

# MAXAM UN EXP 4003 (RIOGUR F CD)

MAXAM Australia

Chemwatch: 4699-29

Version No: 3.1.1.1

Material Safety Data Sheet according to NOHSC and ADG requirements

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## SECTION 1 Identification of the substance / mixture and of the company / undertaking

Product Identifier	
Product name:	MAXAM UN EXP 4003 (RIOGUR F CD)
Chemical Name:	Not Applicable
Synonyms:	RIOGUR F CD
Proper shipping name:	EXPLOSIVE, BLASTING, TYPE E†
Chemical formula:	Not Applicable
Other means of identification:	Not Available
CAS number:	Not Applicable

Relevant identified uses of the substance or mixture and uses advised against	
Relevant identified uses:	Monomethylamine Nitrate-based hydrogel explosives that is made from oxidizing salts and fuels and is detonator sensitive, for civil use in quarries, general mining and public construction work.

Details of the supplier of the safety data sheet			
Registered company name:	MAXAM Australia		
Address:	141 Boundary Road Oxley 4074 QLD Australia		
Telephone:	+61 7 3717 1818		
Fax:	+61 7 3717 1888		
Website:	http://www.maxam-corp.com.au		
Email:	info@maxam-int.com.au		

Emergency telephone number			
Association / Organisation:	Not Available		
Emergency telephone numbers:	1800 833 111 (24hrs)		
Other emergency telephone numbers:			

## SECTION 2 Hazards identification

Classification of the substance or mixture	
HAZARDOUS SUBSTANCE. DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.	

Poisons Schedule:	
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Risk Phrases <sup>[1]</sup>	
R05	Heating may cause an explosion.
R03	Extreme risk of explosion by shock, fire, friction or other sources of ignition.
R36	Irritating to eyes.
R52	Harmful to aquatic organisms.

**Legend:** 1. Classified by Chemwatch; 2. Classification drawn from HSIS ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI

Label elements	
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Relevant risk statements are found in section 2

Indication(s) of danger:	E, Xi
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Safety advice:	
S25	Avoid contact with eyes.
S26	In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.
S29	Do not empty into drains.
S35	This material and its container must be disposed of in a safe way.
S39	Wear eye/face protection.
S40	To clean the floor and all objects contaminated by this material, use water.
S46	If swallowed, seek medical advice immediately and show this container or label.
S56	Dispose of this material and its container at hazardous or special waste collection point.
S57	Use appropriate container to avoid environmental contamination.
S64	If swallowed, rinse mouth with water (only if the person is conscious).

Other hazards	
May produce discomfort of the respiratory system and skin*.	
Cumulative effects may result following exposure*.	

Ingestion may produce health damage\*.

## SECTION 3 Composition / information on ingredients

### Substances

See section below for composition of Mixtures

### Mixtures

CAS No	%[weight]	Name
6484-52-2	51-58	<a href="#">ammonium nitrate</a>
22113-87-7	19-24	<a href="#">monomethylamine nitrate</a>
7631-99-4	4-7	<a href="#">sodium nitrate</a>
7429-90-5	1-4	<a href="#">aluminium powder uncoated</a>
78-11-5	1-3	<a href="#">pentaerythritol tetranitrate</a>

## SECTION 4 First aid measures

### Description of first aid measures

#### Eye Contact:

If this product comes in contact with the eyes:

- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Seek medical attention without delay; if pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

#### Skin Contact:

If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

#### Inhalation:

- If fumes, aerosols or combustion products are inhaled remove from contaminated area.
- Other measures are usually unnecessary.

#### Ingestion:

- **If swallowed do NOT induce vomiting.**
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.

## Indication of any immediate medical attention and special treatment needed

The toxicity of nitrates and nitrites result from their vasodilating properties and their propensity to form methaemoglobin.

- Most produce a peak effect within 30 minutes.
- Clinical signs of cyanosis appear before other symptoms because of the dark pigmentation of methaemoglobin.
- Initial attention should be directed towards improving oxygen delivery, with assisted ventilation, if necessary. Hyperbaric oxygen has not demonstrated conclusive benefits.
- Institute cardiac monitoring, especially in patients with coronary artery or pulmonary disease.
- Hypotension should respond to Trendelenburg's position and intravenous fluids; otherwise dopamine may be needed.
- Naloxone, glucose and thiamine should be given if a multiple ingestion is suspected.
- Decontaminate using Ipecac Syrup for alert patients or lavage for obtunded patients who present within 2-4 hours of ingestion.
- Symptomatic patients with methaemoglobin levels over 30% should receive methylene blue. (Cyanosis alone, is not an indication for treatment). The usual dose is 1-2 mg/kg of a 1% solution (10 mg/ml) IV over 5 minutes; repeat, using the same dose if symptoms of hypoxia fail to subside within 1 hour.

[Ellenhorn and Barceloux: Medical Toxicology]

#### BIOLOGICAL EXPOSURE INDEX - BEI

These represent the determinants observed in specimens collected from a healthy worker who has been exposed at the Exposure Standard (ES or TLV):

Determinant	Index	Sampling Time	Comments
1. Methaemoglobin in blood	1.5% of haemoglobin	During or end of shift	B,NS,SQ

B: Background levels occur in specimens collected from subjects **NOT** exposed

NS: Non-specific determinant; also observed after exposure to other materials

SQ: Semi-quantitative determinant - Interpretation may be ambiguous; should be used as a screening test or confirmatory test.

## SECTION 5 Firefighting measures

### Extinguishing media

- **WARNING:** Deliver water spray or fog from a safe distance only.

### Special hazards arising from the substrate or mixture

#### Fire Incompatibility:

- Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

### Advice for firefighters

#### Fire Fighting:

#### **WARNING: EXPLOSIVE MATERIALS / ARTICLES PRESENT!**

- Evacuate all personnel and move upwind.
- Prevent re-entry.
- Alert Fire Brigade and tell them location and nature of hazard.
- May be explosively reactive, detonate and release much heat.
- Wear full-body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage and fire effluent from entering drains or watercourses.
- Fight from safe distances and protected locations.
- Use flooding quantities of water.
- **DO NOT approach containers suspected to be hot.**
- Cool any exposed containers not involved in fire from protected locations.
- Equipment should be thoroughly decontaminated after use.

For Division 1.1 Explosives

Evacuation is required in case of Emergency.

For quantities of up to:

- 1000 kg, the evacuation distance is 400 metres
- 5000 kg, the evacuation distance is 600 metres
- 20000 kg, the evacuation distance is 800 metres
- 40000 kg, the evacuation distance is 1000 meters

#### Fire/Explosion Hazard:

Division 1.1 Substances, mixtures and articles which have a mass explosion hazard (a mass explosion is one which affects almost the entire quantity present virtually instantaneously).

Explosives are defined as substances which are capable by chemical reaction of producing gas at such a temperature and pressure and at such speed as to cause damage to the surroundings.

Pyrotechnic substances are included even when they do not evolve gases.

#### WARNING: EXPLOSION HAZARD!

- Combustible.
- Detonation may occur from heavy impact or excessive heating.
- Mixing with incompatible chemicals may cause expansion, decomposition or detonation.
- Heat affected containers remain hazardous.
- Explosives can supply own oxygen for combustion and smothering action of foam or dry chemical may be ineffective.
- Combustion or decomposition produces oxides of nitrogen (NO<sub>x</sub>), carbon monoxide (CO) and carbon dioxide (CO<sub>2</sub>).

Compatibility Group D explosives are secondary detonating explosive substances or black powder or articles containing a secondary detonating explosive substance, in each case without means of initiation and without a propelling charge, or articles containing a primary explosive substance and containing two or more effective protective features

## SECTION 6 Accidental release measures

### Personal precautions, protective equipment and emergency procedures

#### Minor Spills:

##### WARNING: EXPLOSIVE.

BLAST and/or PROJECTION and/or FIRE HAZARD

- Clean up all spills immediately.
- Avoid inhalation of the material and avoid contact with eyes and skin.
- Wear impervious gloves and safety glasses.
- Remove all ignition sources.
- Use spark-free tools when handling.
- Sweep into non-sparking containers or barrels and moisten with water.
- Place spilled material in clean, sealable, labelled container for disposal.
- Flush area with large amounts of water.

#### Major Spills:

##### WARNING: EXPLOSIVE.

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- May be violently or explosively reactive.
- Wear full body protective clothing with breathing apparatus.
- Consider evacuation (or protect in place).
- In case of transport accident notify Police, Emergency Authority, Competent Explosives Authority or Manufacturer.
- No smoking, naked lights, heat or ignition sources.
- Increase ventilation.
- Use extreme caution to prevent physical shock.
- Use only spark-free shovels and explosion-proof equipment.
- Collect recoverable material and segregate from spilled material.
- Wash spill area with large quantities of water.

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

## SECTION 7 Handling and storage

### Precautions for safe handling

#### Safe handling

- Handle gently. Use good occupational work practice.
- Observe manufacturer's storage and handling recommendations contained within this MSDS.
- Avoid all personal contact, including inhalation.
- Avoid smoking, naked lights, heat or ignition sources.
- Explosives must not be struck with metal implements.
- Avoid mechanical and thermal shock and friction.
- Use in a well ventilated area.
- Avoid contact with incompatible materials.
- **When handling DO NOT eat, drink or smoke.**
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.

#### Other information

- Store cases in a well ventilated magazine licenced for the appropriate Class, Division and Compatibility Group.
- Rotate stock to prevent ageing. Use on FIFO (first in-first out) basis.
- Observe manufacturer's storage and handling recommendations contained within this MSDS.
- Store in a cool place in original containers.
- Keep containers securely sealed.
- No smoking, naked lights, heat or ignition sources.
- Store in an isolated area away from other materials.
- Keep storage area free of debris, waste and combustibles.
- Protect containers against physical damage.
- Check regularly for spills and leaks

**NOTE:** If explosives need to be destroyed contact the Competent Authority.

### Conditions for safe storage, including any incompatibilities

#### Suitable container:

- **DO NOT repack.** Use containers supplied by manufacturer only.
- Packaging as recommended by manufacturer.
- Check that containers are clearly labelled

#### Storage incompatibility:

- Inorganic reducing agents react with oxidizing agents to generate heat and products that may be flammable, combustible, or otherwise reactive. Their reactions with oxidizing agents may be violent.
- Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous
- Avoid reaction with oxidising agents, bases and strong reducing agents.
- Avoid storage with reducing agents.

#### Package Material Incompatibilities:

## SECTION 8 Exposure controls / personal protection

### Control parameters

#### Occupational Exposure Limits (OEL)

#### INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	aluminium powder uncoated	Aluminium, soluble salts (as Al) / Aluminium (metal dust) / Aluminium (welding fumes) (as Al) / Aluminium, alkyls (NOC) (as Al) / Aluminium, pyro powders (as Al)	2 (mgm3) / 10 (mgm3) / 5 (mgm3)	Not Available	Not Available	Not Available

#### Emergency Limits

Ingredient	TEEL-0	TEEL-1	TEEL-2	TEEL-3
ammonium nitrate	10(ppm)	10(ppm)	10(ppm)	500(ppm)
sodium nitrate	0.4(ppm)	1(ppm)	7.5(ppm)	100(ppm)
aluminium powder uncoated	15(ppm)	30(ppm)	50(ppm)	250(ppm)
pentaerythritol tetranitrate	0.015(ppm)	0.05(ppm)	0.35(ppm)	500(ppm)

Ingredient	Original IDLH	Revised IDLH
MAXAM UN EXP 4003 (RIOGUR F CD)	Not Available	Not Available

### Exposure controls

#### Appropriate engineering controls

Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

Process controls which involve changing the way a job activity or process is done to reduce the risk.

Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use.

Employers may need to use multiple types of controls to prevent employee overexposure.

Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection.

An approved self contained breathing apparatus (SCBA) may be required in some situations.

Provide adequate ventilation in warehouse or closed storage area. Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to effectively remove the contaminant.

Type of Contaminant:	Air Speed:
solvent, vapours, degreasing etc., evaporating from tank (in still air).	0.25-0.5 m/s (50-100 f/min.)
aerosols, fumes from pouring operations, intermittent container filling, low speed conveyer transfers, welding, spray drift, plating acid fumes, pickling (released at low velocity into zone of active generation)	0.5-1 m/s (100-200 f/min.)
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 f/min.)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5-10 m/s (500-2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only.	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood-local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 1-2 m/s (200-400 f/min) for extraction of solvents generated in a tank 2 meters distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

### Personal protection



#### Eye and face protection:

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]

#### Skin protection:

See Hand protection below

#### Hand protection:

- Wear chemical protective gloves, e.g. PVC.
- Wear safety footwear or safety gumboots, e.g. Rubber
- Non-sparking footwear essential.

#### Body protection:

See Other protection below

#### Other protection:

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

For handling explosives or explosive compositions:

- Wear close-fitting flame-protection treated clothing closed at the neck and sleeves.
- Cotton underwear, socks and conductive shoes are recommended to avoid human static discharge.

Manufacture may require:

- Non-static flame retardant treated clothing
- Access to deluge Safety shower
- Barrier cream.

#### Thermal hazards:

#### Recommended material(s):

PVC chemical resistant type.

#### Respiratory protection:

## SECTION 9 Physical and chemical properties

### Information on basic physical and chemical properties

#### Appearance

Grey coloured pasty solid; mixes with water.

Physical state	Non Slump Paste	Relative density (Water = 1)	1.04-1.20
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Available
pH (as supplied)	3.5-5.5	Decomposition temperature	Not Available
Melting point / freezing point (°C)	Not Available	Viscosity (cSt)	Not Available
Initial boiling point and boiling range (°C)	Not Available	Molecular weight (g/mol)	Not Applicable
Flash point (°C)	Not Available	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Not Available	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Available
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Not Available
Vapour pressure (kPa)	Not Available	Gas group	Not Available
Solubility in water (g/L)	Miscible	pH as a solution(1%)	Not Available
Vapour density (Air = 1)	Not Available		

## SECTION 10 Stability and reactivity

#### Reactivity:

See section 7

#### Chemical stability:

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

#### Possibility of hazardous reactions:

See section 7

#### Conditions to avoid:

See section 7

#### Incompatible materials:

See section 7

#### Hazardous decomposition products:

See section 5

## SECTION 11 Toxicological information

### Information on toxicological effects

#### Inhaled:

Limited evidence or practical experience suggests that the material may produce irritation of the respiratory system, in a significant number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which initially evolved to protect mammalian lungs from foreign matter and antigens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs. Respiratory tract irritation often results in an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system. The decomposition vapours are harmful if inhaled in large volume.

#### Ingestion:

Accidental ingestion of the material may be damaging to the health of the individual.

Swallowing large doses of ammonium nitrate may cause dilation of blood vessels by direct smooth muscle relaxation and methaemoglobinaemia. Symptoms include dizziness, abdominal pain, vomiting, bloody diarrhoea, weakness, convulsions and collapse. Other effects of exposure include headache, warm flushed skin, nausea, vomiting, diuresis and fatigue. Both tachycardia and bradycardia, atrial fibrillation, cardiac ischaemia, frequent ventricular premature beats and bigeminy have been reported. Severe poisonings have produced hypotension, decreased peripheral vascular resistance, cardiovascular collapse, convulsions and coma

#### Skin Contact:

Entry into the blood-stream through, for example, cuts, abrasions, puncture wounds or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

Limited evidence exists, or practical experience predicts, that the material either produces inflammation of the skin in a substantial number of individuals following direct contact, and/or produces significant inflammation when applied to the healthy intact skin of animals, for up to four hours, such inflammation being present twenty-four hours or more after the end of the exposure period. Skin irritation may also be present after prolonged or repeated exposure; this may result in a form of contact dermatitis (nonallergic). The dermatitis is often characterised by skin redness (erythema) and swelling (oedema) which may progress to blistering (vesiculation), scaling and thickening of the epidermis. At the microscopic level there may be intercellular oedema of the spongy layer of the skin (spongiosis) and intracellular oedema of the epidermis.

#### Eye:

Evidence exists, or practical experience predicts, that the material may cause eye irritation in a substantial number of individuals and/or may produce significant ocular lesions which are present twenty-four hours or more after instillation into the eye(s) of experimental animals.

Repeated or prolonged eye contact may cause inflammation characterised by temporary redness (similar to windburn) of the conjunctiva (conjunctivitis); temporary impairment of vision and/or other transient eye damage/ulceration may occur.

#### Chronic:

Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

Chronic exposure to ammonium nitrate may produce hypotension and fatigue. Chronic ingestion of 6-12 grams per day has produced gastritis, acidosis, isosmotic diuresis and nitrite toxicity manifested by methaemoglobinaemia or vasodilation

TOXICITY	IRRITATION
<b>MAXAM UN EXP 4003 (RIOGUR F CD)</b>	
Not Available	Not Available
<b>ammonium nitrate</b>	
Oral (rat) LD50: 2217 mg/kg	
Not Available	Not Available
<b>monomethylamine nitrate</b>	
Dermal (rabbit) LD50: >11000 mg/kg *	* DuPont
Oral (rat) LD50: 5000 mg/kg (ALD) *	
Not Available	Not Available
<b>sodium nitrate</b>	
Oral (rabbit) LD50: 2680 Mg/kg	Nil reported
Oral (rat) LD50: 1267 mg/kg	
Not Available	Not Available
<b>aluminium powder uncoated</b>	
Not Available	Not Available
<b>pentaerythritol tetranitrate</b>	
Oral (rat) LD50: 1660 mg/kg	
Not Available	Not Available

\* Value obtained from manufacturer's msds

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances

#### SODIUM NITRATE

Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

#### MAXAM UN EXP 4003 (RIOGUR F CD), ALUMINIUM POWDER UNCOATED

No significant acute toxicological data identified in literature search.

<b>Acute Toxicity:</b>	Not Applicable	<b>Carcinogenicity:</b>	Not Applicable
<b>Skin Irritation/Corrosion:</b>	Not Applicable	<b>Reproductivity:</b>	Not Applicable
<b>Serious Eye Damage/Irritation:</b>	Eye Irrit. 2	<b>STOT - Single Exposure:</b>	Not Applicable
<b>Respiratory or Skin sensitisation:</b>	Not Applicable	<b>STOT - Repeated Exposure:</b>	Not Applicable
<b>Mutagenicity:</b>	Not Applicable	<b>Aspiration Hazard:</b>	Not Applicable

#### CMR STATUS

## SECTION 12 Ecological information

#### Toxicity

Harmful to aquatic organisms.

**DO NOT discharge into sewer or waterways.**

#### Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
Not Available	Not Available	Not Available

#### Bioaccumulative potential

Ingredient	Bioaccumulation
Not Available	Not Available

#### Mobility in soil

Ingredient	Mobility
Not Available	Not Available

## SECTION 13 Disposal considerations

#### Waste treatment methods

#### Product / Packaging disposal:

- Explosives which are surplus, deteriorated or considered unsafe for transport, storage or use shall be destroyed and the statutory authorities shall be notified.
- Explosives must not be thrown away, buried, discarded or placed with garbage.
- This material may be disposed of by burning or detonation but the operation must be performed under the control of a person competent in the destruction of explosives.

Disposal by detonation:

- The explosives to be destroyed must be placed in direct contact with fresh priming charge in a hole which is at least 0.6 metre deep and then adequately stemmed.
- No detonators shall be inserted into defective explosives.
- Personnel must be evacuated to a safe distance prior to initiation/firing of the charge.

Disposal by burning:

- Make a sawdust bed or trail adequate for the quantity of explosives to be burned, approximately 400 mm wide and 40 mm deep, upon which the explosive will be laid.
- If sawdust is not available, newspaper may be used.
- Normal precautions shall be taken to avoid the spread of fire.
- Individual trails should not be closer together than 600 mm and should contain not more than 12 kg of explosive.
- Trails should be side by side, NOT in-line, and not more than four should be set up at one time.
- Remove any explosive that is not to be burnt to a distance of at least 300 metre.
- Sufficient diesel oil (never petrol or other highly flammable liquid) should be used to thoroughly wet the sawdust (or paper) at least 4 litre per trail is recommended.
- Light the trail from a long, rolled paper wick which should be placed downwind and in contact with the end 1m of trail that is not covered with explosive. The wind should blow so that the flame from the wick (and later from the burning explosive) will blow away from the unburned explosive as detonation is more likely to occur if the explosive is preheated by the flame.
- If plastic igniter cord (slow) is available, its use for lighting is recommended instead of paper. One end should be coiled into the sawdust or under the paper and the other end lit from a minimum distance of 7m from the trail.
- Retire at least 300m or to a safe place.
- DO NOT return to the site for at least 30 minutes after the burning has apparently finished.**
- If the fire goes out do not approach for at least 15 minutes after all trace of fire has gone.
- DO NOT add more diesel oil unless certain that the flame is completely extinguished.**

[DYNO]

## SECTION 14 Transport information

### Labels Required:



Marine Pollutant: NO

HAZCHEM: None

### Land transport (ADG)



UN number	0241	Packing group	Not Available
UN proper shipping name	EXPLOSIVE, BLASTING, TYPE E†	Environmental hazard	No relevant data
Transport hazard class(es)	Class: 1.1D Subrisk:	Special precautions for user	Special provisions limited quantity 0

### Air transport (ICAO-IATA / DGR)



UN number	0241	Packing group	Not Available
UN proper shipping name	Explosive, blasting, type E †	Environmental hazard	No relevant data
Transport hazard class(es)	ICAO/IATA Class: 1.1D ICAO / IATA Subrisk: ERG Code: 1L	Special precautions for user	Special provisions: Cargo Only Packing Instructions: Forbidden Cargo Only Maximum Qty / Pack: Forbidden Passenger and Cargo Packing Instructions: Forbidden Passenger and Cargo Maximum Qty / Pack: Forbidden Passenger and Cargo Limited Quantity Packing Instructions: Forbidden Passenger and Cargo Maximum Qty / Pack: Forbidden

### Sea transport (IMDG-Code / GGVSee)



UN number	0241	Packing group	Not Available
UN proper shipping name	EXPLOSIVE, BLASTING, TYPE E	Environmental hazard	No relevant data
Transport hazard class(es)	IMDG Class: 1.1D IMDG Subrisk:	Special precautions for user	EMS Number: F-B,S-X Special provisions: Limited Quantities: 0

Transport in bulk according to Annex II of MARPOL 73 / 78 and the IBC code

Source	Ingredient	Pollution Category	Residual Concentration - Outside Special Area (% w/w)	Residual Concentration
IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk	ammonium nitrate	D		

## SECTION 15 Regulatory information

### Safety, health and environmental regulations / legislation specific for the substance or mixture

#### ammonium nitrate(6484-52-2) is found on the following regulatory lists

"International Council of Chemical Associations (ICCA) - High Production Volume List", "Australia Inventory of Chemical Substances (AICS)", "OECD List of High Production Volume (HPV) Chemicals", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Dangerous Goods Code (ADG Code) - Goods Too Dangerous To Be Transported", "Australia - Tasmania - Work Health and Safety Regulations 2012 - Hazardous Chemicals at Major Hazard Facilities (and their Threshold Quantity) - Table 15.1", "Australia Council of Australian Governments (COAG) Chemicals of Security Concern", "IMO IBC Code Chapter 17: Summary of minimum requirements", "International Maritime Dangerous Goods Requirements (IMDG Code) - Goods Forbidden for Transport", "IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk", "Sigma-Aldrich Transport Information", "Acros Transport Information", "Regulations concerning the International Carriage of Dangerous Goods by Rail - Table A: Dangerous Goods List - RID 2013 (English)", "International Maritime Dangerous Goods Requirements (IMDG Code) - Substance Index", "Australia Explosives Code (AE Code)", "Australia Dangerous Goods Code (ADG Code) - Dangerous Goods List", "Australia - South Australia - Work Health and Safety Regulations 2012 - Schedule 15—Hazardous chemicals at major hazard facilities (and their threshold quantity) Table 15.1", "Australia - New South Wales - Work Health and Safety Regulation 2011 - Hazardous chemicals at major hazard facilities (and their threshold quantity) - Table 15.1", "Australia - Victoria Occupational Health and Safety Regulations - Schedule 9: Materials at Major Hazard Facilities (And Their Threshold Quantity) Table 1", "International Maritime Dangerous Goods Requirements (IMDG Code)", "Australia Dangerous Goods Code (ADG Code) - List of Emergency Action Codes", "International Air Transport Association (IATA) Dangerous Goods Regulations", "Australia - Northern Territories Work Health and Safety National Uniform Legislation Regulations - Restricted hazardous chemicals", "Australia - Tasmania - Work Health and Safety Regulations 2012 - Restricted hazardous chemicals", "Australia Work Health and Safety Regulations 2011 - Restricted hazardous chemicals", "Australia - South Australia - Work Health and Safety Regulations 2012 - Restricted hazardous chemicals", "Australia - New South Wales - Work Health and Safety Regulation 2011 Restricted hazardous chemicals", "Australia - Queensland Work Health and Safety Regulation - Restricted hazardous chemicals", "Australia - Western Australia Hazardous Substances Prohibited for Specified Uses or Methods of Handling", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (STOCK - inorganic chemicals)", "Australia Drinking Water Guideline Values For Physical and Chemical Characteristics", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (STOCK)", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm - Domestic water supply quality", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (Domestic water supply - inorganic chemicals)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia Work Health and Safety Regulations 2011 - Hazardous chemicals at major hazard facilities and their threshold quantity", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "Australia - Queensland Work Health and Safety Regulation - Hazardous chemicals at major hazard facilities (and their threshold quantity)", "Australia National Pollutant Inventory"

#### monomethylamine nitrate(22113-87-7) is found on the following regulatory lists

"International Council of Chemical Associations (ICCA) - High Production Volume List", "Australia Inventory of Chemical Substances (AICS)", "OECD List of High Production Volume (HPV) Chemicals", "Regulations concerning the International Carriage of Dangerous Goods by Rail - Table A: Dangerous Goods List - RID 2013 (English)", "International Maritime Dangerous Goods Requirements (IMDG Code) - Substance Index", "Australia Explosives Code (AE Code)", "Australia Dangerous Goods Code (ADG Code) - Dangerous Goods List", "International Maritime Dangerous Goods Requirements (IMDG Code)", "Australia Dangerous Goods Code (ADG Code) - List of Emergency Action Codes", "International Air Transport Association (IATA) Dangerous Goods Regulations", "Australia National Pollutant Inventory"

#### sodium nitrate(7631-99-4) is found on the following regulatory lists

"International Council of Chemical Associations (ICCA) - High Production Volume List", "Australia Inventory of Chemical Substances (AICS)", "OECD List of High Production Volume (HPV) Chemicals", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Council of Australian Governments (COAG) Precursor Chemicals of Security Concern", "Australia Council of Australian Governments (COAG) Chemicals of Security Concern", "GESAMP/EHS Composite List - GESAMP Hazard Profiles", "Fisher Transport Information", "Sigma-Aldrich Transport Information", "International Numbering System for Food Additives", "Regulations concerning the International Carriage of Dangerous Goods by Rail - Table A: Dangerous Goods List - RID 2013 (English)", "International Maritime Dangerous Goods Requirements (IMDG Code) - Substance Index", "Australia Dangerous Goods Code (ADG Code) - Dangerous Goods List", "International Maritime Dangerous Goods Requirements (IMDG Code)", "Australia Dangerous Goods Code (ADG Code) - List of Emergency Action Codes", "International Air Transport Association (IATA) Dangerous Goods Regulations", "Australia - Northern Territories Work Health and Safety National Uniform Legislation Regulations - Restricted hazardous chemicals", "Australia - Tasmania - Work Health and Safety Regulations 2012 - Restricted hazardous chemicals", "Australia Work Health and Safety Regulations 2011 - Restricted hazardous chemicals", "Australia - South Australia - Work Health and Safety Regulations 2012 - Restricted hazardous chemicals", "Australia - New South Wales - Work Health and Safety Regulation 2011 Restricted hazardous chemicals", "Australia - Queensland Work Health and Safety Regulation - Restricted hazardous chemicals", "Australia - Western Australia Hazardous Substances Prohibited for Specified Uses or Methods of Handling", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (STOCK - inorganic chemicals)", "Australia Drinking Water Guideline Values For Physical and Chemical Characteristics", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (STOCK)", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm - Domestic water supply quality", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (Domestic water supply - inorganic chemicals)", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)", "Australia National Pollutant Inventory"

#### aluminium powder uncoated(7429-90-5) is found on the following regulatory lists

"Australia Inventory of Chemical Substances (AICS)", "OECD List of High Production Volume (HPV) Chemicals", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Exposure Standards", "Australia Hazardous Substances Information System - Consolidated Lists", "WHO Guidelines for Drinking-water Quality - Chemicals for which guideline values have not been established", "Sigma-Aldrich Transport Information", "Acros Transport Information", "International Numbering System for Food Additives", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (IRRIg - inorganic chemicals)", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (STOCK - inorganic chemicals)", "Australia Drinking Water Guideline Values For Physical and Chemical Characteristics", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (AQUA/1 to 6 - inorganic chemicals)", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (STOCK)", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm - Domestic water supply quality", "Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (Domestic water supply - inorganic chemicals)", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (Aquatic habitat)", "Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (IRRIg)", "Regulations concerning the International Carriage of Dangerous Goods by Rail - Table A: Dangerous Goods List - RID 2013 (English)", "International Maritime Dangerous Goods Requirements (IMDG Code) - Substance Index", "Australia Dangerous Goods Code (ADG Code) - Dangerous Goods List", "International Maritime Dangerous Goods Requirements (IMDG Code)", "Australia Dangerous Goods Code (ADG Code) - List of Emergency Action Codes", "International Air Transport Association (IATA) Dangerous Goods Regulations"

#### pentaerythritol tetranitrate(78-11-5) is found on the following regulatory lists

"Australia Inventory of Chemical Substances (AICS)", "OECD List of High Production Volume (HPV) Chemicals", "Australia Dangerous Goods Code (ADG Code) - Goods Too Dangerous To Be Transported", "Australia Hazardous Substances Information System - Consolidated Lists", "International Air Transport Association (IATA) Dangerous Goods Regulations - Prohibited List Passenger and Cargo Aircraft", "International Air Transport Association (IATA) Dangerous Goods Regulations", "Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4", "Regulations concerning the International Carriage of Dangerous Goods by Rail - Table A: Dangerous Goods List - RID 2013 (English)", "International Maritime Dangerous Goods Requirements (IMDG Code) - Substance Index", "Regulations concerning the International Carriage of Dangerous Goods by Rail - Table A: Dangerous Goods List (RID 2009) Prohibited & Restricted List", "Australia Explosives Code (AE Code)", "Australia Dangerous Goods Code (ADG Code) - Dangerous Goods List", "International Maritime Dangerous Goods Requirements (IMDG Code)"

## SECTION 16 Other information

### Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

[www.chemwatch.net/references](http://www.chemwatch.net/references)

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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