SAFETY DATA SHEET

Ammonium Nitrate Emulsion Blend

ABN: 81 008 668 371

Section 1 – Identification of the Material and Supplier

Product Name
Ammonium nitrate emulsion blend

Other names
ANE blend, Spinifex Emulsion Blend

Recommended use
Emulsion phase component blended with Ammonium Nitrate-Fuel Oil solid granules

Company name
CSBP Limited

Address	State	Postcode
Kwinana Beach Road, KWINANA	Western Australia	6167

Telephone number	Emergency telephone number
(08) 9411 8777 (Australia), +61 8 9411 8777 (Overseas)	1800 093 333 (Australia), +61 8 9411 8444

Section 2 – Hazard Identification

Hazard Classification, including a statement of overall hazardous nature

HAZARDOUS SUBSTANCE.

Ammonium nitrate emulsion blends are classified as hazardous according to Safe Work Australia; HAZARDOUS SUBSTANCE.

DANGEROUS GOODS.

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

Classified as Security Sensitive Ammonium Nitrate under Federal Government legislation

GHS Classification(s)

Explosive	Division 1.1D
Eye Irritation	Category 2A
Carcinogenicity	Category 2

Label elements

Signal word DANGER

Pictogram(s)

Hazard statement(s)

H201	Explosive; mass explosion hazard.
H319	Causes serious eye irritation
H351	Suspected of causing cancer

Prevention statement(s)

P201	Obtain special instructions before use
P202	Do not handle until all safety precautions have been read and understood
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P250	Do not subject to grinding / shock / friction / fire or other sources of ignition.
P264	Wash thoroughly after handling
P280	Wear protective gloves/protective clothing/eye protection/face protection

Response statement(s)

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	If eye irritation persists: Get medical advice/attention.
P337 + P313	If exposed or concerned: Get medical advice/attention
P370 + P380	In case of fire: Evacuate area
P372	Explosion risk in case of fire
P373	DO NOT fight fire when fire reaches explosives

Storage statement(s)

P401	Store in accordance to AS2187.1 in a well ventilated magazine
P405	Store locked up

Disposal statement(s)

P501	Dispose of contents/container in accordance with relevant regulations.

Other hazards

No information provided.

Section 3 – Composition/Information on Ingredients

Chemical identity of ingredients	Proportion of ingredients	CAS Number for ingredients
Ammonium nitrate	> 60 % ($^{wt}/_{wt}$)	6484-52-2
Hydrocarbon (which may include diesel)	< 10% ($^{wt}/_{wt}$)	na
Mineral oil, hydrocarbon solvent, petroleum	< 10% ($^{wt}/_{wt}$)	8012-95-1
Water	10-30% ($^{wt}/_{wt}$)	7732-18-5
Non-hazardous additives	<10% ($^{wt}/_{wt}$)	na

Section 4 – First Aid Measures

First Aid

For advice contact a Poisons Information Centre (Australia 131 126) or a doctor

First Aid Facilities

First aid procedures, equipment, medication and training for the treatment of injury by ammonium nitrate emulsion blend should be in place BEFORE the use commences.

Equipment in place should be:

- Safety shower and eyewash stations immediately accessible in the workplace;

- Eye-wash bottle;
- Fresh, clean cool drinking water;
- Oxygen;
- "Space" or thermal blankets for treating patients for shock;
- Personal protective equipment for use by first aid personnel.

FIRST AID PROCEDURES FOR DEALING WITH THIS PRODUCT AND EXPOSURE TO IT

1. Personal Protection By First Aid Personnel

First aid personnel providing first aid treatment to a patient injured by this product should observe the following precautions for their own personal protection:

- Avoid contact with ammonium nitrate emulsion blend by wearing protective gloves;
- Wear chemical goggles to prevent ammonium nitrate emulsion entering eyes;
- Wear P2 type canister respirator if rescue area is contaminated by airborne ammonium nitrate emulsion mist.

2. Swallowed

If person is conscious, rinse mouth thoroughly with water immediately and give water or milk to drink. DO NOT induce vomiting. Seek immediate medical assistance after swallowing.

3. Eyes

Immediately irrigate with copious quantities of water, while holding eyelids open, for at least 15 minutes. Seek medical immediate attention.

4. Skin

Wash affected areas with copious amounts of water. Remove all contaminated clothing and launder before re-use. Seek medical immediate attention.

5. Inhalation

Remove affected person from exposure to a well ventilated area. Keep warm and at rest. In emergency, if breathing is difficult give oxygen. If the affected person suffers cardiac arrest commence cardio-pulmonary resuscitation immediately. Seek urgent medical attention.

ADVICE TO DOCTOR.

Ammonium nitrate emulsion blend is transported at a temperature range of <50ºC. If ingested, nitrates may be reduced to nitrites by intestinal bacteria. Nitrites may affect the blood (methaemoglobinaemia) and blood vessels (vasodilation and a fall in blood pressure). Effects peak within 30 minutes. Clinical signs of cyanosis appear before other symptoms because of the dark pigmentation of methaemoglobin. Institute cardiac monitoring, especially in patients with coronary, artery or pulmonary disease.

Long Term Complications

Possible carcinogenic properties arising from the diesel fuel component. Ammonium Nitrate itself has no known long term complication.

Further information about the treatment for exposure to this product can be obtained from the Poisons Information Centre on (08) 13 1126 (Australia only)

Section 5 – Fire Fighting Measures

Product flammability

AN Emulsion blends are explosives.

Suitable extinguishing media

Do not fight fires that DIRECTLY involve the explosives. Fires occurring adjacent to the explosives can be fought with suitable extinguishing media.

Hazard from combustion products

Decomposes on heating; emitting irritating white or orange & brown fumes of toxic oxides of nitrogen (NOx)

Special protective precautions and equipment for fire fighters

Wear full protective clothing, including respiratory protection.

WARNING: Explosion risk in case of fire, especially if contaminated or confined. An adjacent detonation may also involve the risk of explosion.
Fire-fighters to wear self-contained breathing apparatus and suitable protective clothing if there is a risk of exposure to products of combustion / decomposition.

WARNING: Explosion risk in case of fire. With an intense fire evacuate the area of all personnel to at least 1000 metres. If safe to do so, remove containers from path of fire. If safe to do so, keep containers and adjacent areas cool with water sprays. Prevent spillage or run-off from entering drains or water courses.

Hazchem Code: E
IMDG EMS Fire: F-B;
IMDG EMS Spill: S-X

Section 6 – Accidental Release Measures

Emergency procedures

Remove all sources of ignition including but not limited to: heat, fire, sparks, friction and electricity

Methods and Materials for containment and clean up

For all spills, evacuate unprotected personnel upwind and out of danger. Remove sources of heat and ignition. Restrict access to spill site. Any spillage should be promptly recovered. Avoid use of absorbents such as sand, earth, or vermiculite as it impacts on the ability to treat, recycle and/or dispose of the Remove sources of heat and ignition.

Small Leaks
Material does not readily flow due to the high viscosity. Recover spilt material into a clean labelled open container for subsequent treatment, recycling and/or disposal

Large Spills
Material does not readily flow due to the high viscosity. Recover into suitable vessels such as IBCs for subsequent treatment, recycling and/or disposal.

Section 7 – Handling and Storage

Precautions for safe handling

Ammonium nitrate emulsion blend spills will not flow but tend to form puddles. The material will be at ambient temperature to warm (less than 50ºC). Avoid washing down with water as the product contains hydrocarbons which may result in environmental impact if wash water enters waterways.

Conditions for safe storage, including any incompatibilities

Store in a well ventilated magazine suitable and approved for Class 1.1D Explosives. Storage away from all sources of heat and energy. Keep containers closed. Keep incompatible materials such as chlorine bleaches, pool chlorine and hypochlorite's. Refer to Section 10.

Section 8 – Exposure Controls/Personal Protection

National exposure standards

No exposure standard exists for this product. However exposure standards exist for the constituents.

Diesel: 5mg/m3 (stable aerosol) for 8 hours' time-weighted average (TWA)
Diesel: 100 mg/m3, SKIN (total hydrocarbons, inhalable) for 8 hours' time-weighted average (TWA)
Diesel: 200 mg/m3 (Vapour) 8 hours' time-weighted average (TWA)

AN Decomposition products:
Nitrogen dioxide: 8hr TWA = 5.6 mg/m3 (3 ppm), 15 min STEL = 9.4 mg/m3 (5 ppm)

Source: ACGIH Exposure Standards.

Biological limit values
No data available.

Engineering controls
Provide ventilation where necessary.

Personal protective equipment
Personal protective equipment (PPE) should be used where other control measures are not practicable or adequate to control exposure. It should be chosen to prevent routine exposure and to protect workers in the case of accidental contact with ammonium nitrate emulsion blend.

Eye/face protection: Wear chemical safety goggles to prevent eye contact.
Skin protection: Wear PVC gloves when handling the product to prevent contact. Wear long trouser and long sleeves to prevent contact.
Respiratory protection: Use P2 type canister respirator where mist or fumes are a problem.
Personal hygiene: Change and wash clothing and PPE, if contaminated, or before storing and/or re-using. Wash hands and face thoroughly after handling and before work breaks, eating, drinking, smoking and using toilet facilities.

Section 9 – Physical and Chemical Properties

Appearance (colour, physical form, shape)
Yellow to cream coloured emulsion with white solid granules within the matrix. Ambient temperature.

Odour
Slight ammoniacal odour maybe present. Diesel odour may be detectable.

pH:
NA

Vapour pressure
NA

Vapour density
Not applicable.

Boiling point/range
NA

Freezing/melting point
NA

Solubility
NA

Specific gravity or density
Specific gravity 1.1-1.3g/cc @ 20ºC

Flash point and method of detecting flash point
Ammonium nitrate emulsion blend has Flash Point of >61 ºC (due to the diesel component – if present).

Upper and lower flammable (explosive) limits in air
Ammonium nitrate emulsion blend is not flammable.

Ignition temperature
Not determined.

Viscosity
NA

Section 10 – Stability and Reactivity

Chemical stability
When stored and handled in accordance with AEISG Code of Practice, ammonium nitrate emulsion blend remains stable.

Conditions to avoid
Store away from sources of heat or fire. Keep away from combustible materials and organic substances. Avoid storage and contamination with chlorine bleaches, pool chlorine and hypochlorites. Do not permit smoking and the use of naked lights in the storage area for ammonium nitrate based products.

Incompatible materials
Ammonium nitrate emulsion blend is incompatible with copper, zinc, or their alloys (i.e., bronze, brass, galvanised metals, etc.), aluminium powder and mild steel.

Hazardous decomposition products
When heated to decomposition (unconfined) produces nitrous oxide, white ammonium nitrate fumes and water. Other hazardous decomposition products include irritating toxic brown fumes of nitrogen oxides (NOx). May evolve nitrogen oxides (nitrous oxide) and ammonium nitrate when heated to decomposition

Hazardous reactions
Contamination of ammonium nitrate emulsion blend with chlorine bleaches, pool chlorine and hypochlorite may result in the formation of explosive nitrogen trichloride. When mixed with strong acid ammonium nitrate emulsion blend produces toxic brown nitrogen dioxide gas. Ammonium nitrate emulsion may react violently with nitrites, chlorates, chlorides and permanganates.

Section 11 – Toxicological Information

HEALTH EFFECTS

When handled in accordance with the guidelines in this material safety data sheet, ammonium nitrate emulsion blend should not present any health effects. If this product is mishandled, symptoms that may arise are:

Acute:

Ammonium nitrate emulsion blend is loaded for transport at temperatures less that 50^{o}C and does not result in thermal burns in contact with eyes and flesh. .

Inhalation:

Material maybe irritant to the mucous membranes of the respiratory tract. Vapours (hydrocarbons) may cause dizziness, headaches and nausea.

Skin:

Contact with skin may cause irritation, with localised redness and subsequently dermatitis. Diesel may cause defatting of the skin after repeated or extended contact

Eye:

Contact with the eye will cause mild to moderate irritation.

Swallowed:

Ingestion may result in symptoms such as nausea, vomiting and diarrhoea. Large amounts may also cause dilation of blood vessels by direct smooth muscle relaxation and methaemoglobinaemia (excessive conversion of haemoglobin to methaemoglobin, which is incapable of binding and carrying oxygen – methaemoglobin is formed when iron in the haem molecule is oxidised from the ferrous to the ferric state). Symptoms include dizziness, abdominal pain, vomiting, bloody diarrhoea, weakness, convulsions and collapse. LD_{50} (Oral, rat) = 2,217 mg/kg, for ammonium nitrate.

Chronic:

Prolonged or repeated exposure to Ammonium nitrate emulsion blend may cause drying of the skin with

cracking and irritation that may lead to dermatitis.

Diesel is suspected of causing cancer. Risk of cancer depends on duration and level of exposure.

Section 12 – Ecological Information

Ecotoxicity
Contamination of waterways is to be avoided.
Ammonium nitrate is of low toxicity to aquatic life and spills may cause algal blooms in static waters.
Diesel component may result in impact to aquatic life.

Persistence and degradability
Ammonium nitrate emulsion blend is expected to have impaired degradability due to the stable emulsion. Once the emulsion has collapsed, the ammonium nitrate can be readily absorbed by the surrounding environment. The diesel and other additives are expected to persist.

Mobility
Not mobile due to the stable emulsion

Environmental fate (exposure)
Diesel: Floats on water, resulting in sheen on water surface that may impact on oxygen transfer.

Ammonium Nitrate:
Acute Toxicity to Fish
48 hr. LC_{50} (*Cyprinus carpio*): 1·15 - 1·72 mg un-ionised NH_3/L; 95 – 102 mg total NH_3/L;
96 hr LC_{50} (Chinook Salmon, rainbow trout, bluegill): 420 -1,360 mg NO_3^-/L;
TL_m (Tadpoles): 910 mg NH_3/L.
Chronic Toxicity to Fish
7 day LC_{50} (Fingerling rainbow trout): 1,065 mg/L.
Acute Toxicity to Aquatic Invertebrates
EC_{50} (*Daphnia magna*): 555 mg/L; 124·9 mg total NH_3/L.
Chronic Toxicity to Invertebrates
Up to 7 days NOEC (*Bullia digitalis*): 300 mg/L.

Bioaccumulative potential
Ammonium nitrate emulsion blend does not show any bio-accumulation phenomena.

Section 13 – Disposal Considerations

Disposal methods and containers
Refer to local State Land Waste Management Authority. Refer to licenced waste disposal organisations for assistance.

Special precautions for landfill or incineration
No data available.

Section 14 – Transport Information

UN Number
0241

UN Proper shipping name
Explosive, Blasting, Type E

Class and subsidiary risk
1·1D

Packing group

None allocated

Special precautions for user

Explosives are incompatible in transport with all other dangerous goods in all quantities except as provided in the Australian Explosives Code.

Hazchem Code: E

IMDG EMS Fire: F-B;

IMDG EMS Spill: S-X

Section 15 – Regulatory Information

Australian regulatory information

Ammonium nitrate emulsion blends are classified as hazardous according to Safe Work Australia; HAZARDOUS SUBSTANCE

Additional national and/or international regulatory information

NA

Classifications

Safe Work Australia criteria are based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

Inventory listing(s)

AUSTRALIA: AICS (Australia Inventory of Chemical Substances)

All components are listed on the AICS; or are exempt.

Section 16 – Other Information

Key / legend to abbreviations and acronyms used in the MSDS

NOHSC	National Occupational Health and Safety Commission
SUSDP	Standard for the Uniform Scheduling of Drugs and Poisons
ES-TWA	Exposure Standard – Time weighted average
ES-STEL	Exposure Standard – Short term exposure level
ES-Peak	Exposure Standard – Peak level
FORS	Federal Office of Road and Safety
LC_{50}:	Lethal concentration 50, median lethal concentration
LD_{50}	Lethal dose 50. The single dose of a substance that causes the death of 50% of an animal population from exposure to the substance by any route other than inhalation
$\%(^{wt}/_{wt})$	Percent amount on a weight per weight basis
$\%(^{wt}/_{vol})$	Percent amount on a weight per volume basis
PPM	Parts per million
TLm	Median Toxic Limit is similar to LC but refers specifically to the concentration which kills 50% of the organisms, in other words the LC_{50}
Zone 1 Class 1	An area in which an explosive gas atmosphere can be expected to occur periodically or occasionally during normal operation. (More than 10 hours per year but less than 1000 hours per year)

Literature references

Occupational Safety and Health Regulations 1996, State Law Publisher, Western Australia.

Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals, Safe Work Australia, December 2015

Australian Code for the Transport of Dangerous Goods by Road and Rail, 7th Edition, Australian Government Publishing Service, Canberra, October 2015.

Chemical Rubber Handbook, D.R. Lide, CRC Press, 65th Edition, Boca Ratón, 1987.

Perry's Chemical Engineers' Handbook, R.H. Perry & D. Green, 6th Edition, McGraw-Hill, New York, 1984.

International Critical Tables of Numerical Data, Physics, Chemistry and Technology, National Research Council, 1st Edition, McGraw-Hill, New York, 1928.

Condensed Chemical Dictionary, G.G Hawley, 8th Edition, Van Nostrand Reinhold, New York, 1950.

Dangerous Properties of Industrial Chemicals, N.I.Sax & R.J. Lewis (Sr), 7th Edition, Van Nostrand Reinhold, New York, 1984.

Patty's Industrial Hygiene and Toxicology, F.A. Patty, 3rd Revised Edition, G.D. & F.E. Clayton (Editors), John Wiley & Sons, New York, 1981.

Matheson Gas Data Book, W.Braker & A.L. Mossman, 6th Edition, Matheson Gas Products, Secaucus, 1980.

Encyclopaedia of Occupational Health and Safety, International Labour Office, 4th Edition, J.M. Stellman (Editor), Geneva, 1998

Kirk-Othmer Encyclopaedia of Chemical Technology, 4th Edition, Wiley InterScience, New York, 1997.

Ullmann's Encyclopaedia of Industrial Chemistry, F. Ulmann, 6th Edition, Wiley Interscience, New York, 2001.

Standard for the Uniform Scheduling of Drugs and Poisons, National Health and Medical Research Council, Australian Government Publishing Service, Canberra, 1992.

Poisons Act 1964, State Law Publisher, Western Australia, Reprinted 22 January 1999.

Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environmant, [NHSC:1003(1991)].

Hazardous Materials Handbook for Emergency Responders, Onguard Training for Life, J. Varela (Editor), Van Nostrand Reinhold, New York, 1996.

Chemwatch www.chemwatch.net

Guidance for the Compilation of Safety Data Sheets for Fertilizer Materials, European Fertilizer Manufacturers Association, online at www.efma.org/Publications/Guidance/Index.asp

Sources for data

No data available.

Important Notes

1. To the best of our knowledge this document complies with the Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice February 2016
2. This safety data sheet summarizes our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this material safety data sheet and consider the information in the context of how the product will be handled and used in the workplace, including in conjunction with other products.
3. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact the Safety and Emergency Services Department, CSBP Limited on (08) 9411 8777 (Australia), +61 8 9411 8777 (Overseas).
4. Our responsibility for products sold, is subject to our terms and conditions, a copy of which is sent to our customers, and is also available on request.
5. CSBP reserves the right to make change to safety data sheets without notice.