

SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name	TITAN MATRIX SERIES
Synonyms	TITAN 2000 EMULSION • TITAN 2000 MATRIX • TITAN 3000 MATRIX • TITAN 4000 EMULSION SERIES • TITAN 4000 MATRIX • TITAN 5000 EMULSION MATRIX • TITAN 5000 MATRIX • TITAN 7000 EMULSION MATRIX • TITAN 7000 MATRIX • TITAN 7000I EMULSION MATRIX • TITAN 7000I MATRIX • TITAN 7000SI EMULSION MATRIX • TITAN 7000SX MATRIX • TITAN 7100I MATRIX • TITAN 9000 MATRIX

1.2 Uses and uses advised against

Uses	EXPLOSIVES
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1.3 Details of the supplier of the product

Supplier name	DYNO NOBEL ASIA PACIFIC LIMITED
Address	282 Paringa Rd, Gibson Island, Murarrie, QLD, 4172, AUSTRALIA
Telephone	(07) 3026 3900
Fax	(07) 3026 3999
Website	http://www.dynonobel.com

1.4 Emergency telephone numbers

Emergency	1800 098 836
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2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Oxidizing Liquids: Category 2

Health Hazards

Skin Corrosion/Irritation: Category 2

Serious Eye Damage / Eye Irritation: Category 2A

Specific Target Organ Toxicity (Single Exposure): Category 3 (Respiratory Irritation)

Carcinogenicity: Category 2

Environmental Hazards

Not classified as an Environmental Hazard

2.2 GHS Label elements

Signal word DANGER

Pictograms



Hazard statements

H272	May intensify fire; oxidiser.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.

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Prevention statements

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/incompatible materials/combustible materials.
P221	Take any precaution to avoid mixing with combustibles/incompatible materials.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response statements

P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340	IF INHALED: Remove 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.
P321	Specific treatment is advised - see first aid instructions.
P362	Take off contaminated clothing and wash before re-use.
P370 + P378	In case of fire: Use appropriate media for extinction.

Storage statements

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.

Disposal statements

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

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
AMMONIUM NITRATE	6484-52-2	229-347-8	>60%
NON HAZARDOUS INGREDIENTS	Not Available	Not Available	10 to 30%
OIL(S)	-	-	<10%
INORGANIC OXIDISER(S)	-	-	<15%
EMULSIFIER(S)	-	-	<10%
OXYGEN NEGATIVE MATERIALS	-	-	<10%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. To protect rescuer, use an Air-line respirator where an inhalation risk exists. Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs wash with water and soaps that are not a hazardous substance, do not have a pH greater than 7 and are compatible with oxidising agents. An example of compatible soap is Septone Nature Clean. If unsure, contact the company representative. Remove all contaminated clothing immediately. Wash affected area thoroughly with a compatible soap. Wash contaminated clothing before reuse or discard. Seek medical attention.
Ingestion	For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.
First aid facilities	Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed

Serious damage may result from explosive fragments.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically. Explosive material. Shrapnel from detonation may cause burns, wounds and bruises - treat symptomatically.

Treatment for nitrates:

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

5.1 Extinguishing media

DO NOT attempt to extinguish burning explosives. Evacuate area immediately. Notify trained emergency response personnel.

5.2 Special hazards arising from the substance or mixture

EXPLOSIVE. Will explode under specific conditions. May evolve toxic gases (carbon/ nitrogen oxides, hydrocarbons) when heated to decomposition. Eliminate all ignition sources including cigarettes, open flames, spark producing switches/tools, heaters, naked lights, pilot lights, etc when handling. CAUTION: Will explode if exposed to heat or with heavy impact.

5.3 Advice for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Do not attempt to fight fire. Use waterfog to cool intact containers and nearby storage areas. May explode from heat, pressure, friction or shock.

5.4 Hazchem code

- 1Y
1 Coarse Water Spray.
Y Risk of violent reaction or explosion. Wear full fire kit and breathing apparatus. Contain spill and run-off.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. CAUTION: Heating, impact or static charge may cause explosion.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Explosive Material. Do not clean-up or dispose except under supervision of a specialist. Contain spillage, then cover / absorb spill with NON-combustible absorbent material (vermiculite, sand, or similar), collect and place in suitable containers for disposal in accordance with AS2187.2. Eliminate all sources of ignition.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Use in a well ventilated area. DO NOT use in confined spaces. Build up of mists or vapours in the atmosphere must be prevented. Avoid breathing in spray or mists or vapours. Do not use near welding or other ignition sources and avoid sparks. Do not smoke. When dealing with large quantities, repeated or prolonged skin exposure without protection should be prevented in order to lessen the possibility of skin disorders. 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 using toilet facilities.

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7.2 Conditions for safe storage, including any incompatibilities

Store according to recommendations outlined in the AEISG Code of Practice for Ammonium Nitrate Emulsions, Suspensions or Gels - ANE's (UN3375). Store in suitable, labelled containers away from incompatible materials. Inspect periodically for deficiencies such as damage or leaks. Have appropriate fire extinguishers available in and near the storage area.

7.3 Specific end uses

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

No exposure standards have been entered for this product.

Biological limits

Ingredient	Determinant	Sampling Time	BEI
AMMONIUM NITRATE	Methemoglobin in blood	During or end of shift	1.5% of hemoglobin

Reference: ACGIH Biological Exposure Indices

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical explosion proof extraction ventilation is recommended.

PPE

Eye / Face	Wear safety glasses.
Hands	Wear PVA or neoprene gloves.
Body	Wear coveralls.
Respiratory	Not required under normal conditions of use.



9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	CLEAR GOLD LIQUID
Odour	SLIGHT ODOUR
Flammability	EXPLOSIVE
Flash point	NOT AVAILABLE
Boiling point	NOT AVAILABLE
Melting point	NOT AVAILABLE
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Specific gravity	1.29 to 1.42
Solubility (water)	INSOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT AVAILABLE
Lower explosion limit	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	OXIDISING LIQUID
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability

Potential for exothermic hazard.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid

Avoid shock, friction, heavy impact, heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

May detonate if heated strongly or exposed to severe shock. Incompatible (explosively) with acids (e.g. nitric acid), metal powders, combustible materials, alkalis (e.g. sodium hydroxide), oxidising agents (e.g. hypochlorites), chloride salts, sulphur, urea, nitrites and reducing agents.

10.6 Hazardous decomposition products

May evolve toxic gases (carbon/ nitrogen oxides, hydrocarbons) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity Based on available data, the classification criteria are not met. WARNING: May explode with shock, heat, friction or static charge. Serious damage may result from explosive fragments.

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
AMMONIUM NITRATE	2217 mg/kg (rat)	> 5000 mg/kg (rat)	--

Skin	Contact may result in irritation, redness, rash and dermatitis.
Eye	Contact may result in irritation, lacrimation, pain, blurred vision and redness.
Sensitisation	Not classified as causing skin or respiratory sensitisation.
Mutagenicity	Not classified as a mutagen.
Carcinogenicity	Diesel fuels, distillate (light) is not classifiable as to its carcinogenicity to humans (IARC Group 3).
Reproductive	Not classified as a reproductive toxin.
STOT - single exposure	Over exposure to mists/vapours may result in irritation of the nose and throat, coughing, nausea and headache. High level exposure may result in drowsiness, breathing difficulties and methaemoglobinemia (blood's oxygen-carrying capacity is reduced).
STOT - repeated exposure	Not classified as causing organ damage from repeated exposure. Adverse effects are generally associated with single exposure.
Aspiration	Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No information provided.

12.2 Persistence and degradability

No information provided.

12.3 Bioaccumulative potential

No information provided.

12.4 Mobility in soil

No information provided.

12.5 Other adverse effects

Ammonium nitrate is a nutrient in water. Spills can cause massive algal blooms in static waters and affect local species population balance in the aquatic environment. If water is used to disperse ammonium nitrate spilled on soil, the solution produced can end up in the groundwater. Ammonium nitrate will be taken up by bacteria. Nitrate is more persistent in water than the ammonium ion.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Waste must be disposed of in accordance with AS2187.2 as well as state regulatory and environmental legislation. Small quantities of damaged or deteriorated material may be destroyed by inclusion in a blast hole containing good explosives (by licensed personnel). Detonators should not be inserted into defective explosives. For large quantities, contact the manufacturer/supplier for additional information.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE



	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	3375	3375	3375
14.2 Proper Shipping Name	AMMONIUM NITRATE EMULSION	AMMONIUM NITRATE EMULSION	AMMONIUM NITRATE EMULSION
14.3 Transport hazard class	5.1	5.1	5.1
14.4 Packing Group	II	II	II

14.5 Environmental hazards

Not a Marine Pollutant.

14.6 Special precautions for user

Hazchem code 1Y
GTEPG 5D1
EmS F-H, S-Q

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

Inventory listings **AUSTRALIA: AIC (Australian Inventory of Industrial Chemicals)**
 All components are listed on AIC, or are exempt.

16. OTHER INFORMATION

Additional information EXPLOSIVES & BLASTING AGENTS: Refer to Local State and Federal legislation that specifically relates to the use of Explosives. Users of products described in this ChemAlert Report are advised to ensure familiarity and compliance with the appropriate legal requirements (e.g. Regulations) prior to the use of this product. Where any further information is required, users may contact their local authority in Explosives and Dangerous Goods.

EXPLOSIONS: Fires involving explosives or explosive mixtures may undergo further explosions and rapid propagation. Police and emergency personnel should be notified immediately. Evacuate individuals to a safe sheltered area at least 800 metres away. If possible remove vehicles and further heat and ignition sources from the area. Do not return to areas until at least one hour after fire and explosions have ceased.

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EXPLOSIONS: For further information please refer to Australian Standard 1216, for classification of explosives and Local and Federal Explosive and Dangerous Goods legislation (Act and Regulations).

EXPLOSIVES - BURNING SAFETY:

Note: Disposal in a blast with fresh explosives may be preferable to burning.

(a) Make a sawdust (or newspaper) trail 450mm wide and ~20mm deep in the direction of the wind. The trail should be 2m longer than necessary.

(b) Place the cartridges on the sawdust (or paper), they may be touching, but not piled on top of each other

(c) Individual trails should be no closer than 2m and should not contain more than 12kgs of explosives.

(d) Trails should be side by side, not in a line. No more than 4 should be set up at one time.

(e) Remove explosives not being burnt, to at least 300m away, unless the material can be stored behind something substantial.

(f) Thoroughly wet the trail with kerosene or diesel (never petrol or any other highly flammable liquid). Use at least 2L of fuel per 10m of trail.

(g) Light the trail from a long rolled paper wick, place down wind and contact the 2m of trail which is not covered by explosives. The flame should blow away from the unburned explosives otherwise preheating and detonation may occur.

(g) Use a plastic igniter if available instead of paper. Coil one end into the sawdust or under the paper and light the other end from a minimum distance of 7m away from the trail.

(h) Move away at least 300m. Do not return for a period of at least 30mins after burning has finished.

(j) If the fire goes out, do not approach for at least 15mins. Do not add kerosene or diesel oil unless certain that the flame is completely extinguished.

(k) Bury the residue as it is poisonous to livestock.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: form of product; frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m ³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

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Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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