

SAFETY DATA SHEET

TITAN[®] MATRIX SERIES

Infosafe No.: LPSA2
ISSUED Date : 25/05/2016
ISSUED by: Dyno Nobel Asia Pacific Pty
Limited

1. IDENTIFICATION

GHS Product Identifier

TITAN[®] MATRIX SERIES

Company Name

Dyno Nobel Asia Pacific Pty Limited

Address

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Gibson Island Murarrie
QLD 4172 Australia

Telephone/Fax Number

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Emergency phone number

1800 098 836

Recommended use of the chemical and restrictions on use

Blasting explosive precursor. Suitable for general mining and quarrying applications. Precursor is sensitised or blended with blasting agent during delivery into boreholes using an approved delivery system.

Other Names

Name	Product Code
TITAN 2000 MATRIX	
TITAN 3000 MATRIX	
TITAN 4000 MATRIX	
TITAN 5000 MATRIX	
TITAN 7000 MATRIX	
TITAN 7000i MATRIX	
TITAN 7000SX MATRIX	
TITAN 9000 MATRIX	
DX5111	
DX5114	
TITAN 7100i MATRIX	
DX5115	

2. HAZARD IDENTIFICATION

GHS classification of the substance/mixture

Classified as Hazardous according to the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) including Work, Health and Safety Regulations, Australia.

Classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)

Carcinogenicity: Category 2

Eye Damage/Irritation: Category 2A

Oxidizing Liquids: Category 2

Skin Corrosion/Irritation: Category 2

STOT Single Exposure: Category 3 (respiratory tract irritation)

Signal Word (s)

DANGER

Hazard Statement (s)

H272 May intensify fire; oxidiser.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

H351 Suspected of causing cancer.

Pictogram (s)

Health hazard, Exclamation mark, Flame over circle



Precautionary statement – Prevention

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.

P220 Keep/Store away from clothing/combustible materials.

P221 Take any precaution to avoid mixing with combustibles

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P264 Wash contaminated skin thoroughly after handling.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statement – Response

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

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 exposed or concerned: Get medical advice/attention.

P312 Call a POISON CENTER or doctor/physician if you feel unwell.

P332+P313 If skin irritation occurs: Get medical advice/attention.

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

P362 Take off contaminated clothing and wash before reuse.

P370+P378 In case of fire: Use course spray for extinction.

Precautionary statement – Storage

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

Precautionary statement – Disposal

P501 Dispose of contents/container to an approved waste disposal plant.

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 colour to the skin and lips. Higher levels may cause trouble in breathing, collapse and even death.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Name	CAS	Proportion
Ammonium Nitrate	6484-52-2	>60 %
Other ingredients determined not to be hazardous, including water		10-30 %
Inorganic oxidisers		<15 %
Emulsifiers		<10 %
Oils/Fuels		<10 %
Other oxygen negative materials		<10 %

4. FIRST-AID MEASURES

Inhalation

If inhaled, remove affected person from contaminated area. Apply artificial respiration if not breathing. Seek medical attention.

Ingestion

Do not induce vomiting. Wash out mouth thoroughly with water. Seek immediate medical attention.

Skin

Remove all contaminated clothing immediately. Wash affected area thoroughly with soap (NOT a category 3 flammable liquid) and water. Wash contaminated clothing before reuse or discard. Seek medical attention.

Eye contact

If in eyes, hold eyelids apart and flush the eyes continuously with running water. Remove contact lenses. Continue flushing for several minutes until all contaminants are washed out completely. Seek medical attention.

First Aid Facilities

Eyewash, safety shower and normal washroom facilities.

Advice to Doctor

Treat symptomatically. May cause methemoglobinemia. Clinical effects: The smooth muscle relaxant effects 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 methemoglobin (ie. 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 chocolate brown in colour. At higher levels death may result. Spectrophotometric analysis can determine the presence and concentration of methemoglobin 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 methemoglobin 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 methemoglobin levels of 20-30% revert to normal within 3 days.
5. Bed rest is required for methemoglobin 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 inflammatory changes of bronchiolitis fibrosa obliterans.

Other Information

For advice in an emergency, contact a Poisons Information Centre (Phone Australia 131 126) or a doctor at once.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Use jets, fogs or foams.

Unsuitable Extinguishing Media

Dry powder and carbon dioxide extinguishers are usually not effective in combating fires involving this material.

Hazards from Combustion Products

Under fire conditions this product may emit toxic and/or irritating fumes, smoke and gases including carbon monoxide, carbon dioxide and oxides of nitrogen.

Specific Hazards Arising From The Chemical

Oxidising. Contact with combustible material may cause fire. Non-combustible, but may support the combustion of other materials. Will explode if suitably primed. Avoid extreme conditions of heat or shock. If the product ignites then mass cooling by heavy dousing with water should effectively extinguish small fires.

DO NOT FIGHT LARGE FIRES. If a fire becomes established immediately isolate area and evacuate personnel to a safe distance.

Hazchem Code

1Y

Decomposition Temperature

Not available

Precautions in connection with Fire

Fire-fighters should wear full protective clothing and breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures

Wear appropriate personal protective equipment and clothing to prevent exposure. Extinguish or remove all sources of ignition and stop leak if safe to do so. Increase ventilation. Evacuate all unprotected personnel. If possible contain the spill.

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.

Dispose of waste according to the applicable local and national regulations. If contamination of sewers or waterways occurs inform the local water and waste management authorities in accordance with local regulations.

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.

In the case of a transport accident notify the Police, Explosives Inspector and Dyno Nobel Asia Pacific, Emergency Phone Number: 1800 098 336.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Avoid inhalation of vapours and mists, and skin or eye contact. Use only in a well ventilated area. Keep containers sealed when not in use. Prevent the build up of mists or vapours in the work atmosphere. Do not use near ignition sources. Do not pressurise, cut, heat or weld containers as they may contain hazardous residues. Maintain high standards of personal hygiene by washing hands prior to eating, drinking, smoking or using toilet facilities.

Avoid exposure. Do not handle until all safety precautions have been read and understood.

Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well-ventilated area away from sources of ignition, oxidising agents, strong acids, foodstuffs, and clothing. Keep containers closed when not in use, securely sealed and protected against physical damage. Inspect regularly for deficiencies such as damage or leaks. Have appropriate fire extinguishers available in and near the storage area. Take precautions against static electricity discharges. Use proper grounding procedures. Ensure that storage conditions comply with applicable local and national regulations. For information on the design of the storeroom reference should be made to Australian Standard AS 4326 The storage and handling of oxidizing agents and the recommendations outlined in the AEISG Code of Practice for Ammonium Nitrate Emulsions, Suspensions or Gels - ANE's (UN3375).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limit values

No exposure standards have been established for this material. However, the available exposure limits for specified for some raw materials and potential products formed on decomposition are given below:

Carbon Dioxide

TWA: 5000 ppm, 9000 mg/m³

STEL: 30000 ppm, 54000 mg/m³

Carbon Dioxide (Coal Mines)

TWA: 12500 ppm, 22500 mg/m³

STEL: 30000 ppm, 54000 mg/m³

Carbon monoxide

TWA: 30 ppm, 34 mg/m³

Nitrogen dioxide

TWA: 3 ppm, 5.6 mg/m³

STEL: 5 ppm, 9.4 mg/m³

Oil mist, refined mineral

TWA: 5 mg/m³

TWA (Time Weighted Average): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day week.

STEL (Short Term Exposure Limit): The average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour workday.

Biological Limit Values

No biological limit allocated.

Other Exposure Information

As a result of decomposition 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.

Appropriate Engineering Controls

Natural ventilation should be adequate under normal use conditions. If inhalation risk exists: Use with local exhaust ventilation or wear suitable mist respirator.

Respiratory Protection

If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. 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, in order to make any necessary changes for individual circumstances.

Eye Protection

Safety glasses with side shields, chemical goggles or full-face shield as appropriate should be used. Final choice of appropriate eye/face protection will vary according to individual circumstances. Eye protection devices should conform to relevant regulations.

Eye protection should conform with Australian/New Zealand Standard AS/NZS 1337 - Eye Protectors for Industrial Applications.

Hand Protection

Wear gloves of impervious material such as neoprene. Final choice of appropriate gloves will vary according to individual circumstances. i.e. methods of handling or according to risk assessments undertaken. Occupational protective gloves should conform to relevant regulations.

Reference should be made to AS/NZS 2161.1: Occupational protective gloves - Selection, use and maintenance.

Body Protection

Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

9. PHYSICAL AND CHEMICAL PROPERTIES

Properties	Description	Properties	Description
Form	Liquid	Appearance	Translucent golden emulsion, oily to touch
Colour	Golden	Odour	Not available
Decomposition Temperature	Not available	Melting Point	Not applicable
Boiling Point	Not applicable	Solubility in Water	Insoluble, but dispersible with water jets.
Solubility in Organic Solvents	Not available	Specific Gravity	1.29 - 1.42 g/cm ³
pH	Not available	Vapour Pressure	Not available
Vapour Density (Air=1)	Not available	Evaporation Rate	Not available
Odour Threshold	Not available	Viscosity	Not available
Partition Coefficient: n-octanol/water	Not available	Flash Point	Not applicable
Flammability	Non-combustible, but may support the combustion of other materials. May intensify fire; oxidiser.	Auto-Ignition Temperature	Not available
Flammable Limits - Lower	Not applicable	Flammable Limits - Upper	Not applicable

10. STABILITY AND REACTIVITY

Chemical Stability

Risk of explosion in the presence of combustible materials.

Reactivity and Stability

Reacts with incompatible materials.

Conditions to Avoid

Heat, open flames and other sources of ignition. Keep away from combustible material.

Incompatible materials

Ammonium Nitrate is incompatible with tetranitromethane, dichloroisocyanuric acid, trichloroisocyanuric acid, any bromate, chlorate, chlorite, hypochlorite or chloroisocyanurate or any inorganic nitrite. Combustible materials.

Hazardous Decomposition Products

Thermal decomposition may result in the release of toxic and/or irritating fumes including carbon monoxide, carbon dioxide and oxides of nitrogen.

Possibility of hazardous reactions

Reacts with incompatible materials.

Hazardous Polymerization

Will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicology Information

No toxicity data available for this material. The available acute toxicity data for the ingredients are given below.

Acute Toxicity - Oral

Ammonium nitrate

LD50 (rat): 2217 mg/kg (reference: RTECS)

Ingestion

Ingestion of large amounts may cause cyanosis, nausea, collapse, vomiting, abdominal pain, rapid heartbeat and breathing, coma, convulsions and death may occur.

Inhalation

May cause respiratory irritation. Inhalation of product vapours can cause irritation of the nose, throat and respiratory system.

Skin

Causes skin irritation. Skin contact will cause redness, itching and swelling. Repeated exposure may cause skin dryness and cracking and may lead to dermatitis. This product contains a substance (ammonium nitrate) which may be absorbed through intact skin with resultant toxic effects.

Eye

Causes serious eye irritation. On eye contact this product will cause tearing, stinging, blurred vision, and redness.

Respiratory sensitisation

Not expected to be a respiratory sensitiser.

Skin Sensitisation

Not expected to be a skin sensitiser.

Germ cell mutagenicity

Not considered to be a mutagenic hazard.

Carcinogenicity

Suspected of causing cancer. Classified as a suspected human carcinogen.

Reproductive Toxicity

Not considered to be toxic to reproduction.

STOT-single exposure

Not expected to cause toxicity to a specific target organ.

STOT-repeated exposure

Not expected to cause toxicity to a specific target organ.

Aspiration Hazard

Not expected to be an aspiration hazard.

Other Information

Overexposure can cause nausea and vomiting, headache and collapse.

12. ECOLOGICAL INFORMATION

Ecotoxicity

No ecological data available for this material.

Persistence and degradability

Not available

Mobility

Not available

Bioaccumulative Potential

Not available

Other Adverse Effects

Not available

Environmental Protection

Do not discharge this material into waterways, drains and sewers.

13. DISPOSAL CONSIDERATIONS

Disposal considerations

The disposal of the spilled or waste material must be done in accordance with applicable local and national regulations and AS2187.2.

Small quantities of matrix may be disposed/destroyed by dilution in water jet and/or detergent solution. Deteriorated or waste matrix may be disposed of by detonation by inclusion in a blast hole when loaded with good explosives.

Disposal of large quantities of matrix may require services from a Licensed Waste Contractor; contact Dyno Nobel for further information.

14. TRANSPORT INFORMATION

Transport Information

This material is classified as Dangerous Goods Division 5.1 (Oxidising Substances)

Dangerous Goods are incompatible in a placard load with any of the following:

- Class 1: Explosives
- Division 2.1: Flammable Gases
- Division 2.3: Toxic Gases
- Class 3: Flammable Liquids
- Division 4.1: Flammable Solids
- Division 4.2: Spontaneously combustible substances
- Division 4.3: Dangerous when wet Substances
- Some Division 5.1 Oxidising substances (Refer Table 9.2)
- Division 5.2: Organic peroxides
- Class 6: Toxic or Infectious Substances. If the Class 6 substance is a fire risk substance
- Class 7: Radioactive materials unless specifically exempted
- Class 8: Corrosive substances
- Class 9: Miscellaneous substances. (when the class 9 substance is a fire risk substance)
- Fire risk substances
- Combustible liquids

Refer to the Australian code for the Transport of Dangerous Goods by Road and Rail (7th Edition) including tables 9.2 and 9.3 for further information regarding the transportation of ammonium nitrate.

Marine Transport (IMO/IMDG):

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

UN No.: 3375

Proper Shipping Name: AMMONIUM NITRATE EMULSION

Class: 5.1

Packaging Group: II

EMS No.: F-H, S-Q

Special Provision: 309

Air Transport (ICAO/IATA):

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

UN No.: 3375

Proper Shipping Name: AMMONIUM NITRATE EMULSION

Class: 5.1

Packaging Group: -

Packaging Instructions (passenger & cargo): Forbidden

Packaging Instructions (cargo only): Forbidden

Special Provisions: -

U.N. Number

3375

UN proper shipping name

AMMONIUM NITRATE EMULSION or SUSPENSION or GEL

Transport hazard class(es)

5.1

Packing Group

II

Hazchem Code

1Y

IERG Number

51D

IMDG Marine pollutant

No

Transport in Bulk

Not available

Special Precautions for User

Not available

15. REGULATORY INFORMATION

Regulatory information

Classified as Hazardous according to the Globally Harmonised System of classification and labelling of chemicals (GHS) including Work, Health and Safety regulations, Australia.

Not classified as a Scheduled Poison according to the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Poisons Schedule

Not Scheduled

16. OTHER INFORMATION

Date of preparation or last revision of SDS

SDS amendment: January 2019, SECTION: First-aid measures

SDS amendment: October 2018, SECTION: Identification

SDS amendment: May 2018, SECTION: Identification

SDS amendment: August 2017, SECTION: Hazard Identification, Fire-fighting measures, Accidental release measures, Exposure controls/personal protection, Physical and chemical properties

SDS amendment: June 2017, SECTION: Identification

SDS amendment: May 2017, SECTION: Identification

SDS reviewed: May 2016

Supersedes: August 2012

References

Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice.

Standard for the Uniform Scheduling of Medicines and Poisons.

Australian Code for the Transport of Dangerous Goods by Road & Rail.

Model Work Health and Safety Regulations, Schedule 10: Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.

Workplace exposure standards for airborne contaminants.

Adopted biological exposure determinants, American Conference of Industrial Hygienists (ACGIH).

Globally Harmonised System of classification and labelling of chemicals.

Contact Person/Point

Dyno Nobel Asia Pacific Limited

Telephone: (07) 3026 3900

Fax: (07) 3026 3999

Emergency: 1800 098 836

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.

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END OF SDS

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