

SAFETY DATA SHEET



Revision date: 19-Aug-2020

Revision Number 6

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product identifier

Product Name AMEX
Product Code(s) 000022013202

Other means of identification

Proper shipping name EXPLOSIVE, BLASTING, TYPE B
UN number 0082
Synonyms Ammonium nitrate/fuel oil, ANFO
Pure substance/mixture Mixture

Recommended use of the chemical and restrictions on use

Recommended use Blasting explosive. Packaged product.
Uses advised against Do not use in reactive ground.

Supplier

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

Telephone Number: +61 3 9665 7111
Facsimile: +61 3 9665 7937

Emergency telephone number

Emergency telephone number **AUSTRALIA: 1 800 033 111 (ALL HOURS)**
INTERNATIONAL AUSTRALIA: +61 3 9663 2130 (ALL HOURS)

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

2. HAZARDS IDENTIFICATION

GHS Classification

Classified as dangerous goods in accordance with the Australian Code for the Transport of Explosives by Road and Rail.

Classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS).

Explosives	Division 1.1
Serious eye damage/eye irritation	Category 2A
Carcinogenicity	Category 2

SIGNAL WORD

Danger

Label elementsExploding bomb
Exclamation mark
Health hazard**Hazard statements**H201 - Explosive; mass explosion hazard
H319 - Causes serious eye irritation
H351 - Suspected of causing cancer

The following health/environmental hazard categories fall outside the scope of the Workplace Health and Safety Regulations:
H412 - Harmful to aquatic life with long lasting effects

Precautionary Statements - Prevention

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
Do not subject to grinding/shock/friction
Wash hands thoroughly after handling
Wear eye protection/ face protection

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
In case of fire: Evacuate area
Explosion risk in case of fire
DO NOT fight fire when fire reaches explosives

Precautionary Statements - Storage

Store in accordance with:
AS2187.1 in a well ventilated magazine.
Store locked up

Precautionary Statements - Disposal

Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

Other hazards which do not result in classification

Harmful to aquatic life with long lasting effects

Poisons Schedule (SUSMP) None allocated

3. COMPOSITION/INFORMATION ON INGREDIENTS**Substance**

Not applicable

Mixture

Chemical name	CAS No.	Weight-%
Ammonium nitrate	6484-52-2	>90%

Fuels, diesel	68334-30-5	<10%
Ingredients determined not to be hazardous	-	<1%

4. FIRST AID MEASURES

Description of first aid measures

General advice	For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor. Take a copy of the Safety Data Sheet when going for medical treatment.
Emergency telephone number	Poisons Information Center, Australia: 13 11 26 Poisons Information Center, New Zealand: 0800 764 766
Inhalation	Remove to fresh air and keep at rest in a position comfortable for breathing. Administer oxygen if breathing is difficult. If breathing has stopped, give artificial respiration. Get medical attention immediately.
Eye contact	Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing. Get medical attention immediately if symptoms occur.
Skin contact	Wash off immediately with plenty of water. Get medical attention if irritation develops and persists. Take off contaminated clothing and wash before reuse.
Ingestion	Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person.
Self-protection of the first aider	Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. See section 8 for more information.

Most important symptoms and effects, both acute and delayed

Symptoms	May cause redness and tearing of the eyes. Nitrates can be absorbed through cut, burnt or broken skin.
-----------------	--

Indication of any immediate medical attention and special treatment needed

Note to physicians	<p>Treat symptomatically. Explosive material. Shrapnel from detonation may cause burns, wounds and bruises. Treat as for exposure to nitrates. May cause methemoglobinemia.</p> <p>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 (ferric iron). Symptoms such as headache, dizziness, weakness and dyspnoea occur when methemoglobin 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 methemoglobin in the blood.</p> <ol style="list-style-type: none"> 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 or 2 mg/kg body weight in a 1% solution by slow intravenous injection. If cyanosis has not been 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

Suitable Extinguishing Media Do not fight fires involving explosives.

Unsuitable extinguishing media .

Specific hazards arising from the chemical

Specific hazards arising from the chemical Explosive. May be ignited by heat, sparks or flames. May explode from friction, heat or contamination. Risk of explosion by shock or heating under confinement. 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.

Hazardous combustion products Carbon oxides. Nitrogen oxides. Ammonium nitrate fumes. Ammonia.

Special protective actions for fire-fighters

Special protective equipment for fire-fighters In the case of a small fire, if actual explosive is not burning, carefully remove as much explosive as possible to a safe distance. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. However, if explosive is burning, evacuate area immediately and allow to burn. DO NOT fight fire.

A major fire may involve a risk of explosion. An adjacent detonation may also involve the risk of explosion. Mass explosion hazard.

Hazchem code E

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Explosive material. Evacuate personnel to safe areas. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not subject to grinding/shock/friction. Use personal protective equipment as required. Avoid contact with skin, eyes and inhalation of vapors. Ensure adequate ventilation.

Other information Refer to protective measures listed in Sections 7 and 8.

In the case of a transport accident notify the Police, Regulatory Authorities and Orica Australia Pty Ltd (Telephone: 1800 033 111 -- 24 hour service) and/or Orica New Zealand Ltd (Telephone: 0800 734 607 -- 24 hour service) or Orica International (Telephone: +61 3 9663 2130 -- 24 hour service Australia).

For emergency responders Explosive material. Remove all sources of ignition. Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions Keep out of waterways. Local authorities should be advised if significant spillages cannot be contained.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so. Keep out of drains, sewers, ditches and waterways.

Methods for cleaning up Handle with care. Take up with inert, damp, non-combustible material using clean non-sparking tools and place into loosely covered plastic containers for later disposal. After cleaning, flush away traces with water.

7. HANDLING AND STORAGE**Precautions for safe handling**

Advice on safe handling Keep out of reach of children. Handle with care. Avoid contact with skin and eyes. Avoid breathing vapors or mists. Use personal protection equipment. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharges. Avoid contamination with other substances.

General hygiene considerations Contaminated work clothing should not be allowed out of the workplace. Do not get in eyes, on skin, or on clothing. Wear suitable gloves and eye/face protection.

Conditions for safe storage, including any incompatibilities

Storage Conditions Store material in a well ventilated magazine suitably licensed for the explosives hazard classification. Do not store with other explosives products that have an incompatible explosives hazard classification (for example detonators must not be stored with blasting/high explosives). Store in accordance with local regulations. Store in a cool, dry area away from potential sources of heat, open flames, sunlight or other chemicals. Store away from strong acids, strong alkalis, nitrites, chlorates, chlorides and permanganates. Store away from other materials. Protect from physical damage.

Incompatible materials Incompatible with strong acids and bases. Incompatible with combustible materials. Incompatible with permanganates. Ammonium nitrate is a powerful oxidising agent. Ammonium nitrate is incompatible with, and must be stored away from, tetranitromethane, dichloroisocyanuric acid, trichloroisocyanuric acid, bromates, chlorates, chlorites, hypochlorites, perchlorates, chloroisocyanurates, nitrites, powdered metals.

Poisons Schedule (SUSMP) None allocated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Control parameters**

Exposure Limits This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

Chemical name	Australia	ACGIH TLV
Fuels, diesel 68334-30-5		TWA: 100 mg/m ³ total hydrocarbons inhalable fraction and vapor S*

Decomposition product(s):

Nitrogen dioxide: 8hr TWA = 5.6 mg/m³ (3 ppm), 15 min STEL = 9.4 mg/m³ (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.

STEL (Short Term Exposure Limit) - the airborne concentration of a particular substance calculated as a time-weighted average over 15 minutes, which should not be exceeded at any time during a normal eight hour work day. According to current knowledge this concentration should neither impair the health of, nor cause undue discomfort to, nearly all workers.

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

Engineering controls

Apply technical measures to comply with the occupational exposure limits. Eyewash stations. Ventilation systems.

If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements.

Individual protection measures, such as personal protective equipment

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.

OVERALLS, SAFETY SHOES, CHEMICAL GOGGLES, GLOVES.



Eye/face protection

Goggles.

Skin and body protection

Overalls. Protective shoes or boots.

Hand protection

Protective gloves.

Respiratory protection

No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Environmental exposure controls

No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state

Solid

Appearance

Granules Packaged product.

Color Off-white or Pink
Odor Slight Kerosene / Diesel
Odor threshold No information available.

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	No data available	None known
Melting point / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash point	>61 C	None known
Evaporation rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Relative density	0.8 @ 20C	None known
Water solubility	Partially soluble	None known
Solubility(ies)	No data available	None known
Partition coefficient	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Explosive properties	Explosive; mass explosion hazard	

Other information**10. STABILITY AND REACTIVITY**Reactivity

Reactivity Explosive.

Chemical stability

Stability Explosive properties. Risk of explosion by shock, friction, fire or other sources of ignition. Capable of detonation, explosive decomposition, or explosive reaction but requires a strong initiating source or must be heated under confinement before initiation. Detonation may occur from static electricity discharge or mechanical/heavy impact, particularly under confinement.

Explosion data

Sensitivity to mechanical impact Yes. However, this type of explosive is relatively insensitive.

Sensitivity to static discharge Yes. However, this type of explosive is relatively insensitive.

Possibility of hazardous reactions

Possibility of hazardous reactions A major fire may involve a risk of explosion. An adjacent detonation may also involve the risk of explosion. Mass explosion hazard. Explosion may result due to shock, friction, fire or other sources of ignition. Detonation may occur from heavy impact or excessive heating. Explosion creates the potential for shrapnel.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid

Conditions to avoid Heat. Keep away from open flames, hot surfaces and sources of ignition. Static discharge (electrostatic discharge). Do not subject to grinding/shock/friction. Avoid contact with other chemicals. Avoid contact with combustible substances. Protect from moisture.

Incompatible materials

Incompatible materials Incompatible with strong acids and bases. Incompatible with combustible materials. Incompatible with permanganates. Ammonium nitrate is a powerful oxidising agent. Ammonium nitrate is incompatible with, and must be stored away from, tetranitromethane, dichloroisocyanuric acid, trichloroisocyanuric acid, bromates, chlorates, chlorites, hypochlorites, perchlorates, chloroisocyanurates, nitrites, powdered metals.

Hazardous decomposition products

Hazardous decomposition products Carbon oxides. Nitrogen oxides. Ammonium nitrate fumes. Ammonia. 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 nitrogen dioxide. When molten it may decompose violently due to shock or pressure.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Information on likely routes of exposure

Product Information	No adverse health effects expected if the chemical is handled in accordance with this Safety Data Sheet and the chemical label. Symptoms or effects that may arise if the chemical is mishandled and overexposure occurs are:
Inhalation	May cause irritation of respiratory tract. Causes headache, drowsiness or other effects to the central nervous system. 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.
Eye contact	Causes eye irritation.
Skin contact	May cause irritation. Prolonged skin contact may defat the skin and produce dermatitis. Shrapnel from detonation may cause burns, wounds and bruises. Nitrates can be absorbed through cut, burnt or broken skin. Further information is provided under 'Chronic Effects'.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Ingestion of larger amounts may cause defects to the central nervous system (e.g. dizziness, headache). May cause a lowering of blood pressure (hypotension).
Symptoms	May cause redness and tearing of the eyes.

Numerical measures of toxicity - Product Information

No information available.

Numerical measures of toxicity - Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Ammonium nitrate	= 2217 mg/kg (Rat)	-	> 88.8 mg/L (Rat) 4 h
Fuels, diesel	= 7500 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	= 4.6 mg/L (Rat) 4 h

See section 16 for terms and abbreviations

Delayed and immediate effects as well as chronic effects from short and long-term exposure**Skin corrosion/irritation** No information available.**Serious eye damage/eye irritation** Causes serious eye irritation.**Respiratory or skin sensitization** No information available.**Germ cell mutagenicity** No information available.**Carcinogenicity** Suspected of causing cancer. Contains a known or suspected carcinogen.

Chemical name	Australia
Fuels, diesel - 68334-30-5	Carc. 2

Reproductive toxicity No information available.**STOT - single exposure** No information available.**STOT - repeated exposure** No information available.**Aspiration hazard** Not classified.**Chronic effects:** No information available for the products.

NITRATES: Absorption of nitrates by ingestion, inhalation or through burnt or broken skin may cause dilation of the blood vessels by direct smooth muscle relaxation with a subsequent lowering of blood pressure and may also cause breathing difficulties, blueness of the skin (cyanosis) and methaemoglobinaemia.

For diesel: Available evidence from animal studies indicate that repeated or prolonged exposure to a component of this material could result in effects on the skin. This material contains within the diesel oil component of this formulation polycyclic aromatic hydrocarbons (PAHs). Some PAHs have been implicated as potential skin carcinogens in humans under conditions of poor personal hygiene, prolonged or repeated skin contact and exposure to sunlight. Toxic effects are unlikely to occur if good personal hygiene is practised.

Diesel fuel has been classified by the International Agency for Research on Cancer (IARC) as a Group 3 agent. Group 3 - The agent is not classifiable as to its carcinogenicity to humans.

Diesel fuel has been shown to be carcinogenic in animal tests and has caused mutations in vitro. Repeated dermal exposures to high concentrations in test animals resulted in reduced litter size and litter weight, and increased foetal resorptions at maternally toxic doses.

12. ECOLOGICAL INFORMATION**Ecotoxicity****Ecotoxicity** Keep out of waterways. May cause long lasting harmful effects to aquatic life.

Ammonium nitrate is a plant nutrient. Large scale contamination may kill vegetation and cause poisoning in livestock and poultry.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Ammonium nitrate	-	LC50: 65 - 85mg/L (48h, <i>Cyprinus carpio</i>)	-	-
Fuels, diesel	-	LC50: =35mg/L (96h,	-	-

		Pimephales promelas)	
--	--	----------------------	--

Persistence and degradability

Persistence and degradability No information available.

Bioaccumulative potential

Bioaccumulation No information available.

Chemical name	Partition coefficient
Ammonium nitrate	-3.1

Mobility

Mobility in soil No information available.

Other adverse effects

Other adverse effects For diesel oil:. Floats on water. Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

Ammonium nitrate was evaluated at 5, 10, 25 and 50 mg (NH₄⁺)/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**Waste treatment methods**

Waste from residues/unused products Dispose of in accordance with local regulations. Should not be released into the environment. 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**ADG**

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

UN number 0082
Proper shipping name EXPLOSIVE, BLASTING, TYPE B
Hazard class 1.1D
Hazchem code E

IATA

Forbidden

IMDG

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

UN number 0082
UN proper shipping name EXPLOSIVE, BLASTING, TYPE B
Transport hazard class(es) 1.1D
IMDG EMS Fire F-B
IMDG EMS Spill S-Y

15. REGULATORY INFORMATION**Safety, health and environmental regulations/legislation specific for the substance or mixture****National regulations****Australia**

Classified as dangerous goods in accordance with the Australian Code for the Transport of Explosives by Road and Rail.

Classified as a hazardous chemical in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS).

See section 8 for national exposure control parameters

Poisons Schedule (SUSMP) None allocated

International Inventories

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

Legend:

AICS - Australian Inventory of Chemical Substances

International Regulations

The Montreal Protocol on Substances that Deplete the Ozone Layer Not applicable

The Stockholm Convention on Persistent Organic Pollutants Not applicable

The Rotterdam Convention Not applicable

16. OTHER INFORMATION

Reason(s) For Issue: 5 Yearly Revised Primary SDS

Issuing Date: 19-Aug-2020

This Safety Data Sheet has been prepared by Ixom Operations Pty Ltd (Toxicology and SDS Services).

Revision Note:

The symbol (*) in the margin of this SDS indicates that this line has been revised.

Key or legend to abbreviations and acronyms used in the safety data sheet**Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
C	Carcinogen		

Key literature references and sources for data used to compile the SDS

EPA (Environmental Protection Agency)
Acute Exposure Guideline Level(s) (AEGl(s))

U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
Japan GHS Classification
Australian Industrial Chemicals Introduction Scheme (AICIS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine's PubMed database (NLM PUBMED)
National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
RTECS (Registry of Toxic Effects of Chemical Substances)
World Health Organization

Disclaimer

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 The Supplier 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 Supplier representative or The Supplier at the contact details on page 1.

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

End of Safety Data Sheet