Assessment Criteria	Controls	Document or evidence
		Provide adequate fire protection for the storage area Package and dispose of empty bags appropriately	
Contamination from ship's hold	Clean container holds Protrusions in hold that could damage bags	See IMDG Code, clause 7.1.11 Free from oils and grease Free from protrusions that could damage bags	Berth operator's SOP checklist for handling at a special berth
Contamination from handling equipment	Equipment used in handling	Regular checks of equipment and maintenance of equipment documented and monitored	Berth operator's SOP checklist for handling at a special berth
Contamination of product due to inappropriate packaging	Packaging material and design	Refer to IMDG Code packing instructions P002, LP02 and IBC08	Loader's or consignor's checklist
Other activities in the port	Time in port	Restrict time on special berth, with cargo either removed from berth within 12 hours of being unloaded from a vessel or within 24 hours of being delivered to berth Limit time in port for a loaded ship	Berth operator's SOP checklist for handling at a special berth
Heat and fire from other sources	Proximity to flammable or combustible material and other dangerous goods	25m exclusion zone around berth Spill control (emergency procedures)	Berth operator's SOP checklist for handling at a special berth
	Ignition sources	No hot work or smoking within 25 m exclusion zone Limit number of vehicles involved in the transport of ERGs	Berth operator's SOP checklist for handling at a special berth
	Other heat sources (e.g. engine room, exhausts)	Location on ship ("marine orders")	Master of vessel's SOP checklist for handling at a special berth
	Number and configuration of containers in stockpile on wharf	Limit container stockpile to 2 x 2 x 2 container configuration, separated in all directions by at least 5 m and protected from heat sources.	Berth operator's SOP checklist for handling at a special berth

Sources of hazard	Assessment Criteria	Controls	Document or evidence
		<i>Note: Not permitted for containers of calcium hypochlorite, which must not be stacked and must be separated in all directions by at least 5 m</i>	
	Other ships loading or unloading	Proximity of other ships and activities Ship's ease of access and egress in an emergency situation	Port's emergency plan Port's procedure for allocation of berths
	Suitable mobile equipment (e.g. lift trucks)	Powered by battery, LP gas or diesel Fitted with spark arresters and inspected prior to use – free from leaks at all times	Berth operator's SOP checklist for handling at a special berth
Impact	Traffic control	Berth traffic management plan – use one-way traffic flow, and include signage, speed limits and procedures to minimise the potential for vehicle accidents, collisions and fires Port traffic management plan	Berth operator's SOP checklist for handling at a special berth
	Use of equipment (e.g. cranes, container twist locks)	Training (berth operator) Checking process or mechanism to reduce risk of container dropping No lifting other containers over ERGs Load ERGs last Mandatory reporting of dropped containers	Berth operator's SOP checklist for handling at a special berth
<b>Lack of appropriate emergency procedures</b>	Emergency plan Emergency plan required by rr. 75, 76A and 76B of the Regulations AS 3846 and AS 3745 are approved codes of practice under the Act	Berth emergency plan Port emergency plan	Berth operator's emergency procedure Port emergency procedure



Sources of hazard	Assessment Criteria	Controls	Document or evidence
Water ingress in container or contaminated container or bag	Appropriate waste management plan	Berth operator's waste management plan Port's overall waste management plan	Berth operator's waste management plan Port's waste management plan
Fire at the port (e.g. berth, vessel)	Fire-fighting resources	Berth operator's fire-fighting plan Port's overall fire-fighting plan Ship's fire-fighting equipment ready during loading and unloading – refer to IMDG Code Suitable fire-fighting facilities at the port ready during loading and unloading. "No smoking" signs Ship to shore safety – refer to IMDG Code	Berth operator's emergency plan Berth Operator's SOP checklist for fire watch Port's emergency plan (fire-fighting plan) Suitability of fire-fighting equipment (e.g. layout, operational testing prior to unloading operations) Procedures for removal of vessel and decision point criteria Training of personnel (e.g. correct handling, potential dangers, use of fire-fighting equipment for immediate response)
Tampering and theft	Shore-side security Water-side security	Port security plan(s)	Port security plan(s)

## Appendix 3 – Sample audit template

This template is available in Word format from the Department's website. It should be modified to reflect requirements under the berth operator's safety management system.

### Explosion risk goods at a special berth – audit template

This template should be modified to reflect requirements under the berth operator's safety management system.

#### 1 Cargo shipment details

<b>Special berth name</b>	
<b>Port name</b>	
<b>Vessel name</b>	
<b>Dangerous goods cargo</b>	
Shipping name	
UN number	
Class	
Packing Group	
<b>Quantity to be loaded/unloaded</b>	
<b>Quantity in transit</b>	
<b>Port of loading</b>	
<b>Port of unloading</b>	
<b>Name and details for responsible person in charge of onshore handling</b>	
<b>Name of person in charge of handling on ship</b>	
<b>Name of special berth declaration representative</b>	

## 2 Special berth system checks

ADG = The Australian Code for the Transport of Dangerous Goods by Road and Rail

Date	Time	Activity	Compliance verified	Signature(s)
<b>Pre-arrival</b>				
		Dangerous goods notification received by port authority		
		Shipping movements managed and emergency plan checked and understood by all parties involved (i.e. port, special berth declaration holder, berth operator)		
		Security plan in place on shore side (port)		
		Security plan in place on water side (port)		
		Dangerous goods security cards for all unsupervised personnel (port) for ammonium nitrate and ammonium nitrate emulsion		
		Relevant personnel inducted on safety and emergency response (port)		
		Special berth declaration holder's reporting system in place for each shipment		
		Incident reporting system in place		
		Emergency plan understood by all parties involved		
		Emergency equipment checked and ready for use		
		Vehicles comply with ADG7		
		Loader's handling procedures checked		

### 3 Compliance with special berth safety management requirements

ERGs = explosion risk goods

SSAN Regulations = Dangerous Goods Safety (Security Sensitive Ammonium Nitrate) Regulations 2007

Date	Time	Activity	Compliance verified	Signature(s)
		Documents demonstrating the testing of ERGs in accordance with Appendix 1 to prove the correct classification and UN number has been used for UN 1942, UN 2067 and UN 2426		
		Container design suitability		
		Packaging suitability		
		Berth handling procedures: <ul style="list-style-type: none"> <li>• pre-arrival of the ship</li> <li>• on arrival</li> <li>• during operations</li> <li>• on completion</li> </ul>		
		Special berth areas separated from other activities by exclusion zone of at least 25 m for any part of special berth		
		Special berth cordoned off or otherwise clearly delineated and appropriate signage during handling of ERGs		
		Water hoses in place ready for use		
		Container stockpiles on berth do not exceed eight per stockpile arranged in a 2 x 2 x 2 configuration or a total tonnage of 172 tonnes, with each stockpile separated by at least 5 m in a shaded area <i>Note: Calcium hypochlorite is restricted to packages of 45 kg capacity, with a total of 14 tonnes permitted per dedicated container</i>		
		ERGs are removed as soon as possible from the berth and within 12 hours of being unloaded from a vessel, or within 24 hours of being delivered to the berth		

Date	Time	Activity	Compliance verified	Signature(s)
		Number of vehicles on special berth does not exceed the number of vehicles that can be loaded or unloaded simultaneously		
		No other vehicles permitted on berth except emergency vehicles		
		Traffic only flows in one direction as designated		
		Vehicles do not travel in excess of 20 km/h		
		Vehicles are positioned in such a way that they can be driven away in a forward direction with minimal manoeuvring		
		Area through which the vehicle needs to move or manoeuvre in order to leave the berth is kept clear at all times during loading or unloading		
		Responsible person observing the loading or unloading operation and able to stop the operation in the event of an actual or potential reportable incident and/or initiate appropriate remedial action		
		Reporting of reportable incidents such as split bags, contamination, dropped containers, fire and vehicle incidents		
		Disposal procedure in place for spills in accordance with risk assessment and security in accordance with SSAN Regulations.		

**Any other comments or issues regarding safety and security**

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**Responsible person's name** \_\_\_\_\_

**Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

## **Appendix 4 – Items in clause 6.5.2 – “Selection of a special berth” of AS 3846 that need to be addressed in the risk assessment**

### **6.5.2 Selection of a special berth**

The following items shall be considered when selecting a special berth:

- (a) The total quantity, type and grade of ammonium nitrate or calcium hypochlorite to be transported or handled.
- (b) The packaging, containment and stowage of the ammonium nitrate or calcium hypochlorite.
- (c) The total quantity, type and class of other dangerous cargoes on the ship.
- (d) The geography of the port and the location of the special berth within the port area.
- (e) The berth's proximity to protected places, other ships, other berths, main roads and main railways.
- (f) The materials of construction of the special berth.
- (g) The need to declare a temporary safety distance and a restricted area around the ship and the special berth.
- (h) Any need to temporarily relocate persons for the duration of the immediate removal of ammonium nitrate or calcium hypochlorite from the special berth.
- (i) The type and availability of transport for the immediate removal of the ammonium nitrate or calcium hypochlorite from the special berth.
- (j) The immediate availability of adequate firefighting resources at the special berth.
- (k) Any need to restrict operations to daylight hours.
- (l) Re-routing of land or waterborne traffic.
- (m) Prohibiting the entry of unauthorized persons to the restricted area.
- (n) The proximity to tanks and pipelines.
- (o) Separation from hazardous facilities.
- (p) The need for the ship to have unrestricted passage to open water or other safe area.
- (q) The potential for the release of harmful gases if ammonium nitrate or calcium hypochlorite is involved in a fire, as this can affect some individuals (see Clause 6.5.3).