

Infosafe No. LPSA1 Issue Date : May 2007 ISSUED by DYNONOB

Product Name : **TITAN® EMULSION 4000 SERIES**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name TITAN® EMULSION 4000 SERIES
Company Name Dyno Nobel Asia Pacific Limited
Address Level 20, 111 Pacific Highway North Sydney
NSW 2060
Emergency Tel. 1800 098 836
Telephone/Fax Tel: +61 2 9968 9000
Number Fax: +61 2 9964 0170
Recommended Use Precursor to a bulk or packaged blasting agent.

2. HAZARDS IDENTIFICATION

Hazard Classification DANGEROUS GOODS
NON-HAZARDOUS SUBSTANCE
Dangerous goods classification according to the Australia Dangerous Goods Code.
Hazard classification according to the criteria of NOHSC.

Risk Phrase(s) R8 Contact with combustible material may cause fire.

Safety Phrase(s) S17 Keep away from combustible material.
S34 Avoid shock and friction.
S35 This material and its container must be disposed of in a safe way.
S37/39 Wear suitable gloves and eye/face protection.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	Name	CAS	Proportion
	Ammonium Nitrate	6484-52-2	60-90 %
	Water	7732-18-5	10-30 %
	Inorganic oxidisers		0-10 %
	EMULSIFIER		0-10 %
	Oils and other oxygen negative materials		0-10 %

4. FIRST AID MEASURES

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing. If symptoms develop seek medical attention

Ingestion DO NOT INDUCE VOMITING. Wash out mouth with water. If symptoms develop seek medical attention.

Skin Wash affected area thoroughly with soap and water. If symptoms develop seek medical attention.

Eye If contact with the eye(s) occurs, wash with copious amounts of water holding eyelid(s) open. Take care not to rinse contaminated water into the non-affected eye. If symptoms persist seek medical attention.

First Aid Facilities Eye wash fountain, safety shower and normal washroom facilities.

Advice to Doctor Treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media If the product ignites then mass cooling by heavy dousing with water should effectively extinguish small fires.

Hazards from Combustion Products Under fire conditions this product may emit toxic and/or irritating fumes including carbon monoxide and carbon dioxide.

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Specific Hazards Avoid extreme conditions of heat or shock. May explode when heated in confined spaces. Will explode if suitably primed.
Do not fight large fires. If a fire becomes established immediately isolate area and evacuate personnel to a safe distance. Toxic fumes may be generated as the product decomposes.

Hazchem Code 1[Y]E

6. ACCIDENTAL RELEASE MEASURES

Other Information Shut off all possible ignition sources. Contain the source and spread of the spill and ensure that the material does not enter any waterways or drains. Small spills should be scooped up and placed in clean, approved containers which are then labelled and sealed. Where possible, all residues should be scraped up for disposal and an inert absorbent material such as sand or vermiculite spread over the area.
For large spills, collect as much of the material as possible and place in clean, approved containers which are then labelled and sealed.
Contaminated bulk product recovered from a spill should be passed through a 10mm screen before pumping. The screened material should only then be pumped using a double diaphragm positive displacement pump.
Surplus or defective explosives must not be placed in any waterway, buried, thrown away, discarded or placed with rubbish.

7. HANDLING AND STORAGE

Precautions for Safe Handling Do not mix with combustible materials. Wear protective clothing to prevent inhalation, skin and eye contact. It is essential that all who come into contact with this material, maintain high standards of personal hygiene ie. washing hands prior to eating, drinking, smoking or going to the toilet.

Conditions for Safe Storage Store material in a cool, well ventilated store suitably licensed for Class 5.1 Oxidising liquids.
Store in accordance with Local, State and Federal Regulations and the National Fire Protection Association regulations. Store away from heat, naked flames or sparks.
Do not store or consume food, drink or tobacco in areas where they may become contaminated with this material.
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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards No exposure standards have been established for this material, however, the TWA National Occupational Health And Safety Commission (NOHSC) exposure standards for dust not otherwise specified is 10 mg/m³ and exposure standards for oil mist is 5 mg/m³.

Biological Limit Values No Biological limit available.

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Other Exposure Information	As a result of detonation of this product, oxides of nitrogen or carbon fumes may be liberated. Nitrogen oxides are skin, eye and respiratory system irritants. Systematic toxicity resulting from oxidation of lung tissue and bronchopneumonia. Acute exposure can lead to death from asphyxia or pulmonary oedema. In animals, nitrogen oxide caused methemoglobinemia, was not carcinogenic, but caused embryotoxicity and reproductive effects. Carbon dioxide is a colourless, odourless gas. It is a simple asphyxiant, attacking the lungs, skin and cardiovascular system. Concentrations of 5% may produce shortness of breath and headache and concentrations of 10% can produce unconsciousness and death from oxygen deficiency. Adequate ventilation will provide sufficient protection from any carbon dioxide accumulations. Carbon monoxide is a colourless, odourless, tasteless gas which, when inhaled, combines with haemoglobin to form carboxyhemoglobin which interferes with the oxygen-carrying capacity of blood. symptoms include headache, dizziness, drowsiness, nausea, vomiting, collapse, coma and death. Carbon monoxide attacks the central nervous system, lungs, blood and cardiovascular system. Do not enter any area where accumulations of these gases are suspected without appropriate breathing apparatus.
Engineering Controls	Ensure sufficient ventilation to keep airborne concentrations below exposure limits. Mechanical exhaust ventilation may be required.
Respiratory Protection	If engineering controls are not effective in controlling airborne exposure then respiratory protective equipment should be used suitable for protecting against airborne contaminants. Final choice of appropriate breathing protection is dependant upon actual airborne concentrations and the type of breathing protection required will vary according to individual circumstances. Expert advice may be required to make this decision. Reference should be made to Australian Standards AS/NZS 1715, Selection, Use and maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices.
Eye Protection	Safety glasses with side shields, goggles or full-face shield as appropriate recommended. Final choice of appropriate eye/face protection will vary according to individual circumstances i.e. methods of handling or engineering controls and according to risk assessments undertaken. Eye protection should conform with Australian/New Zealand Standard AS/NZS 1337 - Eye Protectors for Industrial Applications.
Hand Protection	Wear gloves of impervious material(PVC or neoprene gloves). Final choice of appropriate gloves will vary according to individual circumstances i.e. methods of handling or according to risk assessments undertaken. Reference should be made to AS/NZS 2161.1: Occupational protective gloves - Selection, use and maintenance.
Body Protection	Wear appropriate clothing including chemical resistant apron where clothing is likely to be contaminated. It is advisable that a local supplier of personal protective clothing is consulted regarding the choice of material.
Hygiene Measures	Ensure a high level of personal hygiene is maintained when using this product. Always wash hands before eating, drinking, smoking or using the toilet.
Other Information	Severe overexposure may interfere with the ability of the blood to carry oxygen (methemoglobinemia). This can cause headache, weakness, to have dizziness and a blue color to the skin and lips. Higher levels may cause trouble in breathing, collapse and even death.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Translucent emulsion, oily to touch.
Odour	Not available.
Solubility in Water	Insoluble but dispersible with water jets.
Specific Gravity	1.36- 1.40
pH Value	Not available.

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Vapour Pressure Not available.
Vapour Density (Air=1) Not available.
Flash Point Not applicable
Flammability COxidising agent. Eliminate all ignition sources.
Flammable Limits - Lower Not available.

10. STABILITY AND REACTIVITY

Conditions to Avoid Avoid sources of heat and incompatible materials.
Incompatible Materials Avoid contact with other explosives, pyrotechnics, solvents, acids, alkalis, reducing agents, amines, phosphorous, organic materials/compounds, finely divided combustible materials, finely divided metals and metal oxides.
Hazardous Decomposition Products Thermal decomposition may result in the release of toxic and/or irritating fumes including ammonia and oxides of nitrogen.

11. TOXICOLOGICAL INFORMATION

Toxicology Information No toxicity data is available for this specific product, however toxicity data found for constituents are stated below:
For AMMONIUM NITRATE:
Oral LD50 (rat): 2217 mg/kg. (Reference: RTECS).
Inhalation Inhalation of product vapours may cause irritation of the nose, throat and respiratory system.
Ingestion Not a likely source of exposure. However, ingestion of this product may irritate the gastric tract causing nausea and vomiting.
Skin May cause redness, itching and irritation.
Eye Eye contact may cause mechanical irritation. May result in mild abrasion.
Chronic Effects Prolonged, repeated skin contact with mineral oils may cause irritant contact dermatitis.

12. ECOLOGICAL INFORMATION

Ecotoxicity No ecotoxicity data is available for this specific product, however toxicity data for constituents are stated below:
For Ammonium Nitrate:
Ammonium Nitrate was evaluated at 5, 10, 25 and 50mg (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.
40 hr LC50 (Aspergillus niger): 15 mg/L (36°C).
Persistence / Degradability No data available for this specific product.
Mobility No data available for this specific product.
Environ. Protection Prevent this material entering waterways, drains and sewers.

13. DISPOSAL CONSIDERATIONS

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Disposal Considerations

DISPOSAL:

Destruction of explosives must be carried out by suitably qualified personnel. If necessary, the relevant statutory authorities must be notified. In all circumstances, detonation is the preferred method of disposal.

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 m deep and then adequately stemmed. No detonators are to be inserted into defective explosives. Personnel must be evacuated to a safe distance in accordance with relevant local regulations prior to initiation of the charge.

NOTE: Detonations in loose or stony ground may be expected to cause fly rock.

BURNING:

Burning may result in the detonation of explosives. Burning explosives produces toxic fumes eg. oxides of nitrogen and carbon.

Make a sawdust bed or trail adequate for the quantity of explosives to be burned approximately 250mm wide and 25mm deep, upon which the explosive will be laid. If sawdust is not available, newspaper may be used. Normal precautions should be taken against the spread of fire.

Individual trails should not be closer together than 600mm and should contain not more than 12kg of explosive.

Trails should be side-by-side, not in a 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 300m.

Sufficient diesel oil (never petrol or other highly flammable liquid) should be used to thoroughly wet the sawdust (or paper). At least 4L per trail is recommended.

Light the trail from a long rolled paper 'wick' which should be placed downwind and in contact with the 1m of trail which is not covered with explosive.

The wind should blow so that the flame from the wick (and later from the burning explosives) will blow away from the unburned explosives as detonation is more likely to occur if the explosives are 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 or under the paper and the other end lit from a minimum distance of 7m from the trail. Retire to at least 300m or to a safe place.

Do not return to the site for at least 30 min after the burning has apparently finished.

If the fire goes out do not approach for at least 15 minutes after all traces of fire has gone. Do not add more diesel oil unless certain that the flame is completely extinguished.

14. TRANSPORT INFORMATION

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Transport Information This material is classified as a Class 5.1 (Oxidising Agent) Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. Dangerous goods of Class 5.1 (Oxidising Agent) are incompatible in a placard load with any of the following:

- Class 1, Explosive
- Class 2.1, Flammable Gas
- Class 2.3, Toxic Gas
- Class 3, Flammable Liquid
- Class 4.1, Flammable Solid
- Class 4.2, Spontaneously Combustible Substance
- Class 4.3, Dangerous When Wet Substance
- Class 5.2, Organic Peroxide
- Class 6, Toxic and Infectious Substances, if the Class 6 substance is a fire risk substance
- Class 7, Radioactive Substance
- Class 8, Corrosive
- Class 9 - Miscellaneous Dangerous Goods, if the Class 9 substance is a fire risk substance
- Fire risk substances
- Combustible liquids

U.N. Number 3375

DG Class 5.1

Hazchem Code 1[Y]E

Packing Group II

EPG Number 5A1

IMO Proper Shipping Name AMMONIUM NITRATE EMULSION, intermediate for blasting explosives, liquid

UN Number (Road Transport) 3375

15. REGULATORY INFORMATION

Poisons Schedule Not Scheduled

Hazard Category Oxidising

16. OTHER INFORMATION

Date of preparation or last revision of MSDS SDS created: April 2004.

MSDS Reviewed and renamed: May 2007

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Material Safety Data Sheet

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Contact Person/Point Dyno Nobel Asia Pacific Limited
Mt Thorley Technical Centre
Telephone: +61 2 6574 2500
Fax: +61 2 65 74 6849

DISCLAIMER: The information and suggestions above concern explosive products which should only be dealt with by persons having appropriate technical skills, training and licences. The results depend to a large degree on the conditions under which the products are stored, transported and used.

While Dyno Nobel Asia Pacific makes every effort to ensure the details contained in the data sheet are as current and accurate as possible the conditions under which its products are used are not within Dyno Nobel Asia Pacific Limited's control. Each user is responsible for being aware of the details in the data sheet and the product applications in the specific context of the intended use. Buyers and users assume all risk, responsibility and liability arising from the use of this product and the information in this data sheet. Dyno Nobel Asia Pacific Limited is not responsible for damages of any nature resulting from the use of its products or reliance upon the information. Dyno Nobel Asia Pacific Limited makes no express or implied warranties other than those implied mandatory by Commonwealth, State or Territory legislation.

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