

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Product Name:** **BULK SUBTEK PRODUCTS**

**Other name(s):** Subtek, Subtek Eclipse, Subtek Velcro, Subtek Charge, Subtek Control

**Recommended use of the chemical and restrictions on use:** Mining explosive.

**Supplier:** Orica Australia Pty Ltd  
**ABN:** 99 004 117 828  
**Street Address:** 1 Nicholson Street  
Melbourne 3000  
Australia

**Telephone Number:** +61 3 9665 7111  
**Facsimile:** +61 3 9665 7937  
**Emergency Telephone:** **1 800 033 111 (ALL HOURS)**

## 2. HAZARDS IDENTIFICATION

Classified as Dangerous Goods by the criteria of the Australian Code for the Transport of Explosives by Road and Rail; DANGEROUS GOODS.

This material is hazardous according to Safe Work Australia; HAZARDOUS SUBSTANCE.

**Classification of the substance or mixture:**

Explosives - Division 1.1  
Eye Irritation - Category 2A

**SIGNAL WORD:** DANGER



**Hazard Statement(s):**

H201 Explosive; mass explosion hazard.  
H319 Causes serious eye irritation.

**Precautionary Statement(s):**

**Prevention:**

P210 Keep away from heat / sparks / open flames / hot surfaces. No smoking.  
P230 Keep wetted with water.  
P240 Ground / bond container and receiving equipment.  
P250 Do not subject to grinding / shock / friction / impact / electrical energy from extraneous source (lighting, static electricity, stray currents, galvanic electricity or electromagnetic radiation) or any form of heating.  
P264 Wash hands thoroughly after handling.  
P280 Wear protective gloves / protective clothing / eye protection / face protection.

# Safety Data Sheet

**Response:**

P370+P380 In case of fire: Evacuate area.

P372 Explosion risk in case of fire.

P373 DO NOT fight fire when fire reaches explosives.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313 If eye irritation persists: Get medical advice/attention.

**Storage:**

P401 Store in accordance with AS2187.1 in a well ventilated magazine.

**Disposal:**

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**Poisons Schedule (SUSMP):** None allocated.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

| Components                                  | CAS Number | Proportion | Hazard Codes |
|---|------------|------------|--------------|
| Ammonium nitrate                            | 6484-52-2  | >60%       | H272 H319    |
| Distillates, petroleum, hydrotreated middle | 64742-46-7 | 0-<10%     | H304         |
| Vegetable oils                              | -          | 0-<10%     | -            |
| Non hazardous component(s)                  | -          | to 100%    | -            |

## 4. FIRST AID MEASURES

For advice, contact a Poisons Information Centre (e.g. phone Australia 131 126; New Zealand 0800 764 766) or a doctor.

**Inhalation:**

Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. If patient finds breathing difficult and develops a bluish discolouration of the skin (which suggests a lack of oxygen in the blood - cyanosis), ensure airways are clear of any obstruction and have a qualified person give oxygen through a face mask. Apply artificial respiration if patient is not breathing. Seek immediate medical advice.

**Skin Contact:**

If skin contact occurs, remove contaminated clothing and wash skin with running water. If irritation occurs seek medical advice. Nitrates can be absorbed through cut, burnt or broken skin. Launder contaminated clothing before reuse. For skin burns, cover with a clean, dry dressing until medical help is available.

**Eye Contact:**

If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre or a doctor, or for at least 15 minutes.

**Ingestion:**

Rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Seek medical advice.

# Safety Data Sheet



## **Indication of immediate medical attention and special treatment needed:**

Treat symptomatically. Explosive material. Shrapnel from detonation may cause burns, wounds and bruises - treat symptomatically. May cause methemoglobinemia. Treat as for exposure to nitrates. For ammonium nitrate: Clinical findings: The smooth muscle relaxant effect of nitrate salts may lead to headache, dizziness and marked hypotension.

Cyanosis is clinically detectable when approximately 15% of the haemoglobin has been converted to methaemoglobin (ie. ferric iron).

Symptoms such as headache, dizziness, weakness and dyspnoea occur when methaemoglobin concentrations are 30% to 40%; at levels of about 60%, stupor, convulsions, coma and respiratory paralysis occur and the blood is a chocolate brown colour. At higher levels death may result. Spectrophotometric analysis can determine the presence and concentration of methaemoglobin in blood.

Treatment:

1. Give 100% oxygen.
  2. In cases of (a) ingestion: use gastric lavage, (b) contamination of skin (unburnt or burnt): continue washing to remove salts.
  3. Observe blood pressure and treat hypotension if necessary.
  4. When methaemoglobin concentrations exceed 40% or when symptoms are present, give methylene blue 1 to 2 mg/kg body weight in a 1% solution by slow intravenous injection. If cyanosis has not resolved within one hour a second dose of 2 mg/kg body weight may be given. The total dose should not exceed 7 mg/kg body weight as unwanted effects such as dyspnoea, chest pain, vomiting, diarrhoea, mental confusion and cyanosis may occur. Without treatment methaemoglobin levels of 20-30% revert to normal within 3 days.
  5. Bed rest is required for methaemoglobin levels in excess of 40%.
  6. Continue to monitor and give oxygen for at least two hours after treatment with methylene blue.
  7. Consider transfer to centre where haemoperfusion can be performed to remove the nitrates from the blood if the condition of the patient is unstable.
  8. Following inhalation of oxides of nitrogen the patient should be observed in hospital for 24 hours for delayed onset of pulmonary oedema.
- Further observation for 2-3 weeks may be required to detect the onset of the inflammatory changes of bronchiolitis fibrosa obliterans.

## **5. FIRE FIGHTING MEASURES**

### **Suitable Extinguishing Media:**

Do not fight fires involving explosives.

**Hazchem or Emergency Action Code:** E

### **Specific hazards arising from the substance or mixture:**

Explosive material. On burning under confined or semi-confined conditions, some oxides of nitrogen and/or carbon will be present. Brown fumes indicate the presence of toxic oxides of nitrogen.

### **Special protective equipment and precautions for fire-fighters:**

Explosive material. In case of small fire where the actual explosive is not involved, carefully remove explosive to a safe distance, otherwise evacuate area immediately and allow to burn. Do NOT fight fire. A major fire may involve a risk of explosion. Mass explosion hazard. Severe explosive hazard when shocked or exposed to heat. Confinement of burning material may result in detonation. An adjacent detonation may also involve the risk of explosion.

## **6. ACCIDENTAL RELEASE MEASURES**

# Safety Data Sheet



## Emergency procedures/Environmental precautions:

Clear area of all unprotected personnel. Shut off all possible sources of ignition. Avoid friction and impact. Wear protective equipment to prevent skin and eye contact and inhalation of vapours/dusts. In the case of a transport accident notify the Police, Explosives Inspector and Orica Australia Pty Ltd (Telephone: 1800 033 111 -- 24 hour service) and/or Orica New Zealand Pty Ltd (Telephone: 0800 734 607 -- 24 hour service). If contamination of sewers or waterways has occurred advise local emergency services.

## Personal precautions/Protective equipment/Methods and materials for containment and cleaning up:

Handle with care. Contain - prevent run off into drains and waterways. Collect with non-metallic implements. Use a spark-free shovel. Collect in properly labelled containers, with loose fitting lids, for disposal.

## 7. HANDLING AND STORAGE

### Precautions for safe handling:

Handle with care. Avoid skin and eye contact and breathing in vapour/dust. Avoid all contact with other chemicals. Keep out of reach of children. Do NOT subject the material to impact, friction between hard surfaces nor to any form of heating.

### Conditions for safe storage, including any incompatibilities:

Store material in a well ventilated magazine suitably licensed for Class 1.1D Explosives. Do not store detonators in an explosives magazine. Store away from incompatible materials described in Section 10. Store in a cool, dry, well ventilated place and out of direct sunlight. Store away from sources of heat or ignition. Store away from strong acids, strong alkalis, nitrites, chlorates, chlorides and permanganates. Ammonium Nitrate is incompatible with, and must be stored away from, tetranitromethane, dichloroisocyanuric acid, trichloroisocyanuric acid, any bromate, chlorate, chlorite, hypochlorite or chloroisocyanurate or any inorganic nitrite. Keep containers closed when not in use - check regularly for leaks.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control Parameters:** No value assigned for this specific material by Safe Work Australia. However, Workplace Exposure Standard(s) for constituent(s) and decomposition product(s):

Oil mist, refined mineral: 8hr TWA = 5 mg/m<sup>3</sup>

Nitrogen dioxide: 8hr TWA = 5.6 mg/m<sup>3</sup> (3 ppm), 15 min STEL = 9.4 mg/m<sup>3</sup> (5 ppm)

As published by Safe Work Australia Workplace Exposure Standards for Airborne Contaminants.

TWA - The time-weighted average airborne concentration of a particular substance when calculated over an eight-hour working day, for a five-day working week.

These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

### Appropriate engineering controls:

Ensure ventilation is adequate and that air concentrations of components are controlled below quoted Workplace Exposure Standards.

# Safety Data Sheet



## Individual protection measures, such as Personal Protective Equipment (PPE):

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

Orica Personal Protection Guide No. 1, 1998: C - OVERALLS, SAFETY SHOES, CHEMICAL GOGGLES, GLOVES.



Wear overalls, chemical goggles and impervious gloves. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

|                                       |  |
|---------------------------------------|--|
| <b>Physical state:</b>                | Emulsion . Freshly prepared bulk explosive is hot (60-70°C). |
| <b>Colour:</b>                        | Grey to Cream mixture . May be dyed.                         |
| <b>Odour:</b>                         | Negligible   |
| <b>Solubility:</b>                    | Insoluble in water.  |
| <b>Specific Gravity:</b>              | 1.19 (approx) @ 20°C   |
| <b>Vapour Pressure (20 °C):</b>       | N Av   |
| <b>Flash Point (°C):</b>              | Not applicable   |
| <b>Autoignition Temperature (°C):</b> | N Av   |
| <b>Melting Point/Range (°C):</b>      | N Av   |
| <b>Boiling Point/Range (°C):</b>      | N Av   |
| <b>Decomposition Point (°C):</b>      | N Av   |
| <b>pH:</b>                            | N Av   |
| <b>Viscosity:</b>                     | N Av   |

## 10. STABILITY AND REACTIVITY

|  |  |
|--|--|
| <b>Reactivity:</b>                         | Explosive.   |
| <b>Chemical stability:</b>                 | Explosive material. Avoid ignition sources, static electricity discharge and friction. Detonation may occur from heavy impact or excessive heating, particularly under confinement.  |
| <b>Possibility of hazardous reactions:</b> | Explosive material. Detonation may occur from heavy impact or excessive heating, particularly under confinement. Explosion may result due to shock, friction, fire and other sources of ignition. Explosion creates the potential for shrapnel. Hazardous polymerisation will not occur. |
| <b>Conditions to avoid:</b>                | Avoid exposure to heat, sources of ignition, and open flame. Avoid contact with combustible substances. Avoid contact with other chemicals. Avoid build up of static electricity. Avoid friction.  |

# Safety Data Sheet



**Incompatible materials:** Incompatible with strong alkalis. Incompatible with strong acids. Incompatible with combustible materials. Incompatible with nitrites, chlorates, chlorides and permanganates. Ammonium nitrate is a powerful oxidising agent; it is incompatible with tetranitromethane, dichloroisocyanuric acid, trichloroisocyanuric acid, bromates, chlorates, chlorites, hypochlorites, perchlorates, permanganates, chloroisocyanurate, nitrites, powdered metals.

**Hazardous decomposition products:** Oxides of nitrogen. Oxides of carbon. When heated to decomposition (unconfined) ammonium nitrate produces nitrous oxide, white ammonium nitrate fumes and water. When mixed with strong acids, and occasionally during blasting, it produces an irritating toxic brown gas, mostly of nitrogen dioxide. When molten may decompose violently due to shock or pressure.

## 11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

**Ingestion:** Swallowing can result in nausea, vomiting, diarrhoea, and abdominal pain. Swallowing large amounts may result in headaches, dizziness and a reduction in blood pressure (hypotension).

**Eye contact:** An eye irritant.

**Skin contact:** Contact with skin may result in irritation. Will have a degreasing action on the skin. Repeated or prolonged skin contact may lead to irritant contact dermatitis. Can be absorbed through cut, broken, or burnt skin with resultant adverse effects. See effects as noted under 'Inhalation'. Contact with hot material may cause skin burns. Shrapnel from detonation may cause burns and wounds to the skin and eyes.

**Inhalation:** Material may be irritant to the mucous membranes of the respiratory tract (airways). Blasting may produce a toxic brown gas of nitrogen dioxide. Inhalation of the gas may result in chest discomfort, shortness of breath and possible pulmonary oedema, the onset of which may be delayed.

Absorption of ammonium nitrate by inhalation, ingestion or through burnt or broken skin may cause dilation of blood vessels by direct smooth muscle relaxation and may also cause methaemoglobinaemia.

**Acute toxicity:** No LD50 data available for the product. For the constituent AMMONIUM NITRATE:  
Oral LD50 (rat): 2217 mg/kg

**Serious eye damage/irritation:** Irritant.

**Chronic effects:** No information available for the product.

In humans and animals methaemoglobinaemia has occurred under untreated circumstances following the ingestion of nitrates.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity** Avoid contaminating waterways.

# Safety Data Sheet



**Aquatic toxicity:** Ammonium nitrate was evaluated at 5, 10, 25 and 50 mg (NH<sub>4</sub><sup>+</sup>)/L. The fertility of Daphnia magna was decreased at 50 mg/L. Post embryonic growth of crustacea was impaired at 10, 25 and 50 mg/L.

## 13. DISPOSAL CONSIDERATIONS

### Disposal methods:

Refer to Waste Management Authority. Dispose of contents/container in accordance with local/regional/national/international regulations. Dispose of material through a licensed waste contractor. Small quantities of damaged or deteriorated explosives may be destroyed by inclusion in a blast hole containing good explosive(s). For large quantities of damaged or deteriorated explosives notify Orica Australia Pty Ltd and/or Orica New Zealand Pty Ltd.

## 14. TRANSPORT INFORMATION

### Road and Rail Transport

Classified as Dangerous Goods by the criteria of the Australian Code for the Transport of Explosives by Road and Rail; DANGEROUS GOODS.



**UN No:** 0241  
**Transport Hazard Class:** 1.1 D Explosive  
**Proper Shipping Name or Technical Name:** EXPLOSIVE, BLASTING, TYPE E  
**Hazchem or Emergency Action Code:** E

### Marine Transport

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; DANGEROUS GOODS.

**UN No:** 0241  
**Transport Hazard Class:** 1.1 D Explosive  
**Proper Shipping Name or Technical Name:** EXPLOSIVE, BLASTING, TYPE E

**IMDG EMS Fire:** F-B  
**IMDG EMS Spill:** S-X

### Air Transport

TRANSPORT PROHIBITED under the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air in Passenger and Cargo Aircraft, and Cargo Aircraft Only.

## 15. REGULATORY INFORMATION

### Classification:

This material is hazardous according to Safe Work Australia; HAZARDOUS SUBSTANCE.

### Classification of the substance or mixture:

Explosives - Division 1.1  
Eye Irritation - Category 2A

Product Name: BULK SUBTEK PRODUCTS  
Substance No: 00000009249

Issued: 10/12/2014  
Version: 3

# Safety Data Sheet

**Hazard Statement(s):**

H201 Explosive; mass explosion hazard.

H319 Causes serious eye irritation.

**Poisons Schedule (SUSMP):** None allocated.

All the constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS).

## 16. OTHER INFORMATION

'Registry of Toxic Effects of Chemical Substances'. Ed. D. Sweet, US Dept. of Health & Human Services: Cincinnati, 2014.

This safety data sheet has been prepared by Orica Toxicology & SDS Services.

**Reason(s) for Issue:**

5 Yearly Revised Primary SDS

Alignment to Safe Work Australia requirements

Alignment to HSNO requirements

Change in Personal Protection Requirements

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since Orica Limited cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their Orica representative or Orica Limited at the contact details on page 1.

Orica Limited's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.