SAFETY DATA SHEET

DYNOSPLIT®

Infosafe No.: LTSWB
ISSUED Date: 08/04/2016
Issued by: Dyno Nobel Asia Pacific Pty Limited

1. IDENTIFICATION

GHS Product Identifier
DYNOSPLIT®

Product Code

Company Name
Dyno Nobel Asia Pacific Pty Limited

Address
282 Paringa Road
Gibson Island
Murarrie, QLD 4172
Australia

Telephone/Fax Number
Tel: (07) 3026 3900
Fax: (07) 3026 3999

Emergency phone number
1800 098 836

Recommended use of the chemical and restrictions on use
Blasting (pre-splitting) explosive

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)
Explosives: Division 1.1
Eye Damage/Irritation: Category 2A

Signal Word (s)
DANGER

Hazard Statement (s)
H201 Explosive; mass explosion hazard.
H319 Causes serious eye irritation.

Pictogram (s)
Exploding bomb,Exclamation mark

Precautionary statement – Prevention
P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P230 Keep wetted with water
P240 Ground/bond container and receiving equipment.
P250 Do not subject to grinding/shock/friction.
P264 Wash contaminated skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statement – Response
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 If eye irritation persists: 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.

Precautionary statement – Storage
P401 Store in accordance with supplier

Precautionary statement – Disposal
P501 Dispose of contents/container to an approved waste disposal plant.

Other Information
Prolonged exposure to decomposition products may result in respiratory difficulties and possibly severe toxic effects.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Information on Composition

Ingredient Name	CAS	Proportion
Ammonium nitrate	6484-52-2	30.00 - 60.00%
Monomethylamine Nitrate	-	10.00 - 30.00%
Water	7732-18-5	10.00 - 30.00%
Aluminium	7429-90-5	0.00 - 10.00%
Oxidising substances	-	0.00 - 10.00%
Ingredients determined not to be hazardous	Not required	0.00 - 10.00%
Thiourea	62-56-6	0.00 - 0.50%

PETN (pentaerythritol tetranitrate) is added as 5 g/m detonating cord.

MMAN is a combination of 24% water, 25% methylamine (CAS 74-89-5) and 51% nitric acid (CAS 7697-37-2).
Note: That there are two possible compositions for this product.

Alternative Composition:

Ingredient Name	CAS	Proportion
Ammonium nitrate	6484-52-2	30.00 - 60.00%
Sodium Nitrate	7631-99-4	10.00 - 30.00%
Nitric Acid*	7697-37-2	< 10.00%
Sodium Perchlorate	7601-89-0	< 10.00%
Aluminium Powder	7429-90-5	< 10.00%
Hexamine*	100-97-0	10.00 - 30.00%
Ingredients determined not to be hazardous to 100.00%		

* Hexamine and Nitric Acid react to form Hexamine Nitrate.

Other Information Note: Remainder of ingredients determined not to be hazardous.

Ingredients

Name	CAS	Proportion
Ammonium Nitrate	6484-52-2	30-60 %
Hexamine nitrate		0-<40 %
Monomethylamine Nitrate		10-30 %
Water	7732-18-5	10-30 %
Sodium nitrate	7631-99-4	0-30 %
Oxidising substances		0-10 %
Aluminium	7429-90-5	0-<10 %
Sodium perchlorate	7601-89-0	0-<10 %
Thiourea	62-56-6	0-0.5 %
Other ingredients determined not to be hazardous		Balance

4. FIRST-AID MEASURES

Inhalation
If inhaled, remove affected person from contaminated area. Keep at rest until recovered. If symptoms develop and/or persist seek medical attention.
Unlikely route of exposure unless detonator is fired.

Ingestion
Not considered a potential route of exposure for intact product, when used as intended.
Unlikely route of exposure unless detonator is fired.

Skin
Not considered a potential route of exposure for intact product, when used as intended.
If the sealed unit is damaged and exposure occurs: Wash affected area thoroughly with soap and water. If symptoms develop seek medical attention.
Unlikely route of exposure unless detonator is fired.

Eye contact
Not considered a potential route of exposure for intact product, when used as intended. If the sealed unit is damaged and exposure occurs: 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.
Unlikely route of exposure unless detonator is fired.

First Aid Facilities
Eyewash, safety shower and normal washroom facilities.

Advice to Doctor
Treat symptomatically.

Other Information
If decomposition products are inhaled remove to fresh air. Allow patient to assume most comfortable position. Keep at rest until fully recovered. If not breathing, administer artificial respiration. If breathing is difficult, give oxygen. Call a physician.
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
If the product ignites then mass cooling by heavy dousing with water should effectively extinguish small fires. Use only remote or fixed extinguishing systems (sprinklers).

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

Specific Hazards Arising From The Chemical
Dangerous when exposed to heat or flames. Can support combustion of other materials involved in fire and is capable of undergoing detonation if heated to high temperatures especially under any confinement including being piled on itself in a burning fire. When heated to decomposition, highly toxic fumes may be emitted.

DO NOT FIGHT LARGE FIRES. If a fire becomes established immediately isolate area and evacuate personnel to at least 1600 metres - do not return until smoke and fumes have dissipated.

Hazchem Code
E

Decomposition Temperature
Not available

Precautions in connection with Fire
DO NOT FIGHT EXPLOSIVES FIRES. Try to keep fire from reaching explosives. Isolate area and evacuate personnel to a safe place.

Other Information
Explosives should not be abandoned at any location for any reason. Do not handle during electrical storms.

6. ACCIDENTAL RELEASE MEASURES

Emergency Procedures
If material is spilled or released, isolate the area, eliminate ALL sources of ignition, avoid skin contact and remove soiled clothing. 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.
Surplus or defective explosives must not be placed in any waterway, thrown away, discarded or placed with rubbish.

Avoid breathing fumes or gases from detonation of explosives. Notify authorities in accordance with emergency response procedures. Only personnel trained in emergency response should respond. If no fire danger is present, and product is undamaged and/or uncontaminated, repackage product in original packaging or other clean approved container. Ensure that a complete account of product has been made and is verified. If loose explosive powder is spilled, such as from a broken detonator, only properly qualified and authorised personnel should be involved with handling and clean-up activities. Spilled explosive powder is extremely sensitive to initiation and may detonate. Dispose of waste according to 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.

7. HANDLING AND STORAGE

Precautions for Safe Handling
Use smallest possible amounts in designated areas with adequate ventilation. Avoid sources of shock, friction, heat and ignition. Avoid contact with oxidising materials. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Label containers. Keep containers closed when not in use. Wear appropriate protective equipment 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 using toilet facilities.

Only properly qualified and authorised personnel should handle and use explosives. Handle with great care. Unintended detonation of explosives or explosive devices can cause serious injury or death. Detonation in confined or unventilated areas may result in exposure to hazardous fumes or oxygen deficiency.

Conditions for safe storage, including any incompatibilities
Keep storage area free of sources of shock, friction, heat, ignition and combustible materials.

Store in a cool, dry, well-ventilated area away from sources of ignition, oxidising agents, strong acids, foodstuffs, and clothing. Only properly qualified and authorised personnel should handle and use explosives. 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. Keep away from heat, sparks, open flames, ignition sources, hot surfaces. Take precautions against static electricity discharges. Use proper grounding procedures. Do not subject materials to impact, friction and strong shock. Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous. 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 2187 Explosives - Storage, transport and use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limit values
No exposure standards have been established for this material. However, the available exposure limits for ingredients are listed below:

Aluminium:
TWA: 10 mg/m³

NOTE
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

Biological Limit Values
No biological limits allocated.

Appropriate Engineering Controls
Ensure sufficient ventilation to keep airborne concentrations below exposure limits. All personnel should be removed to a safe location and protected from air blast and fly rock during blasting. Refer to AS 1940 - The storage and handling of flammable and combustible liquids and AS/NZS 60079.10.1:2009 Explosive atmospheres - Classification of areas - Explosive gas atmospheres, for further information concerning ventilation requirements.

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 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. 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	Article	**Appearance**	Continuous string of plastic wrapped material with 5 g/m detonating cord running through the centre of the entire length. When package is perforated, exposed product appears as a silver foamed gel.
Colour	Not available	**Odour**	Not available
Decomposition Temperature	Not available	**Melting Point**	Not available
Boiling Point	Not available	**Solubility in Water**	Insoluble in water
Specific Gravity	1.05 - 1.15	**pH**	4.5 - 6.0
Vapour Pressure	Not available	**Vapour Density (Air=1)**	Not available
Evaporation Rate	Not available	**Odour Threshold**	Not available
Partition Coefficient: n-octanol/water	Not available	**Flash Point**	Not available
Flammability	Explosive. Eliminate all ignition sources.	**Auto-Ignition Temperature**	Not available
Flammable Limits - Lower	Not available	**Flammable Limits - Upper**	Not available
Melting/Freezing Point	Not available		

10. STABILITY AND REACTIVITY

Chemical Stability
Stable under normal conditions of storage and handling.

Reactivity and Stability
Reacts with incompatible materials

Conditions to Avoid
Avoid sources of heat and combustible 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.

Possibility of hazardous reactions
Reacts with incompatible materials

Hazardous Polymerization
Not available

11. TOXICOLOGICAL INFORMATION

Toxicology Information
No toxicity data available for this product.

Ingestion
Ingestion unlikely due to form of product. If the sealed unit is damaged and exposure occurs: Ingestion of this product may irritate the gastric tract causing nausea and vomiting.

Inhalation
Unlikely due to form of product. If the sealed unit is damaged and exposure occurs: Inhalation of product vapours may cause irritation of the nose, throat and respiratory system.

Skin
Unlikely due to form of product. If the sealed unit is damaged and exposure occurs: May be irritating to skin. The symptoms may include redness, itching and swelling.

Eye
Unlikely due to form of product. If the sealed unit is damaged and exposure occurs: 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
Not considered to be a carcinogenic hazard.

Thiourea is listed as a Group 3: Not classifiable as to carcinogenicity to humans according to International Agency for Research on Cancer (IARC).

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.

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
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. The explosives to be destroyed must be placed in direct contact with fresh priming charge in a hole 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 e.g. oxides of nitrogen and carbon.

Make a sawdust bed or trail adequate for the quantity of explosives to be burned approximately 400mm wide and 40mm 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 the sawdust 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

Transport Information
Road and Rail:
This material is classified as Dangerous Goods Class 1 Explosives.
Class 1 Dangerous Goods are incompatible in a placard load with any of the following:
- Division 2.1: Flammable gases
- Division 2.2: Non-flammable Non-toxic 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
- Division 5.1: Oxidising substances
- Division 5.2: Organic Peroxides
- Class 6: Toxic or Infectious Substances
- Class 7: Radioactive materials unless specifically exempted
- Class 8: Corrosive Substances
- Class 9: Miscellaneous substances
- Fire risk substances

Marine Transport (IMO/IMDG):
Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.
Class/Division: 1.1D
UN No: 0241
Proper Shipping Name: EXPLOSIVE, BLASTING, TYPE E
EMS : F-B,S-X

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

Class/Division: 1.1D
UN No: 0241
Proper Shipping Name: Explosive, blasting, type E
Packaging Instructions (passenger & cargo): Forbidden
Packaging Instructions (cargo only): Forbidden

U.N. Number
0241

UN proper shipping name
EXPLOSIVE, BLASTING, TYPE E

Transport hazard class(es)
1.1D

Packing Group
see "Other information" (*)

Hazchem Code
E

Special Precautions for User
Not available

IERG Number
02

IMDG Marine pollutant
No

Other Information
(*)Unless specific provision to the contrary is made, the packagings used for explosives shall comply with at least the requirements for solids or liquids (as appropriate) of Packing Group II (medium danger).
Further information related to packaging, IBCS and Unit loads for explosives can be obtained from Australian Explosives Code

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
MSDS Reviewed: April 2016
Supersedes: May 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, Safe work Australia.

American Conference of Industrial Hygienists (ACGIH)

Globally Harmonised System of classification and labelling of chemicals.

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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.
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END OF SDS